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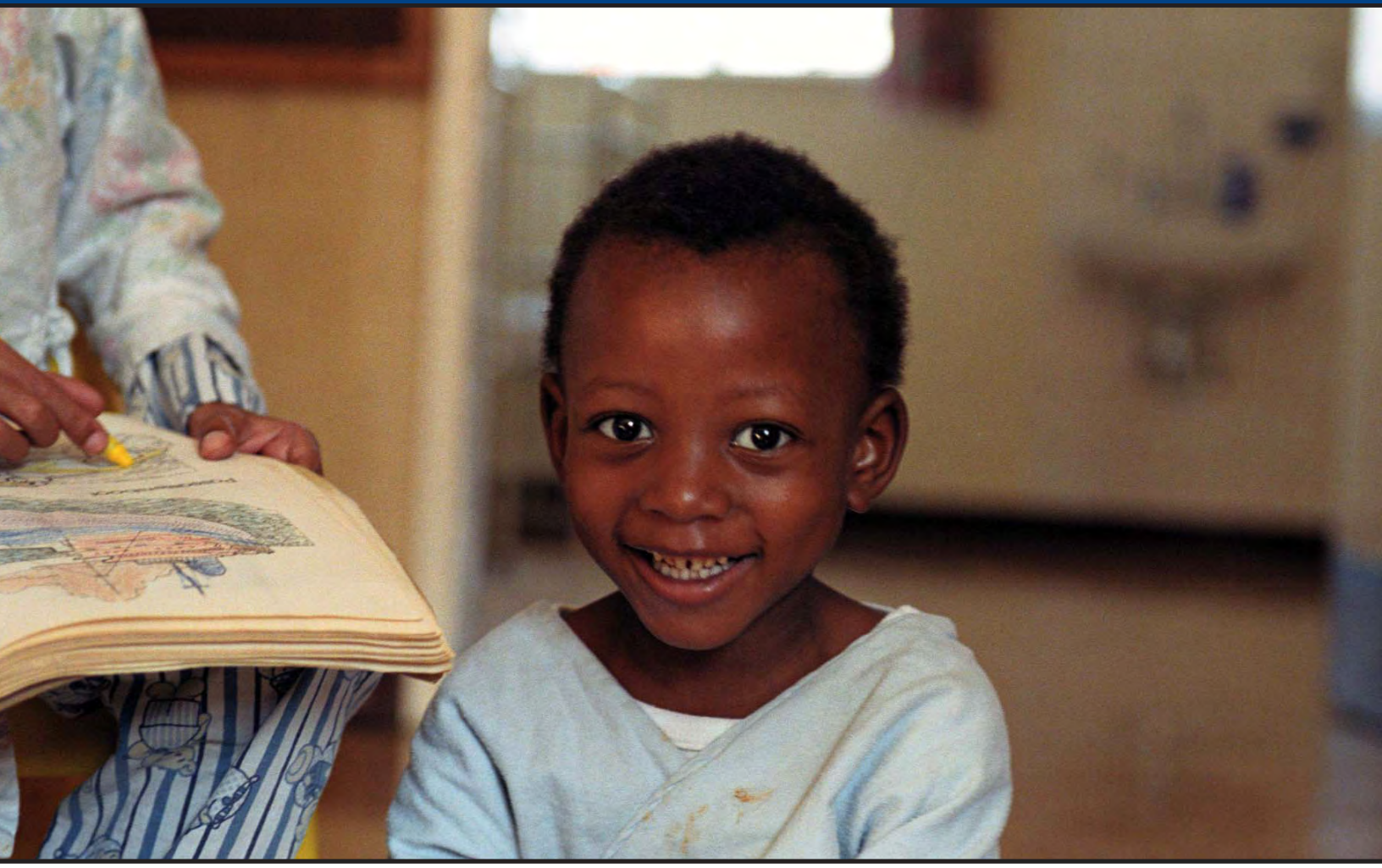
FROM THE AMERICAN PEOPLE

Building Partnerships to Control Tuberculosis



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OCTOBER 2010

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Building Partnerships to Control Tuberculosis

OCTOBER 2010

IN MEMORIAM

Susan May Bacheller
(August 29, 1958–October 19, 2010)

Our dear colleague and friend, Susan Bacheller, gave more than 15 years of dedicated service to USAID and global public health.

We admired and appreciated her dedication to development, global health, and especially the fight against tuberculosis. A faithful friend, she showed grace and good humor toward everyone.

Susan grew up in Grand Rapids, Michigan, and was a registered nurse, later earning a Bachelor of Arts in Political Science and a Master of Arts in International Development. Following service as a Peace Corps volunteer in Yemen and Honduras, she joined USAID, working in the Bureau for Global Health, as well as the Bureau for Latin America and the Caribbean. As TB Team Leader, Susan was instrumental in building up USAID's tuberculosis portfolio, and she provided expert support to USAID Missions. Susan was also the lead author of the U.S. Government's Tuberculosis Strategy. She was a determined and compassionate advocate for global tuberculosis control and established a network of colleagues worldwide who deeply respected her work and dedication.

Her passion for those who lived on the margins and for fairness was evident to all. Susan will be greatly missed.

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ABBREVIATIONS AND ACRONYMS

ACSM	Advocacy, Communication, and Social Mobilization
AIDS	Acquired Immunodeficiency Syndrome
BHC	Basic Health Center
CBO	Community-based Organization
CDC	U.S. Centers for Disease Control and Prevention
DOT	Directly Observed Therapy
DOTS	Directly Observed Treatment, Short-course
DP	Direct Procurement
DRC	Democratic Republic of the Congo
FY	Fiscal Year
GDF	Global Drug Facility
GHI	Global Health Initiative
GLC	Green Light Committee
Global Fund	The Global Fund to Fight AIDS, Tuberculosis and Malaria
Global Plan	Actions for Life – The Global Plan to Stop TB 2006–2015
HIV	Human Immunodeficiency Virus
IC	Infection Control
IDP	Internally Displaced Population
LED	Light-emitting Diode (Microscopy)
MDR-TB	Multidrug-resistant TB
MOH	Ministry of Health
NGO	Nongovernmental Organization
NIH	National Institutes of Health
NTP	National Tuberculosis Control Program
OGAC	Office of the U.S. Global AIDS Coordinator
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PETTS	Preserving Effective Tuberculosis Treatment Study

RNTCP	Revised National Tuberculosis Control Program (India)
SNRL	supranational reference laboratory network
SOP	Standard Operating Procedure
TB	Tuberculosis
USAID	U.S. Agency for International Development
USG	U.S. Government
WHO	World Health Organization
XDR-TB	Extensively Drug-resistant Tuberculosis

PREFACE

The Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008 (P.L. 110-293) required the submission of a report to Congress that describes the impact of United States foreign assistance on efforts to control tuberculosis.

The specific reporting requirements and the sections of the report where these requirements are addressed are provided below:

1. *The number of tuberculosis cases diagnosed and the number of cases cured in countries receiving United States bilateral foreign assistance for tuberculosis control purpose (Executive Summary, Chapter 2, and Annex B)*
2. *A description of activities supported with United States tuberculosis resources in each country, including a description of how those activities specifically contribute to increasing the number of people diagnosed and treated for tuberculosis (Chapter 2 and Annex A)*
3. *In each country receiving bilateral United States foreign assistance for tuberculosis control purposes, the percentage provided for direct tuberculosis services in countries receiving United States bilateral foreign assistance for tuberculosis control purposes (Annex E)*
4. *A description of research efforts and clinical trials to develop new tools to combat tuberculosis, including diagnostics, drugs, and vaccines supported by United States bilateral assistance (Chapter 4)*
5. *The number of persons who have been diagnosed and started treatment for multidrug-resistant tuberculosis in countries receiving United States bilateral foreign assistance for tuberculosis control programs (Executive Summary, Chapter 2, and Annex D)*
6. *A description of the collaboration and coordination of United States antituberculosis efforts with the World Health Organization, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and other major public and private entities within the Stop TB Strategy (Chapter 5)*
7. *The constraints on implementation of programs posed by workforce shortages and capacities (Chapter 3)*
8. *The number of people trained in tuberculosis control (Executive Summary and Chapter 3)*
9. *A breakdown of expenditures for direct patient tuberculosis services, drugs, and other commodities, drug management, training diagnosis and treatment, health systems strengthening, research, and support costs (Chapter 1 and Annex E)*

EXECUTIVE SUMMARY

A TB patient in South Africa holds hands with her DOTS supporter.

Tuberculosis (TB) is a serious public health threat that kills approximately 1.3 million people annually. The World Health Organization (WHO) estimates that there were 9.4 million new cases of TB in 2008. While TB can be found in almost every country in the world, 80 percent of the estimated cases occur in 22 developing and/or transitioning countries. The TB epidemic has been further exacerbated by its complex interaction with HIV/AIDS. TB is the leading cause of death among people with HIV/AIDS. Among new TB cases in 2008, an estimated 1.4 million, or 15 percent, were HIV positive. The dual epidemic is particularly pervasive in Africa where 79 percent of the total global burden of HIV-positive TB cases is found. Drug-resistant TB also compounds the problem and threatens to undermine years of progress in TB control efforts. In 2008, there were an estimated 440,000 cases of multidrug-resistant TB (MDR-TB),[1] and 57 countries had detected at least one case of extensively drug-resistant TB (XDR-TB).[2] Access to good quality services to diagnose and treat drug-resistant TB continues to be inadequate, with only 5 percent of MDR-TB patients having access to treatment.

The U.S. Government (USG) is a global leader in combating TB and focuses its programs on working with National TB Control Programs (NTPs) to expand TB services in the countries most affected by this disease. The USG provides vital global technical leadership in epidemiology and surveillance, laboratory strengthening, and clinical/operational research to accelerate actions to control TB and addresses the multiple other dimensions and challenges, including TB-HIV/AIDS co-infection, MDR- and XDR-TB, improvements in health delivery systems, and stronger community awareness.

The Global Health Initiative and the USG TB Strategy

The U.S. Congress demonstrated its continued firm commitment to TB control with the passage of the Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008 (P.L. 110-293) (herein referred to as the Reauthorization Act), supporting a substantial increase in USG funding for TB treatment and control over a 5-year period. The Reauthorization Act requested the development of a USG Global TB Strategy that supports the objectives of the Stop TB Partnership's Actions for Life – The Global Plan to Stop TB 2006–2015 (Global Plan).

1 MDR-TB is a form of TB that is resistant to at least isoniazid and rifampicin, the two most important first-line anti-TB drugs. Persons with MDR-TB are treated with second-line drugs, which are much more costly and have more serious side effects than first-line drugs.

2 XDR-TB is a form of MDR-TB that is also resistant to any fluoroquinolone and at least one of three injectable aminoglycoside drugs (capreomycin, kanamycin, or amikacin).

Announced by President Obama in May 2009, the Global Health Initiative (GHI) plans to invest $63 billion over six years to help partner countries improve health outcomes, with a particular focus on improving the health of women, newborns, and children. The GHI is a global commitment to invest in healthy and productive lives, building upon and expanding the USG's successes in addressing specific diseases and issues. TB is one of the priority diseases included in the GHI.

The GHI and the USG TB Strategy (2009–2014) provide the framework for the USG TB program goals and objectives. Launched on World TB Day, March 24, 2010, the USG TB Strategy has four main goals:

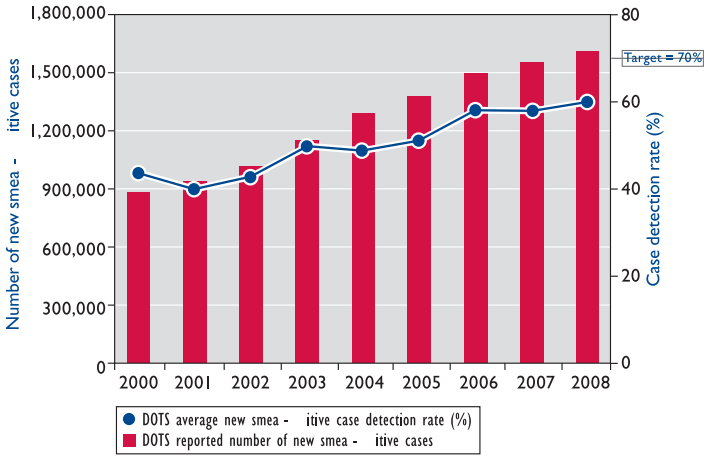
1. Contribute to a 50 percent reduction in TB deaths and disease burden from the 1990 baseline.
2. Sustain or exceed the detection of at least 70 percent of sputum smear-positive cases of TB and successfully treat at least 85 percent of cases detected in countries with established USG-supported TB programs.
3. Successfully treat 2.6 million new sputum smear-positive TB patients under Directly Observed Treatment, Short-course (DOTS) programs by 2014.
4. Diagnose and initiate treatment of at least 57,200 new MDR-TB cases by 2014 and provide additional treatment through coordinated multilateral efforts.

In addition to requiring the development of a USG TB strategy, the Reauthorization Act also requires the submission of an annual report to Congress describing the impact of U.S. foreign assistance on efforts to control TB. This report focuses on achievements in countries "… receiving United States bilateral foreign assistance for tuberculosis control purposes…"[3] as well as global technical leadership and research activities supported with USG foreign assistance funding for international TB control.[4] This report also provides examples of the successful collaboration between USG TB programs and the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). USG progress in addressing the challenges of TB-HIV/AIDS co-infection in countries through PEPFAR is described in the PEPFAR annual report to Congress.

Achievements

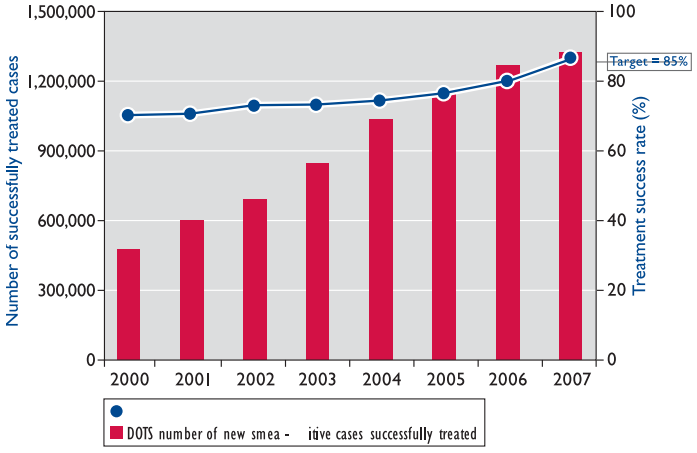
USAID focuses the majority of its technical and financial resources in the Tier 1 priority countries, which have the greatest burden of TB. The latest WHO data show that in the U.S. Agency for International Development's

Trend in new smear-positive cases detected and case detection rates in USAID's Tier 1 countries



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Trend in new smear-positive cases successfully treated and treatment success rates in USAID's Tier 1 countries



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.
Note: DOTS treatment success rates for 2008 will be reported in the WHO 2010 *Global Tuberculosis Control* report.

3. Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008 (P.L. 110-293), section 302, p. 50.

4. Note: TB research funded by the National Institutes of Health and the U.S. Centers for Disease Control and Prevention's support for domestic TB control in the United States are not described in this report as these activities are not funded through USG foreign assistance.

(USAID's) Tier 1 countries, the average case detection rate for new smear-positive TB cases (the most infectious type of TB) increased from 42 percent in 2001 to 60 percent in 2008 (see tables on page 2). Among these same countries, average treatment success increased from 75 percent in 2001 to 82 percent in 2007 (see tables on page 2). **The number of new smear-positive TB patients successfully treated in Tier 1 countries increased by 7 percent, from 1,246,100 in 2006 to 1,329,455 in 2007** (see tables on page 2). Additionally, in USAID-assisted countries, approximately 11,700 patients with MDR-TB were diagnosed and initiated on treatment in 2008. These results were achieved by building the capacity of NTPs to deliver high-quality TB diagnostic and treatment services. In fiscal year (FY) 2009, with USAID support, more than 63,000 health care workers were trained in DOTS and other components of the Stop TB Strategy.

According to WHO, 80 percent of estimated cases occur in 22 high-burden countries. USAID focuses its efforts in 18 of these 22 countries; thus, the Agency's accomplishments have contributed significantly to overall increases in global case detection and treatment success. Global case detection increased from 41 percent in 2001 to 62 percent in 2008. Treatment success increased from 73 percent in 2001 to 86 percent in 2007, surpassing the global target of 85 percent.

USAID's Tier 1 countries are demonstrating good progress toward the Global Plan and USG TB Strategy goal of 50 percent reductions in TB deaths and prevalence by 2015, compared with 1990 levels. **According to 2008 data, death and prevalence rates in Tier 1 countries have decreased 21 percent and 26 percent, respectively, compared with 1990 levels.**

Leveraging its field presence in developing and transitional countries, USAID allocates the majority of its annual TB budget to country-level programs and activities. The focus of USAID's FY09 global TB control effort was to scale up the Stop TB Strategy in 20 priority (Tier 1) countries. The Agency supported smaller-scale programs in an additional 21 (Tier 2) countries.

Collaboration among USG Agencies and Partners

Within the USG, TB efforts are well coordinated. There is an ongoing technical-level working group dedicated to international TB under the auspices of the Federal Tuberculosis Task Force. Specific roles have also been clearly established among USG partners. USAID is the lead USG agency in international TB control. USAID works closely with the Office of the U.S. Global AIDS Coordinator (OGAC) at the Department of State; OGAC is the lead for the USG response to TB-HIV co-infection as part of PEPFAR. USAID and the U.S. Centers for Disease Control and Prevention (CDC) are the key agencies responsible for implementing PEPFAR-supported TB-HIV activities. The CDC leads domestic USG TB control efforts, where 60 percent of reported TB cases in 2009 were foreign born; provides critical technical support to international partners on epidemiology and surveillance, laboratory strengthening, and clinical/operational research that evaluates promising diagnostic and treatment strategies; and informs the

Highlights of Country-Level Achievements

In **Afghanistan,** USAID and other international partners have worked in partnership to support the NTP to expand DOTS coverage. As a result of these coordinated efforts, ***case detection increased from 28 percent in 2001 to 61 percent in 2008***, and the treatment success rate was 87 percent.

In **Bangladesh,** USAID assisted the NTP to establish 50 new sputum collection centers and train 50 community volunteers to collect sputum samples and transfer the samples to the laboratory for testing. ***The case detection rate in USAID-supported areas was 78 percent, surpassing both the national average and the global target of 70 percent.***

In **Russia,** USAID and international partners have worked together to support the NTP and provide technical assistance at both the federal and regional levels to expand and improve the quality of TB control services. These efforts resulted in ***an increase in case detection from 51 percent in 2001 to 73 percent in 2008***.

In **South Africa,** through capacity building and expansion of diagnostic and treatment services, USAID assisted the country ***to provide treatment to 4,031 patients with MDR-TB***.

efficient use of new approaches to TB care. Finally, the National Institutes of Health leads the way in improving the biomedical understanding of TB and conducts basic, applied, and clinical research for both drug-sensitive and -resistant TB and is heavily involved in the development of new drugs, vaccines, and diagnostics. These agencies are active members of the Stop TB Partnership and are committed to achieving the global targets established in the Global Plan.

The USG also works with international partners to combat TB, has made major contributions to global policy development, and has established strong relationships with national TB control programs, nongovernmental organizations, technical partners and communities. The USG is the largest single contributor to the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), making this multilateral effort a critical complement to the USG's bilateral assistance program. The Global Fund provides 57 percent of all international financing for TB, and the USG provided more than $4.3 billion of the Global Fund's total received contributions of more than $16 billion as of April 2010. The USG leverages its technical and financial resources with those of the Global Fund, WHO, and others to increase the impact of global investments in TB control.

Contributing to the GHI Principles

The GHI aims to maximize the impact the United States achieves for every health dollar it invests, in a sustainable way. The Initiative promotes a new business model to deliver its dual objectives of achieving significant health improvements and creating an effective, efficient, and country-led platform for the sustainable delivery of essential health care and public health programs. USAID's FY09 TB activities and achievements reflect a strong commitment to implementing the seven core development principles of the GHI: implement an approach that promotes women, girls, and gender equity; increase impact through strategic coordination and integration; strengthen and leverage key multilateral organizations, global health partnerships, and private sector engagement; encourage country ownership and invest in country-led plans; build sustainability through health systems strengthening; improve monitoring, metrics, and evaluation; and promote research and innovation.

Addressing Challenges

Continued efforts are needed to identify more cases of TB and to bring TB services closer to the community, with the goal of meeting and surpassing the global target of 70 percent case detection (currently at 62 percent) and moving toward universal coverage. Although the treatment success target of 85 percent was surpassed globally for the first time in 2007, the African (79 percent) and European (67 percent) regions lagged, due partly to HIV co-infection and drug-resistant TB. Reaching the case detection and treatment success targets that were set forth in the Global Plan and the USG TB Strategy will require intensified efforts in all countries to plan, finance, and implement the Stop TB Strategy. USAID is working closely with its many partners to close gaps in financial and technical support and to scale up all components of the Stop TB Strategy.

CHAPTER 1
U.S. Government's Foreign Assistance for TB Control

A clinical officer for the IMPACT TB Project injects a tuberculin skin test into a young girl in Muheza district in Tanga, Tanzania.

The U.S. Government (USG) is a global leader in the international fight to control tuberculosis (TB) and has made a significant contribution to global, regional, and national efforts to reduce illness and death associated with the disease. The primary focus of the U.S. Agency for International Development's (USAID's) program is to support country-level efforts to scale up services to diagnose and treat TB. The U.S. Centers for Disease Control and Prevention (CDC) works closely with USAID and provides critical technical support to international partners on epidemiology and surveillance, laboratory strengthening, and clinical/operational research that evaluates promising diagnostic and treatment strategies and informs the efficient use of new approaches to TB care.

The U.S. Congress demonstrated its continued firm commitment to TB control with the passage of the Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008 (P.L. 110-293) (herein referred to as the Reauthorization Act), supporting a substantial increase in USG funding for TB treatment and control over a five-year period. The Reauthorization Act requested the development of a USG Global TB Strategy that supports the objectives of the Stop TB Partnership's Actions for Life – The Global Plan to Stop TB 2006–2015 (Global Plan).[5]

The Global Health Initiative and the USG TB Strategy

Announced by President Obama in May 2009, the Global Health Initiative (GHI) plans to invest $63 billion over six years to help partner countries improve health outcomes, with a particular focus on improving the health of women, newborns, and children. The GHI is a global commitment to invest in healthy and productive lives, building upon and expanding the USG's successes in addressing specific diseases and issues. The GHI aims to maximize the impact the United States achieves for every health dollar it invests, in a sustainable way. Seven key development principles form the core of the GHI approach to implementing health programs:

- Implement an approach that promotes women, girls, and gender equity.
- Increase impact through strategic coordination and integration.
- Strengthen and leverage key multilateral organizations, global health partnerships, and private sector engagement.
- Encourage country ownership and invest in country-led plans.
- Build sustainability through health systems strengthening.
- Improve monitoring, metrics, and evaluation.
- Promote research and innovation.

5. Launched by the Stop TB Partnership in January 2006, the Global Plan includes the Millennium Development Goal of halting and beginning to reverse the incidence of TB by 2015 as well as the more ambitious Stop TB Partnership targets of reducing TB prevalence and deaths by 50 percent by 2015 relative to the 1990 baseline.

The Stop TB Strategy

1. Pursue quality DOTS expansion and enhancement.
   a. Political commitment with increased and sustained financing
   b. Case detection through quality-assured bacteriology
   c. Standardized treatment with supervision and patient support
   d. An effective drug supply and management system
   e. Monitoring and evaluation system and impact measurement
2. Address TB-HIV co-infection, MDR-TB, and the needs of poor and vulnerable populations.
3. Contribute to health systems strengthening based on primary health care.
4. Engage all care providers.
5. Empower people with TB and affected communities through partnerships.
6. Enable and promote research.

The USG TB Strategy was launched on World TB Day, March 24, 2010. The GHI and the USG TB Strategy provide the framework for the USG TB program goals and objectives. The projected targets for the USG TB program 2009–2014 are to:

- Contribute to a 50 percent reduction in TB death and disease burden from the 1990 baseline.
- Sustain or exceed the detection of at least 70 percent of sputum smear-positive[6] cases of TB and successfully treat at least 85 percent of cases detected in countries with established USG-supported TB programs.
- Successfully treat 2.6 million new sputum smear-positive TB patients under Directly Observed Treatment, Short-course (DOTS) programs by 2014, primarily through support for needed services, commodities, health workers, and training and additional treatment through coordinated multilateral efforts.
- Diagnose and initiate treatment of at least 57,200 new multidrug-resistant TB (MDR-TB) cases by 2014 and provide additional treatment through coordinated multilateral efforts.

The USG TB Strategy outlines treatment targets based upon the total estimated costs of existing drugs, diagnostic tests, and services to diagnose and treat basic TB and MDR-TB. It is anticipated that these targets could be surpassed substantially with the introduction of new technologies and enhanced donor contributions to the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) and other TB control programs.

Accelerating Action to Achieve Results

USAID's technical approach incorporates all components of the Stop TB Strategy (see box, left), and the Agency works with National TB Programs (NTPs) at the country level to build local capacity and provide support that is fully aligned with national strategic plans. USAID works with the private sector and nongovernmental organizations, mobilizes communities to become engaged in TB control, and coordinates and leverages technical and financial resources with a variety of partners and donors, including the World Health Organization (WHO); the Global Fund; and the World Bank, to achieve results at the country level. USAID provides funding to the CDC for global- and country-level activities where CDC has a clear comparative advantage. Key areas of CDC support are epidemiology and surveillance, infection control, laboratory strengthening, and clinical/operational research.

The Stop TB Strategy

As elaborated throughout this report, the USG's TB program has made clear progress toward achieving the objectives of the USG TB Strategy and has demonstrated a strong commitment to the principles of the GHI and to implementation of the WHO Stop TB Strategy (see box, above left). Chapter 2 and Appendix A of this report describe how USAID's country-level activities accelerated detection and treatment of TB, scaled up MDR-TB services, and expanded TB-HIV co-infection interventions, in coordination with the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). Chapter 3 describes how the TB program contributed to the strengthening of health systems. Chapter 4 summarizes how USAID's fiscal year (FY) 2009 activities and achievements at the global and country levels contributed to promoting research and innovation and to the integration of new tools and approaches into country programs. Finally, Chapter 5 describes USAID's partnerships with a variety of organizations and how the Agency collaborates

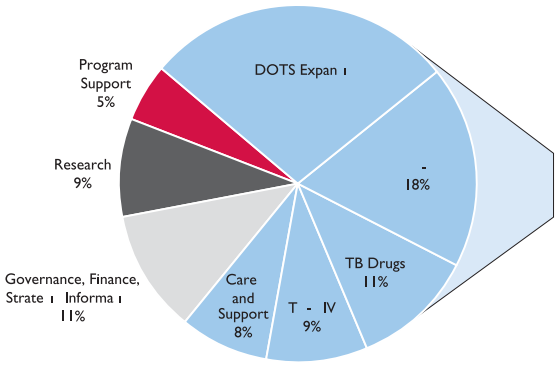
6. Sputum smear-positive TB cases are the most infectious and therefore the most responsible for transmission of the disease.

and leverages resources with partners to maximize the USG investments in TB control. The CDC's partnership with USAID in these efforts and contributions to country-level programs and research are described throughout the report.

FY09 USAID Funding for TB Control

In FY09, USAID provided $176,583,000 to support TB programs worldwide and to increase the capacity of countries most affected by TB to expand TB services and adopt and implement evidence-based interventions. Leveraging its field presence in developing and transitional countries, USAID allocated the majority of its FY09 TB budget to country-level programs and activities. The Agency also funded late-stage research on new TB intervention tools, such as anti-TB drugs, TB diagnostics, and the development of new approaches to improve the performance of TB programs.

Figure 1: USAID Total Funds Allocated for Tuberculosis in FY09



Source: Foreign Assistance and Coordination Tracking System (FACTS)

As Figure 1 demonstrates, 75 percent of the Agency's budget was allocated to direct patient services, including for DOTS, anti-TB drugs, MDR-TB, TB-HIV, and care and support for TB patients. Overall, a total of 86 percent of the budget was dedicated to health systems strengthening, including direct patient services (75 percent) and governance, finance, and strategic information activities (11 percent). Nine percent of the budget was invested in research and 5 percent was allocated to program support costs.

Supporting a Country-Led Plan: Scaling Up MDR-TB Treatment in Namibia

The first official case of extensively drug-resistant TB (XDR-TB) in Namibia was reported in 2007. USAID has been instrumental in supporting the NTP to establish a Programmatic Management of Drug-Resistant TB Initiative. Nine sites strategically located throughout the country have been designated official sites for treatment of drug-resistant TB. One of the most active sites is the Walvis Bay Hospital on the west coast, where about 13 XDR-TB and 39 MDR-TB patients received treatment in FY09. One of those patients was 26-year-old Lukas E., who gave the following testimony about his treatment:

I was apprehensive when I was first told about my condition and admitted to the hospital. During the first few weeks after my hospitalization (which I was informed would be a minimum of six months), I had few visitors. I later learned that this was because people were afraid of catching the disease from me or other patients. I am grateful for the care and support provided to me by the dedicated staff at the hospital. As a result of the treatment and medicine I received, my condition improved dramatically, and six months after I was admitted I was lucky enough to be discharged, as my sputum tests turned negative.

After being discharged from the hospital, I was put on ambulatory treatment through Field Promoters, who ensure that I take my medications under direct observation, every day. The timing of the DOT suits me well, as I take the medications early in the morning before I go to work, which has made life a lot easier for me and fellow TB patients who are breadwinners. I am constantly counseled about the importance of adherence to treatment, as patients tend to interrupt treatment once they start feeling well again.

I must admit, however, that the long duration of treatment remains a great barrier to patients, and the side effects of the medicines can be severe, including the injections (which can also be painful). The government should consider provision of recreational facilities and skill development/income-generating activities for hospitalized patients. A lot needs to be done to create awareness about the danger that drug-resistant TB poses and the measures to be taken to curtail this growing problem.

Collaboration among USG Agencies

Within the USG, TB efforts are well coordinated. There is an ongoing technical-level working group dedicated to international TB under the auspices of the Federal Tuberculosis Task Force. Specific roles have also been clearly established among USG partners. USAID is the lead USG agency in international TB control. USAID works closely with the Office of the U.S. Global AIDS Coordinator (OGAC) at the Department of State; OGAC is the lead for the USG response to TB-HIV co-infection as part of PEPFAR. USAID and CDC are the primary agencies responsible for implementing PEPFAR-supported TB-HIV activities. The CDC leads domestic USG TB control efforts and provides critical technical support to international partners on epidemiology and surveillance, laboratory strengthening, and clinical/operational research that evaluates promising diagnostic and treatment strategies and informs the efficient use of new approaches to TB care. Finally, the National Institutes of Health leads the way in improving the biomedical understanding of TB and conducts basic, applied, and clinical research for both drug-sensitive and -resistant TB and is heavily involved in the development of new drugs, vaccines, and diagnostics. All of these agencies are active members of the Stop TB Partnership and are committed to achieving the key global targets established in the Global Plan.

CHAPTER 2
Tier 1 Country-level Activities

A patient with TB symptoms gives a sputum sample in Kampala, Uganda.

Leveraging its field presence in developing and transitional countries, U.S. Agency for International Development (USAID) allocates the majority of its annual tuberculosis (TB) budget to country-level programs and activities. The major focus of USAID's fiscal year (FY) 2009 global TB control effort was to scale up the Stop TB Strategy in 20 priority (Tier 1) countries where there is a high burden of disease. USAID supported smaller-scale programs in an additional 21 (Tier 2) countries. This chapter summarizes USAID's major activities and accomplishments in each of the 20 Tier 1 countries. Annex A provides highlights of activities in the Tier 2 countries. U.S. Centers for Disease Control and Prevention's (CDC's) activities in these countries are also described.

The Stop TB Strategy is a robust package of interventions that builds on the Directly Observed Treatment, Short-course[7] (DOTS) strategy. USAID collaborated with National TB Control Programs (NTPs), multilateral institutions, nongovernmental organizations (NGOs), community-based organizations, and the private sector to implement all components of the Stop TB Strategy. The Agency's support and assistance at the country level contributed to improved TB services, increased case finding, and better treatment outcomes.

Achievements in TB Control

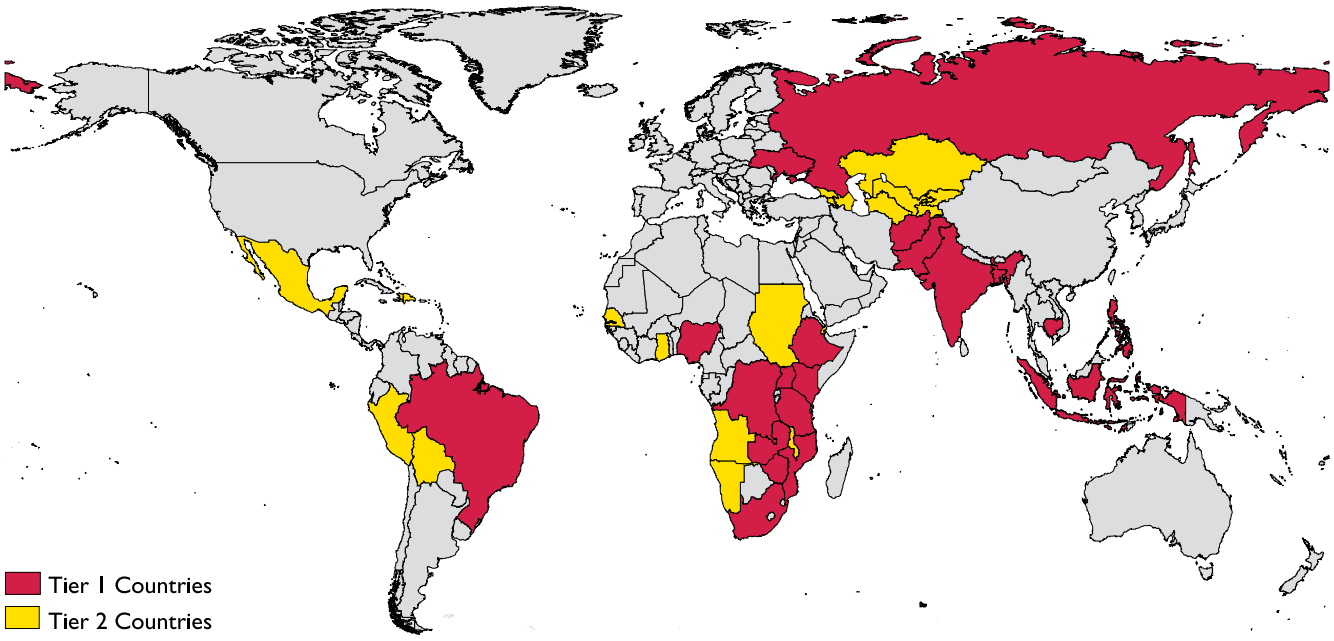
The latest World Health Organization (WHO) data show that in USAID's Tier 1 countries, the average case detection rate for new smear-positive TB cases (the most infectious type of TB) increased from 42 percent in 2001 to 60 percent in 2008. Among these same countries, the average treatment success rate increased from 75 percent in 2001 to 82 percent in 2007. **The number of new smear-positive TB patients successfully treated in Tier 1 countries increased by 7 percent from 1,246,100 in 2006 to 1,329,455 in 2007.** Additionally, in USAID-assisted countries, approximately 11,700 patients with MDR-TB were diagnosed and initiated on treatment in 2008.

According to WHO, 80 percent of estimated cases occur in 22 high-burden countries. USAID focuses its efforts in 18 of these 22 countries,[8] thus the Agency's accomplishments have contributed significantly to overall increases in global case detection and treatment success.

7. DOTS consists of five components: 1) Political commitment with increased and sustained financing; 2) Case detection through quality-assured bacteriology; 3) Standardized treatment with supervision and patient support; 4) An effective drug supply and management system; and 5) Monitoring and evaluation system and impact assessment.

8. USAID's 20 Tier 1 countries include 18 of the 22 high-burden countries: Afghanistan, Bangladesh, Brazil, Cambodia, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Kenya, Mozambique, Nigeria, Pakistan, Philippines, Russia, South Africa, Tanzania, Uganda, and Zimbabwe.

Figure 2. Map of World: USAID Tier 1 and Tier 2 Countries with TB



Note: USAID supports TB activities in Southern Sudan.

Global case detection for new smear-positive cases increased from 41 percent in 2001 to 62 percent in 2008. Treatment success for new smear-positive cases increased from 73 percent in 2001 to 86 percent in 2007.

USAID's Tier 1 countries are also demonstrating good progress toward the Global Plan and USG TB Strategy goal of 50 percent reductions in TB prevalence and deaths by 2015, compared with 1990 levels. According to 2008 data, the prevalence and death rates in Tier 1 countries have decreased 26 percent and 21 percent, respectively.

AFGHANISTAN

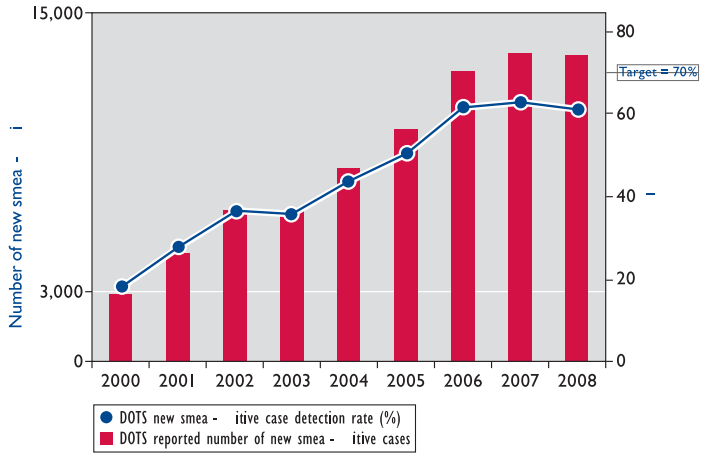
Afghanistan had an estimated 51,000 new TB cases in 2008. Although the NTP adopted DOTS in 1997, years of conflict and a lack of regional coordination and support have limited the number of people able to access DOTS services. USAID, WHO, the Global Fund, and other international partners have supported the NTP to expand DOTS coverage and increase case detection and treatment success rates. **As a result of these coordinated efforts, case detection increased from 44 percent in 2004 to 61 percent in 2008. The treatment success rate has been consistently high since 2000, while the number of successfully treated cases continues to increase each year.**

In 2009, **USAID continued its expansion of DOTS by successfully implementing community-based DOTS programs in four provinces (Badakhshan, Baghlan, Jawzjan, and Herat) and providing training for 1,697 community health workers.** USAID also selected eight health facilities in six provinces to serve as DOTS learning centers and supported an urban-based DOTS program in the capital city of Kabul.

To improve the quality of TB services nationwide, USAID introduced standard operating procedures (SOPs) for case detection and treatment management; trained 744 individuals on the use of the SOPs and other TB control topics; translated the SOPs, as well as national TB guidelines, into local languages (Dari and Pashto); and distributed the translated materials to all health facilities nationwide. The Agency also provided more than 33,000 treatment packages containing TB medications and other supplies to the NTP and printed and distributed thousands of TB-related booklets, pamphlets, and other educational materials for patients and their family members and for community health workers to use as job aids.

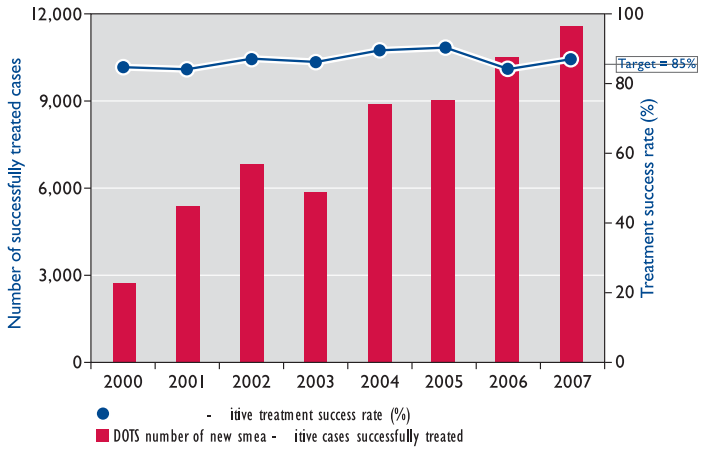
To build capacity at the national level and improve regional coordination, USAID provided management and leadership training for 78 senior NTP staff members, developed new national NTP guidelines, and equipped NTP programs in 13 provinces with necessary office equipment, including computers.

Afghanistan: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Afghanistan: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.
Note: DOTS treatment success rate for 2008 will be reported in the 2010 *Global Tuberculosis Control* report.

It Takes Communities: Providing TB Services in Remote Afghanistan

Haji M. was one of 1,697 community health workers who received training in community-based DOTS as part of a USAID-supported initiative to provide services to rural and internally displaced populations (IDPs) in Afghanistan. Haji had been working for 3 years in the Maslakh IDP camp, which is located approximately nine miles from the city of Herat and six miles from the nearest health facility, Injil Basic Health Center (BHC). Injil BHC was one of 10 centers that USAID upgraded with diagnostic laboratory services as part of the expansion of community-based DOTS. Before his training, Haji knew very little about TB; he did not know how to identify suspect cases or what to do if he could identify them. But within the first 3 months after his training, Haji was able to refer 74 camp inhabitants with suspected TB to Injil BHC for diagnosis. Seventeen (23 percent) of those individuals were diagnosed as having smear-positive TB.

Abdul B., a 13-year-old child, was one of the 17 camp inhabitants who received a positive diagnosis. Other health workers had checked Abdul in the past. He had been coughing for 3 months. Prior to the USAID-supported training activity, no one had suspected TB. It was only after the training of community health workers that Abdul's symptoms were recognized, and he was referred to Injil BHC for proper diagnosis. After Abdul's smear-positive diagnosis, Haji visited Abdul's house to see if any other family members were showing symptoms. Haji identified TB symptoms in three of Abdul's sisters and referred them to the same facility for diagnosis. All three tested positive for TB. Abdul and his sisters were provided TB treatment, with Haji supervising their treatment.

Haji's story illustrates the vitally important role that USAID-supported community-based DOTS serves in remote and hard-to-reach areas of Afghanistan. In 2009, community health workers in four target provinces – Badakhshan, Baghlan, Jawzjan, and Herat – referred a total of 6,973 persons with symptoms of TB for diagnosis, with 704 (10 percent) testing positive. Because of the direct supervision that Haji and other trained workers provided, 98 percent of the persons with confirmed TB completed their treatment.

USAID contributed to several additional achievements in 2009, including:

- Established 10 new TB diagnostic laboratories and improved laboratory-based diagnostic services in 13 provinces.
- Conducted workshops for private sector health service managers to improve public-private sector coordination in TB control.
- Increased TB awareness among more than 6 million schoolchildren through World TB Day events and print and mass media messages.

BANGLADESH

Bangladesh had an estimated 360,000 new TB cases in 2008, and, based on 2007 WHO estimates, Bangladesh is on the WHO list of high MDR-TB-burden countries. While treatment success is high at 92 percent (in 2007) and case detection has improved dramatically from 38 percent in 2004 to 61 percent in 2008, many TB cases remain undiagnosed. In 2009, USAID focused its efforts on improving case finding and diagnosis and improving programmatic management of drug-resistant TB.

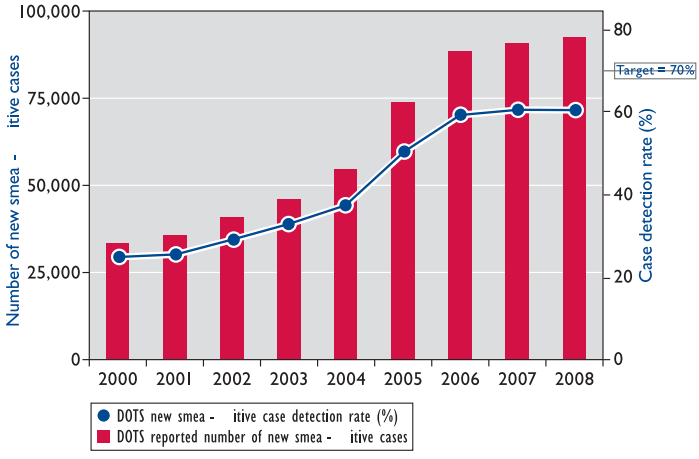
USAID assisted the NTP to establish 50 new sputum collection centers and to train 50 community volunteers to collect sputum samples, transfer the samples to microscopy centers, and administer directly observed treatment. The new collection centers, located in the Dhaka and Rajshahi divisions, were also used as "centers of advocacy," where local leaders, village doctors, DOTS providers, and cured TB patients convened to increase community involvement in the effort to prevent and control the spread of TB. USAID also trained 45 private sector providers and 880 local government leaders on case finding and referral to DOTS-based diagnostic centers. **The case detection rate in USAID-supported areas was 78 percent in 2009, surpassing both the national average and global target.**

To improve the management of MDR-TB, USAID supported renovations, improved inventory control for second-line drugs, and procured equipment and supplies for the MDR-TB ward at the national reference hospital.

USAID contributed to several additional TB prevention and control achievements in 2009:

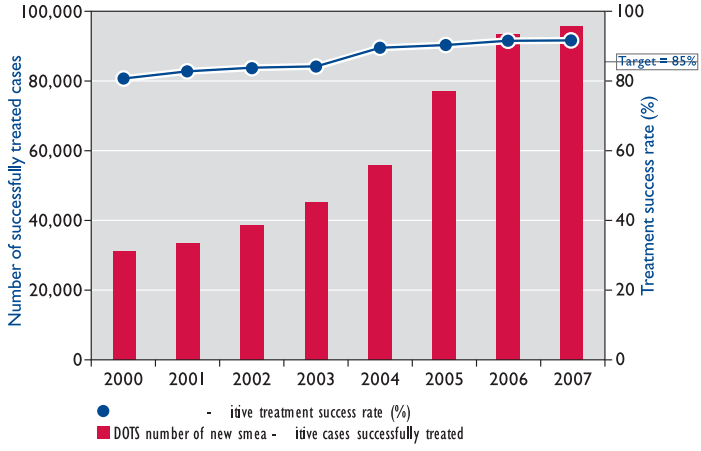
- Assisted the NTP to conduct performance reviews in 265 subdistricts, *upazilas*, with a focus on gathering information from community-level health professionals about their achievements and challenges. The NTP is using the results to guide future program design.
- Assisted the NTP to identify programmatic areas needing improvement by conducting an assessment of the national TB laboratory network and laboratory quality control procedures in more than 1,000 facilities nationwide.
- Established referral links between HIV clinics and TB services, resulting in 1,237 TB patients being tested for HIV.

Bangladesh: Case Detection Under DOTS



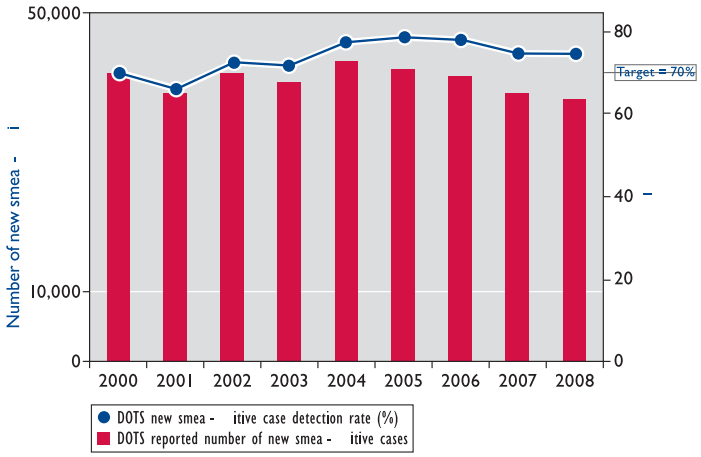
Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Bangladesh: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.
Note: DOTS treatment success rate for 2008 will be reported in the 2010 *Global Tuberculosis Control* report.

Brazil: Case Detection Under DOTS



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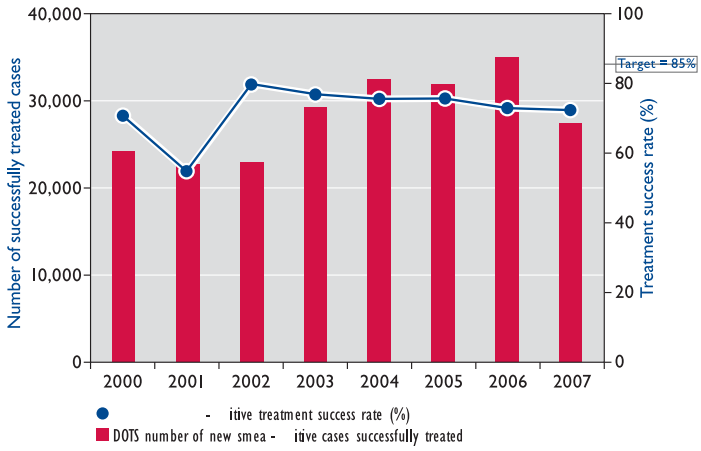
Brazil: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.
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Brazil had an estimated 89,000 new TB cases in 2008. Brazil accounts for 32 percent of all TB cases in Latin America. **As a result of USAID support and good coordination with the Global Fund, the case detection rate reached 75 percent in 2008, surpassing the global target. The decrease in reported number of new smear-positive cases since 2004 indicates that TB incidence in Brazil is likely on the decline.**

To address the challenge of lagging treatment success rate (72 percent), USAID assisted the NTP to expand and to improve the quality of DOTS through trainings and other activities. The Agency supported 44 DOTS supervision and monitoring visits, completion of a DOTS manual for nurses, and training for a total of 11,084 health care workers. USAID focused most of its 2009 TB control activities in the states of Rio de Janeiro and São Paulo, which together account for 40 percent of all new TB cases in the country. In Rio de Janeiro, where municipalities are highly variable in DOTS coverage and treatment success, USAID helped to decentralize TB control activities by developing work plans for each municipality.

Achievements in Itaborai, a municipality in Rio de Janeiro, exemplify the impact of USAID activities in Brazil. In 2009, training and technical assistance were provided to increase the administration of DOTS in the health services and at patients' homes through a Family Health/Community Outreach Program. **As a result, case detection reached 91 percent, and treatment success reached 89 percent, surpassing the national averages. Additionally, 87 percent of TB patients were tested for HIV, compared with the national average of 49 percent.** Similar results were achieved in several São Paulo municipalities.

USAID contributed to several additional achievements in 2009:

- Implemented an innovative Internet-based surveillance system in 122 MDR-TB reference centers, resulting in improved monitoring and evaluation of MDR-TB services and tracking of patients.
- Assisted the NTP to develop a strategy for expanding the pool of suppliers of quality-assured second-line TB medicines and mediated communication with potential suppliers.
- Supported 96 community awareness and mobilization activities, reaching more than 30,000 people; and implemented TB screening interventions in waiting rooms at 36 HIV/AIDS clinics.

CAMBODIA

Cambodia had an estimated 71,000 new TB cases in 2008. While Cambodia has achieved a consistently high treatment success rate of 93 to 94 percent over the past several years, case detection has stagnated at 55 to 56 percent. USAID has been working closely with the NTP and other partners to implement the government's National Strategic Plan for TB Control in Cambodia, 2006–2010, with a major objective of increasing the detection of TB cases. This effort has had an impact. **In 2008, average case detection rates for new smear-positive cases in USAID-supported provinces were much higher (69 percent) than the national average (56 percent).**

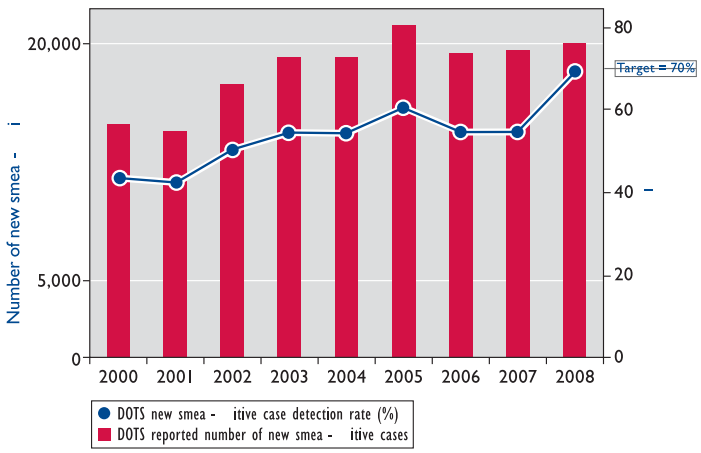
In 2009, USAID continued to build on past achievements by providing 271 health facilities with support for community-based DOTS programs and assisting the NTP to expand this intervention to more than 75 percent of health centers nationwide. The Agency also engaged private sector providers and pharmacists in early case finding and referral to DOTS centers by facilitating dozens of seminars, meetings, and site visits aimed at increasing TB awareness in the private sector. A total of 5,929 private and public sector staff participated in the various events. **In FY09, 8,828 people with TB-like symptoms were referred to DOTS services from health care service providers not previously linked to the NTP, mostly private providers and pharmacists, resulting in the identification of 730 new cases of TB.**

USAID also worked to integrate TB and HIV services and increase the proportion of TB patients referred to HIV counseling and testing. The rate of HIV testing among TB patients in USAID-supported districts increased from 45 percent (2008) to 64 percent (2009). Also in 2009, USAID assisted the NTP to finalize a national TB-HIV framework and SOPs for management of TB-HIV co-infection; supported meetings aimed at improving coordination among TB and HIV partner organizations; and initiated integrated TB-HIV services in three prisons.

USAID assistance and support contributed to several additional TB prevention and control achievements in 2009:

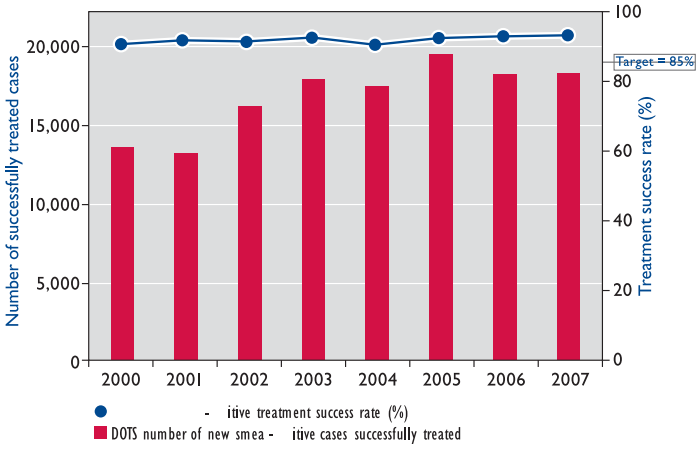
- Supported external quality assurance programs in 78 TB diagnostic laboratories among nine USAID-supported provinces.
- Expanded community outreach activities in 10 remote sites, reaching 7,606 local authorities, village leaders, and village volunteers with messages about TB and the importance of contact tracing (identifying and diagnosing persons who may have come into contact with infectious individuals).
- Assisted the NTP to procure pediatric anti-TB drugs and second-line drugs for the treatment of MDR-TB.

Cambodia: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Cambodia: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.
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DEMOCRATIC REPUBLIC OF THE CONGO

The Democratic Republic of the Congo (DRC) had an estimated 245,000 new cases in 2008. USAID has been supporting and assisting the NTP since 2001. **With USAID help, case detection has been steadily increasing each year, from 61 percent in 2004 to 66 percent in 2008. Treatment success increased from 85 percent in 2004 to 87 percent in 2007, surpassing the global target.** However, co-infection with HIV and a high burden of drug-resistant TB pose serious threats to these achievements. The DRC ranks 13th on the WHO list of high MDR-TB-burden countries. The challenges for TB control are exacerbated by the vastness of the country, poor infrastructure, and a weak national health system. The delivery of TB drugs and other commodities is almost entirely dependent on air transport.

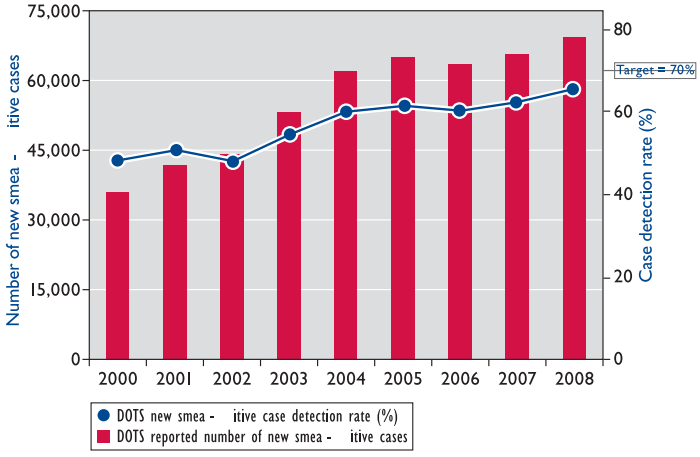
In 2009, USAID expanded DOTS by introducing TB detection and treatment services into primary health care centers in four new health districts in the South Kivu province and nine health centers in the East Equator and Maniema provinces; conducting a massive campaign to enroll 1,582 TB patients in treatment in Mlemba-Nkulu, a district in the Katanga province with the highest TB rates in the country; and training 61 former TB patients in community-based DOTS in three pilot cities. **The implementation of community-based DOTS resulted in a doubling of the TB case detection in the three pilot sites.** Because of this success, community-based DOTS is now being scaled up in all USAID-supported areas.

To improve the diagnosis and treatment of drug-resistant TB, USAID renovated two rooms for MDR-TB patients in the referral hospital in the capital city of Kinshasa, trained 24 medical staff in MDR-TB care, and provided nutritional and social support to 238 MDR-TB patients. USAID also assisted the NTP to develop national MDR-TB guidelines.

USAID contributed to several additional achievements in 2009:

- Established 13 new microscopy-based diagnostic centers and delivered microscopy slides to diagnostic laboratories nationwide to avert local stock-outs.

DR Congo: Case Detection Under DOTS



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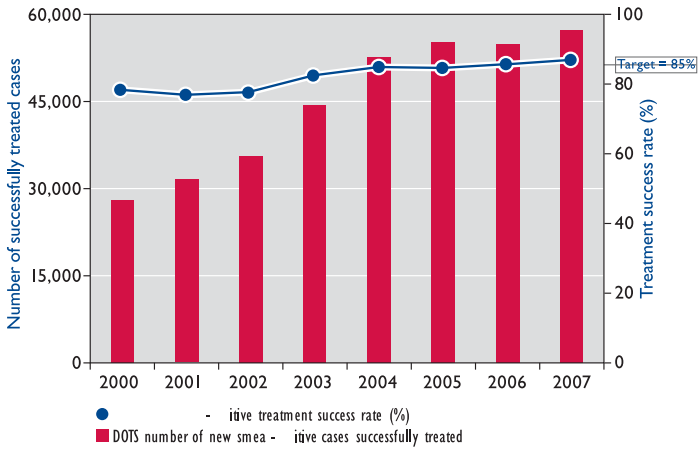
DR Congo: Treatment Success Under DOTS



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Overcoming Obstacles so 1,500 People Can Overcome TB: Expanding DOTS to Remote Areas of the Democratic Republic of the Congo

The Democratic Republic of the Congo is a vast country, with remote areas relying entirely on air transport for their supplies of anti-TB drugs and other commodities. In 2009, USAID supported a screening of several thousand people in the remote central Katanga province who were showing symptoms of TB. An alarming number of TB cases (1,582) were detected, but there was no place for the newly diagnosed patients to receive treatment.

To remedy the situation, USAID supported the expansion of primary health services, including TB treatment, in this remote area of the country. Working with the NTP, a DOTS protocol was revised to meet the local situation, and more than 1,000 copies were distributed. Field trainings for health care providers on the updated protocols were organized, equipment and supplies were purchased, and single-engine planes were chartered to ferry hundreds of cartons of medicines and equipment into rarely used grass and dirt-packed air strips and then distributed to primary health centers.

The results have been impressive. In an e-mail to USAID, the regional officials announced that "due to the collective efforts of all stakeholders, we have managed to enroll 100 percent of the 1,582 identified TB cases on treatment."

- Assisted the NTP to draft a national monitoring and evaluation plan and to prepare a successful Global Fund Round 9 proposal.
- Provided HIV counseling and testing for TB patients, resulting in 49 percent of TB patients in USAID-supported facilities being tested for HIV, compared to 15 percent nationally, according to WHO.

ETHIOPIA

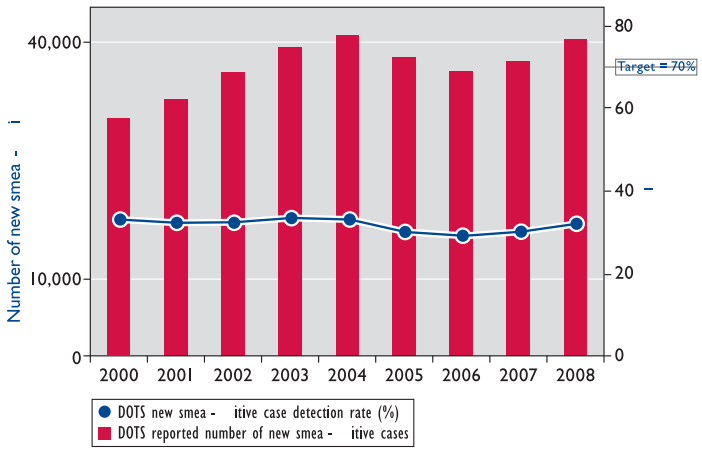
Ethiopia had an estimated 297,000 new TB cases in 2008. Ethiopia is ranked 7th on the WHO list of high MDR-TB-burden countries, with rates of MDR-TB of 2 percent among new TB cases and 12 percent among previously treated cases. Lack of access to basic health services and limited laboratory diagnostic capacity contributed to a low case detection rate of 32 percent; however, the reported number of new smear-positive cases has steadily increased since 2006. Once cases are detected, case holding is high with a treatment success rate of 84 percent. USAID has supported the NTP since 2001, with a focus on expanding and enhancing DOTS and increasing laboratory diagnostic capacity so that more people can access TB diagnostic and treatment services.

In 2009, **USAID assisted the NTP to introduce community-based DOTS by training 1,105 community-based health extension workers and 299 district health officials and other experts. More than 60 percent of the individuals trained were women.** USAID also helped the NTP to develop and disseminate guidelines and materials for community-based DOTS programs. These included 70,000 copies of a pocket manual, 4 million leaflets, and 64,000 copies of a poster for health extension workers to use during their community outreach work. Additionally, the Agency expanded DOTS partnerships with the private sector to four additional districts. A total of 107 private clinics and workplaces now provide TB or integrated TB-HIV services.

To increase laboratory-based diagnostic capacity, USAID supported the training of 216 laboratory personnel on basic TB microscopy techniques and laboratory quality control procedures and supported the development and distribution of national quality assurance and TB microscopy guidelines. **In USAID-assisted areas, the percentage of diagnostic laboratories performing external quality assurance procedures increased from 20 percent (2008) to 73 percent (2009).** External quality assurance programs monitor the ability of laboratories to perform reliable diagnostic tests.

In April 2009, there were reports of anti-TB drug stock-outs from various public health facilities. USAID assisted the Ministry of Health (MOH) to take immediate action and alleviate the problem. To help prevent future stock-outs, USAID supported training for MOH staff on drug quantification and assisted the MOH to forecast its anti-TB drug needs for 2010.

Ethiopia: Case Detection Under DOTS



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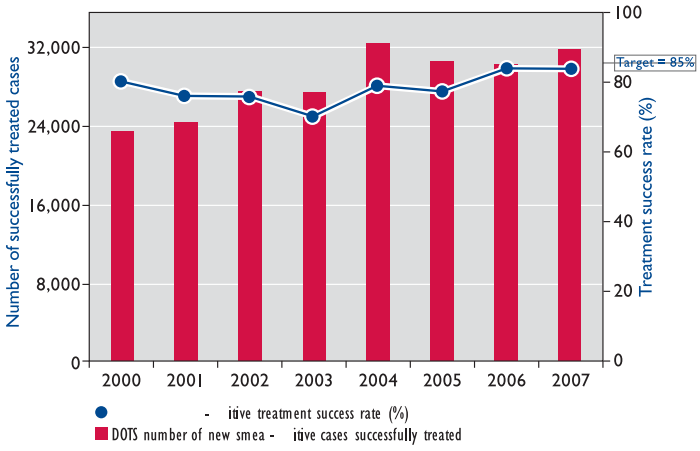
Ethiopia: Treatment Success Under DOTS



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USAID contributed to several additional achievements in 2009:

- Provided technical and financial support for preparation of Ethiopia's successful Global Fund Round 9 proposal.
- Assisted the development of national guidelines for programmatic management of MDR-TB; supported the development of training materials on MDR-TB; and conducted training in MDR-TB care for 86 clinicians.
- Developed national TB infection control guidelines; supported training in TB infection control for 330 health care workers; and assisted 30 hospitals to develop TB infection control plans.

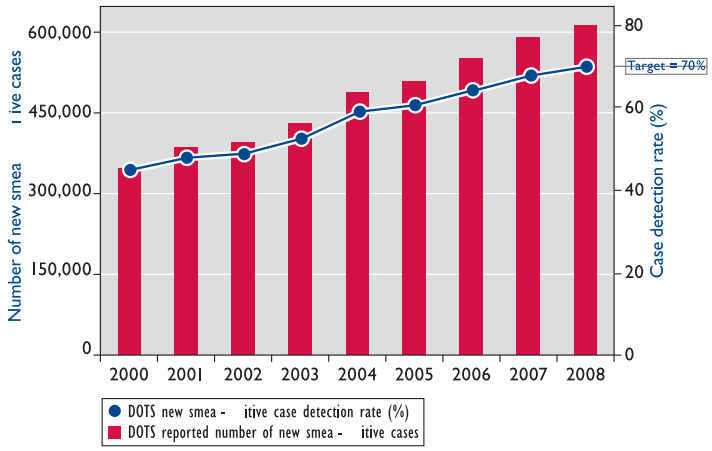
INDIA

India had an estimated 2 million new cases of TB in 2008, representing more than 21 percent of all TB cases worldwide. In partnership with WHO and the CDC, USAID has been assisting the Government of India at all administrative levels in expanding the DOTS-based Revised National Tuberculosis Control Program (RNTCP). **The case detection rates met the global target of 70 percent for the first time in 2008, and treatment success rates have surpassed the global target of 85 percent every year since 2005. The reported number of new smear-positive cases has increased significantly from 489,195 in 2004 to 615,977 in 2008.** Still, TB is a leading cause of infectious disease mortality, causing more than 276,000 deaths in 2008.

Many USAID activities in India are aimed at engaging the private sector and mobilizing communities to become more involved in the national effort to control the spread of TB. In 2009, USAID educated 6,802 private practitioners on TB, formed 971 community support groups, and conducted 8,363 TB and DOTS awareness workshops, meetings, trainings, and other "sensitization" programs for 984 nongovernmental and community-based organizations. **As a result of these efforts, 38,716 persons with TB symptoms were referred for diagnostic tests, and 2,857 persons were confirmed to have TB and started on treatment.**

India ranks first among the 27 WHO high MDR-TB-burden countries, with an estimated 130,526 cases of MDR-TB in 2007, representing more than 25 percent of the global burden. In 2009, USAID procured laboratory equipment to improve MDR-TB diagnosis, facilitated the adoption by the RNTCP of new diagnostic algorithms for MDR-TB, supported the development of the revised "National Plan for Scale-up of TB Culture & DST Laboratories," provided technical assistance to laboratories to introduce culture and drug sensitivity testing, helped renovate the laboratory in Hyderabad for culture and drug sensitivity testing, and piloted the use of a new monitoring and evaluation tool to assess the capacity of the program to manage MDR-TB patients.

India: Case Detection Under DOTS



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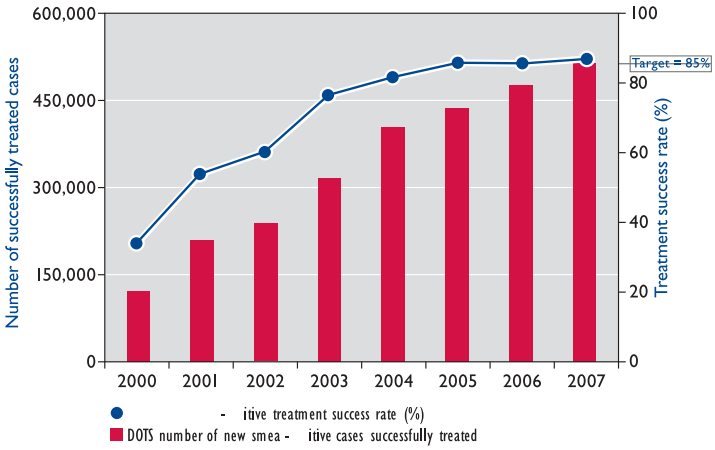
India: Treatment Success Under DOTS



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Also in 2009, USAID continued to support the RNTCP in its efforts to expand integrated TB-HIV services by initiating policy changes to require all TB patients in high HIV-prevalence states be referred for HIV testing, leading the development of TB-HIV training modules for HIV counselors and for providers in antiretroviral therapy centers that were adopted by the Ministry of Health and Family Welfare. The proportion of TB patients receiving HIV testing through USAID-supported programs was 54 percent (2009), compared to 2 percent nationally (2008).

USAID assistance and support contributed to several additional TB prevention and control achievements in 2009:

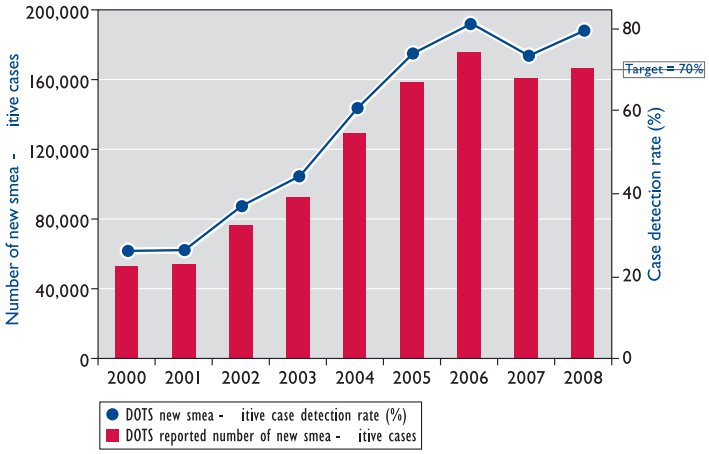
- Developed and disseminated new airborne infection control (IC) guidelines and conducted trainings in IC to reduce TB transmission in health facilities.
- Accelerated the laboratory accreditation process so more laboratories could perform culture and drug sensitivity testing that met international standards. By the end of FY 2009, a total of 13 laboratories had been accredited by the RNTCP (surpassing the target of 12 laboratories to be accredited), and another 10 were undergoing the accreditation process.
- Conducted validation study of line-probe assay (in collaboration with The Foundation for Innovative New Diagnostics, Geneva) for MDR-TB diagnosis, which resulted in the development of plans for the establishment of 43 laboratories for MDR-TB diagnosis by line-probe assay by 2010.

INDONESIA

Indonesia had an estimated 430,000 new TB cases in 2008. USAID has been a major supporter of the NTP since 2002. **With the help of USAID, the national case detection rate has increased from 39 percent in 2002 to 80 percent in 2008.** Treatment success has remained high and fairly stable at 91 percent since 2005. However, the suspension of the Global Fund TB grant contributed to a decrease in case detection and treatment success between 2006 and 2007. While a growing percentage of smear-positive cases are being detected and successfully treated, TB remains a serious challenge in Indonesia and places considerable demand on the currently existing network of services.

USAID's TB program is filling the gaps of the NTP 5-year strategic plan and coordinates very closely with the Global Fund TB grants. In 2009, a major focus of USAID's TB control efforts in Indonesia was assisting the NTP to expand DOTS and to improve the quality of TB services, particularly in public hospitals. While many TB patients seek care at public hospitals, many of these hospitals do not implement DOTS. To address this problem, USAID scaled up the "Hospital DOTS Linkage" program, beginning in 2006. As a result, treatment success rates in the seven target provinces improved from 72 percent in 2007 to 75 percent in 2008. The challenge of getting people to remain on treatment in order to reach the 85 percent target still remains. The pilot hospitals doubled the detection of smear-positive cases from 2007 to 2009. In 2009, USAID continued the scale-up by supporting 25 technical advisors to help 169 hospitals establish links with the NTP, conducting "Hospital DOTS Linkage" socialization activities, and establishing referral networks between hospitals and 65 district health offices. USAID also worked toward expanding DOTS in the high-risk prison population by developing and maintaining a DOTS network among prisons in five provinces and training prison staff in TB control.

Indonesia: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Indonesia: Treatment Success Under DOTS

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Note: DOTS treatment success rate for 2008 will be reported in the 2010 *Global Tuberculosis Control* report..

Also in 2009, USAID was instrumental in addressing numerous gaps that have stood in the way of launching MDR-TB services. Indonesia ranks seventh on the WHO list of high MDR-TB-burden countries, with an estimated 2 percent of all new TB cases and 16 percent of previously treated cases being MDR-TB. USAID supported development of a national MDR-TB response plan, guidelines, and training materials; helped five reference laboratories to achieve international standards for first-line drug sensitivity testing; and supported environmental and engineering improvements in two MDR-TB treatment pilot sites, with enrollment of patients scheduled to begin in late 2009.

USAID contributed to several additional TB prevention and control achievements in 2009, including:

- Initiated capacity building for second-line drug sensitivity testing in three laboratories; one of them has completed certification.
- Developed SOPs and training materials for second-line drugs management and assisted the adaptation of e-TB Manager©, a comprehensive Web-based tool for programmatic management of drug-resistant TB to be used in two MDR-TB treatment pilot sites.
- Supported the establishment of 19 community support groups (known locally as *paguyuban*) in Banten Province on Java Island to increase community awareness about TB and reduce the stigma that is often associated with a TB diagnosis.

Kenya had an estimated 127,000 new cases of TB in 2008. While the country experienced a dramatic increase in TB incidence due to HIV/AIDS – from 26,000 cases in 1990 to a high of 150,000 in 2003 – the number of new cases has been gradually declining in recent years due to intensified efforts to control TB by the Government of Kenya, USAID, and other partners; improved coordination of TB-HIV services; and an overall decline in HIV. **Case detection rates have also improved, from 63 percent in 2004 to 68 percent 2008, and treatment success increased from 80 percent in 2003 to 85 percent in 2007.**

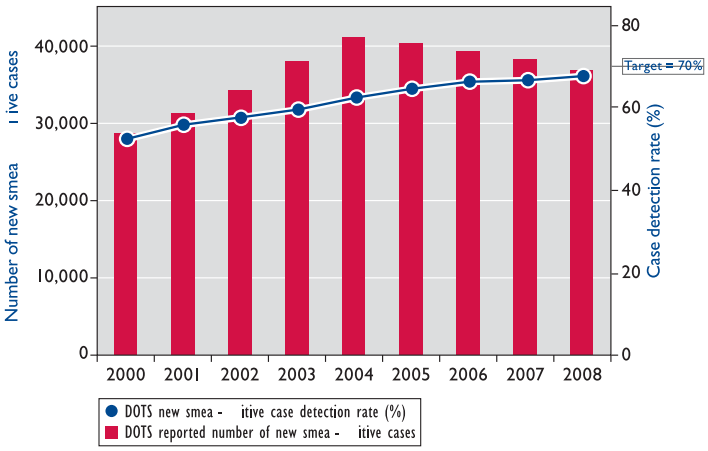
A key challenge in Kenya has been the lack of access to TB services in the private sector. For many years, TB diagnosis and treatment were available only through public facilities or at select faith-based organization and NGO facilities. In 2009, USAID focused on increasing private sector involvement in TB control. With USAID support, 43 private health facilities were recruited to provide TB treatment, representing a 70 percent increase from 2008. USAID-supported private facilities now comprise 27 percent of the total number of TB treatment centers in the country. The Agency also supported the printing and dissemination of 15,000 copies of the "International Standards for Tuberculosis Care" to private health care providers. **Additionally, as a result of collaborative efforts between USAID and PEPFAR, HIV testing in TB patients attending USAID-supported private facilities increased from 72 percent in 2008 to 81 percent in 2009.**

While there are 955 laboratory-based TB diagnostic centers across Kenya, another key challenge has been the lack of quality assurance in the centers. In 2009, USAID provided financial and technical support to initiate external quality assurance programs, with 531 laboratories participating (56 percent), including 89 of the country's 102 private sector laboratories.

USAID assistance and support contributed to several additional TB prevention and control achievements in 2009:

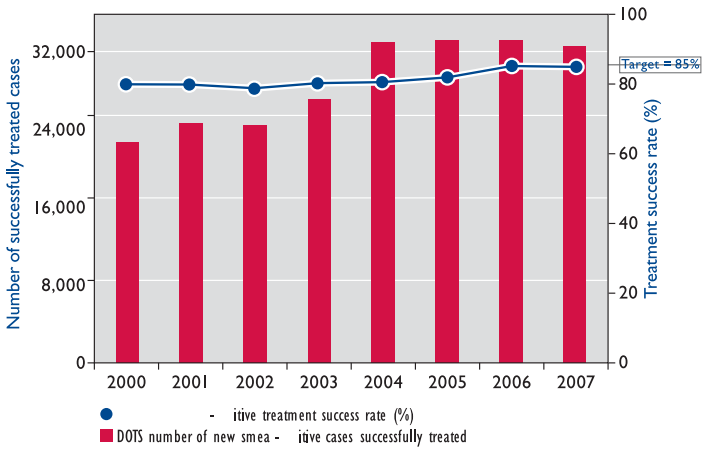
- Educated 2,495 private sector health workers, peer educators, and human resource managers on laboratory diagnostic procedures, TB-HIV co-infection, and other TB topics.
- Assisted the development, piloting, and finalization of national policy documents on community health worker training curricula, drug-resistant TB treatment guidelines, and stigma reduction.
- Scaled up IC activities by developing new IC guidelines and conducting trainings at 12 high-volume public hospitals.

Kenya: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Kenya: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.
Note: DOTS treatment success rate for 2008 will be reported in the 2010 *Global Tuberculosis Control* report.

MOZAMBIQUE

In Mozambique, there were an estimated 94,000 new TB cases in 2008. While all 128 districts implement DOTS, access to health services is limited by weak infrastructure and a serious shortage of human resources, leading to only 40 percent of the population actually having access to DOTS. TB case detection has improved slowly from 43 percent in 2004 to 47 percent in 2008. In 2009, USAID supported the NTP to expand access to DOTS, so more people could receive diagnosis and treatment for TB.

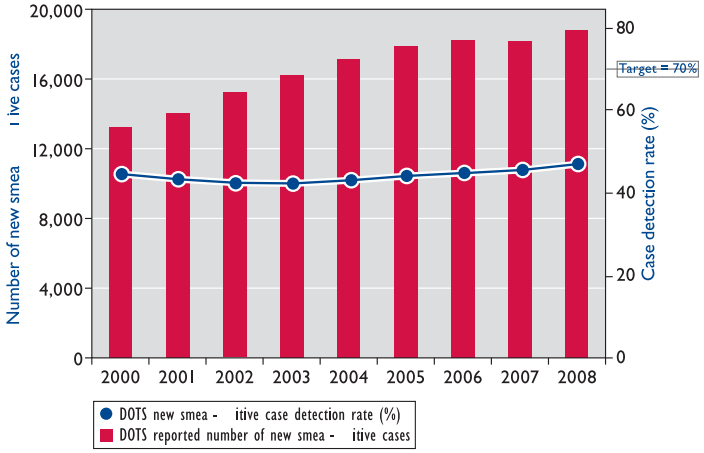
In 2009, USAID supported training of 1,204 health workers and the expansion of community-based DOTS programs from 17 to 23 districts in four targeted provinces, serving a total population of 4.4 million. USAID supported the NTP to update the community-based DOTS training manual and to conduct a national community-based DOTS meeting for 22 TB control provincial supervisors and representatives from 10 NGOs. These efforts resulted in an increase in case detection. **Community DOTS volunteers referred a total of 18,695 individuals to health facilities for laboratory-based diagnosis, and 1,549 (8 percent) tested positive for TB; of these, 305 (20 percent) were also HIV positive.** The Agency also supported renovation of eight dedicated "TB corners" in health facilities located in remote areas to improve conditions for TB patients and providers.

Also in 2009, USAID assisted the NTP to complete preparatory steps for initiation of services to treat MDR-TB patients. A manual for MDR-TB clinical management was completed and distributed, and training was provided to clinicians in six districts. The Agency also supported renovation of two hospital wards in the northern region of the country to establish in-patient treatment centers for MDR-TB patients.

USAID contributed to several additional achievements in 2009:

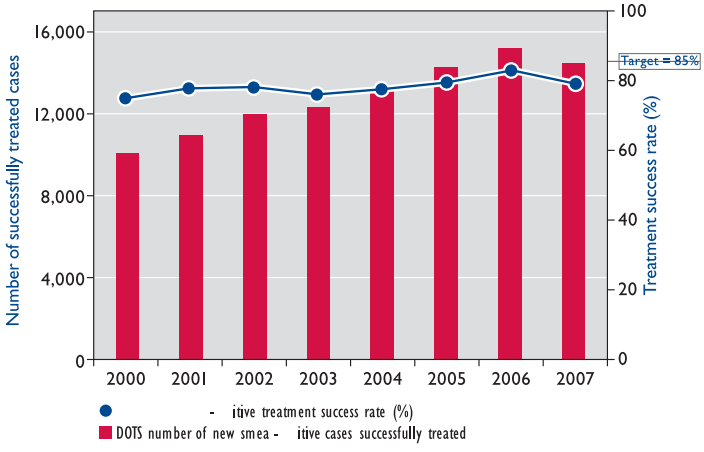
- Supported renovation of the reference laboratories in Beira and Nampula, increasing access to culture and drug sensitivity testing in the central and northern regions of the country. In partnership with PEPFAR, USAID also initiated renovation of the National TB Reference Laboratory in Maputo.
- Trained 40 medical doctors and health technicians in TB infection control and procured and distributed TB IC supplies to all USAID-supported districts.
- Collaborated with PEPFAR to improve linkages between TB and HIV/AIDS services. The number of TB patients in USAID-supported programs that received HIV counseling and testing increased from 70 to 79 percent.

Mozambique: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report,* WHO, December 2009.

Mozambique: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report,* WHO, December 2009.
Note: DOTS treatment success rate for 2008 will be reported in the 2010 *Global Tuberculosis Control* report..

NIGERIA

Nigeria had an estimated 458,000 new TB cases in 2008. The public health burden of TB is made more difficult by the country's unfolding HIV/AIDS epidemic, with an estimated 27 percent of persons with TB also infected with HIV. While the improvement in the case detection rate has been slow (from 12 percent in 2002 to 24 percent in 2008), **the absolute number of new TB cases detected in 2008 was 46,026, an increase of 109 percent compared to the 21,936 TB cases detected in 2002 prior to the initiation of USAID support to the country.** Treatment success increased from 79 percent in 2002 to 82 percent in 2007.

In 2009, USAID assisted the NTP to improve case detection and increase the number of people receiving necessary treatment by expanding and enhancing DOTS in 17 states and increasing the number of community TB care programs. The Agency helped to establish 102 new DOTS-based diagnostic and treatment centers, expanded access to DOTS services in 12 hospitals, trained 1,710 health workers, and supported community TB care programs in 92 communities. **With USAID support, community volunteers referred a total of 4,893 people with suspected TB to health centers for diagnosis.**

Nigeria ranks ninth among the WHO 27 high MDR-TB-burden countries, with an estimated 11,700 MDR-TB cases in 2007. In 2009, USAID increased its focus on MDR-TB by assisting the ongoing national MDR-TB survey and by training physicians and nurses in diagnosis and treatment of MDR-TB. Additionally, USAID collaborated with PEPFAR to support the country's first training-of-trainers on the clinical management of MDR-TB, creating a pool of trainers who are now qualified to facilitate subsequent trainings across the country. USAID also supported the establishment of an MDR-TB ward, MDR-TB biosafety level 3 laboratory, and a PCR (polymerase chain reaction) suite for molecular diagnosis of MDR-TB in Calabar.

USAID continues to be a leader in coordinating and harmonizing TB control efforts between the Government of Nigeria and its many partners, assisting the official launch of the Nigeria Stop TB Partnership. Additionally, USAID facilitated Nigeria's first successful application to the Green Light Committee for the purchase of second-line drugs for the treatment of MDR-TB and provided technical assistance, resulting in approval of phase two funding for the Global Fund Round 5 grant.

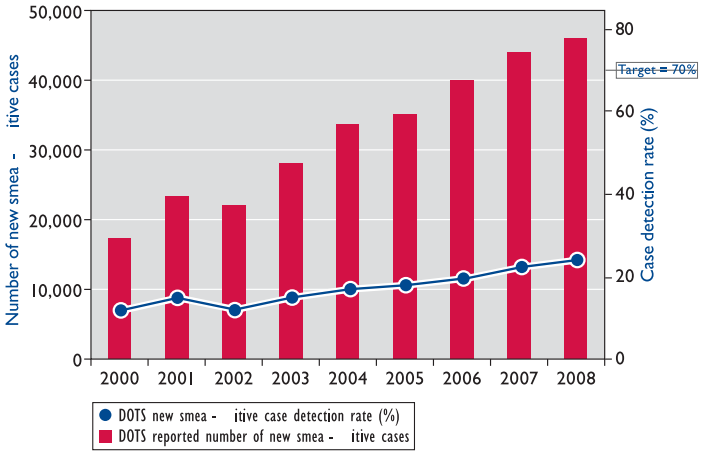
Integrating TB and HIV/AIDS Services: Getting the Message, Getting Tested, and Getting Treatment

In Nigeria, people infected with TB or HIV typically seek care only after they become very ill. But when 24-year-old Rhoda B. developed a cough and fever, she remembered radio and television messages she had heard about TB, and she sought testing. The diagnosis was positive. The private laboratory that made the diagnosis referred her to the infectious diseases General Hospital Bayara a USAID- and PEPFAR-supported facility, where Rhoda's health care workers recommended that she also be tested for HIV. She was tested, and the diagnosis was positive. The hospital immediately put her on both TB and HIV treatment. Her recovery was rapid. Today, Rhoda is healthy, and she plays an active role in the General Hospital Bayara's patient support group.

Rhoda's story highlights not just the importance of educating people about TB, which led Rhoda to seek testing in the first place, but also the importance of integrating TB and HIV services. USAID and PEPFAR are working together with the Government of Nigeria and local partners in meeting this need by training TB providers in HIV counseling and testing and developing protocols to ensure that all TB patients are encouraged to receive HIV testing and that all TB patients who test positive for HIV are enrolled in an integrated TB-HIV treatment plan. Volunteers are also trained to accompany referred TB patients to HIV testing and TB-HIV prevention and treatment facilities.

The integration of TB and HIV testing and treatment services throughout Nigeria has led to more than 95 percent of TB patients knowing their HIV status. Today, the vast majority of co-infected patients at USG-supported TB treatment sites are on comprehensive TB-HIV therapy.

Nigeria: Case Detection Under DOTS



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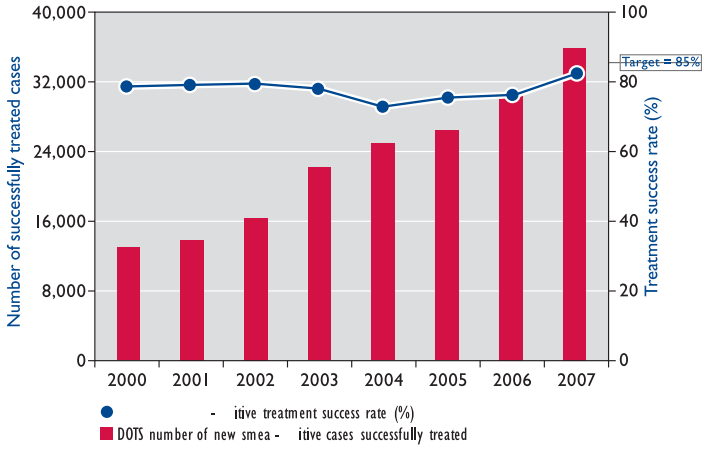
Nigeria: Treatment Success Under DOTS



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USAID assistance contributed to several additional TB prevention and control achievements in 2009:

- Assisted the first comprehensive assessment of the TB logistics system and establishment of a national logistics taskforce and improved warehouse stock management.
- Supported staff trainings in airborne IC and the development and implementation of IC plans in 32 health facilities.
- In collaboration with PEPFAR, USAID supported the establishment of TB-HIV activities in all 36 states of the country, including the federal capital territory, Abuja.

PAKISTAN

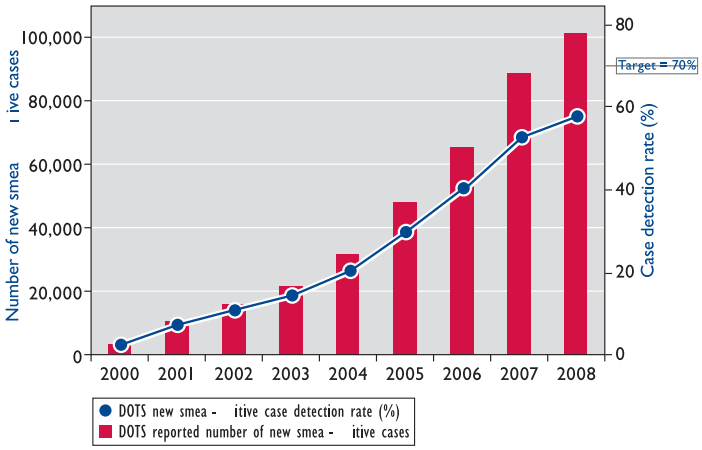
Pakistan had an estimated 409,000 new cases of TB in 2008 and is ranked sixth on the WHO list of high MDR-TB-burden countries. With the support of USAID, the Global Fund, and other partners, the MOH has made tremendous progress over the past several years in implementing DOTS and increasing case detection and treatment success rates. **Nationally, case detection increased from less than 5 percent in 2000 to 58 percent in 2008 – more than 100,000 new smear-positive cases were reported in 2008 compared to 3,285 in 2000 – and the treatment success increased from 82 to 91 percent over the same time period. Case detection in USAID-supported areas reached 82 percent, largely as a result of increased private sector participation in DOTS.** The challenge now is to sustain this high treatment success rate while improving access to services and continuing to accelerate case detection.

In 2009, USAID focused many of its activities on building the national capacity to lead and manage Pakistan's TB control programs. USAID participated in a joint donor technical review of the NTP and conducted field visits to assess the progress and results in several districts. Based on the findings of this review, the Agency also assisted the NTP to draft a National Strategic Plan for TB in Pakistan. **USAID also supported the expansion of quality assurance in the laboratory network, resulting in 89 percent of USAID-supported TB diagnostic laboratories achieving more than 95 percent correct microscopy results.** USAID trained NTP staff on TB drug management and assisted the NTP to develop national guidelines for management of first- and second-line TB drugs.

USAID contributed to several additional achievements in 2009, including:

- Assisted the NTP to develop a protocol for the first-ever national TB prevalence survey, draft a field manual of SOPs for conducting the survey, and conduct technical and administrative preparatory work for the survey.
- Established linkages to DOTS services in more than 29 teaching hospitals and provided DOTS training for 50 health care workers.
- Advocated to secure increased financing from public sector funds for TB control.

Pakistan: Case Detection Under DOTS



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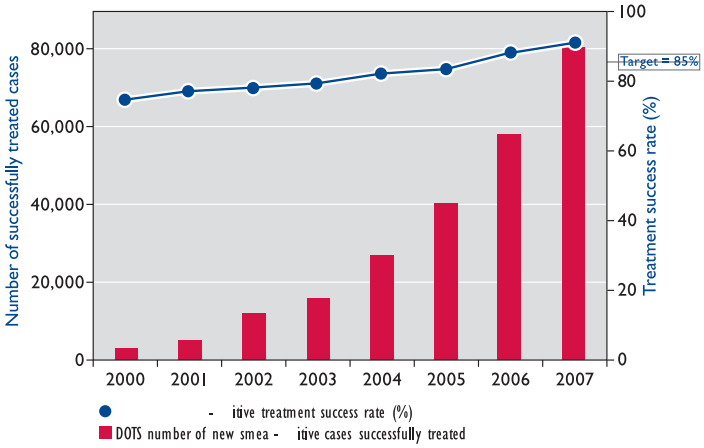
Pakistan: Treatment Success Under DOTS



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PHILIPPINES

The **Philippines** had an estimated 257,000 TB cases in 2008. USAID has been assisting the NTP since 2001. **With USAID support, case detection rates increased from 62 percent in 2004 to 67 percent in 2008. National treatment success rates have remained at a constant high rate of 87 to 89 percent over the same time period.**

In 2009, USAID continued to assist the NTP and local governments to expand DOTS and improve the quality of services in weak-performing provinces. At the national level, USAID assisted the development of revised guidelines and training modules for the Childhood TB Program. Additionally, the Agency supported training for 1,514 health providers nationwide, mostly women (75 percent), to deliver quality TB services. At the local level, USAID placed a strong emphasis on mobilizing communities to become more involved in TB control. USAID supported training for 1,840 TB treatment partners (community volunteers who monitor drug intake and counsel patients on the importance of finishing their treatment) and established 99 new community support groups. USAID also developed and distributed communication materials and job aids for volunteer health workers and engaged local NGOs in the effort to increase utilization of TB facilities. These activities are making a difference. **In one province, 42 percent of all registered TB cases were referred to TB diagnostic facilities by community volunteers trained by USAID.**

To more fully engage the private and non-health sectors in DOTS expansion efforts, USAID supported workplace TB programs, conducted workshops and meetings for private providers and non-health sector partners, and assisted the Department of Health and the Bureau of Jail Management and Penology to develop new policies for the management of TB in jails and prisons.

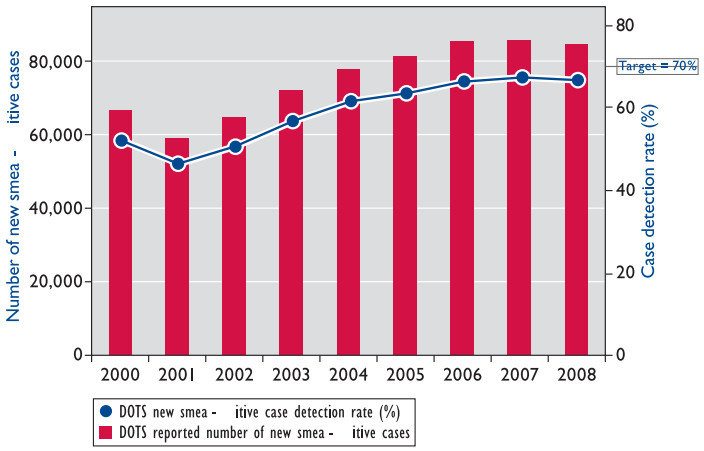
USAID contributed to several additional key accomplishments in TB prevention and control in 2009:

- Assisted local government units to improve their budgeting and procurement policies for anti-TB drugs in order to prevent drug shortages.

- Expanded the national diagnostic microscopy laboratory network with an additional 83 laboratories from 2006 to 2009; increased the number of laboratories participating in external quality assurance programs; and conducted operational research on the national diagnostic laboratory network to assess the capacity to support programmatic management of MDR-TB.

- Assisted the NTP to develop the Philippine Plan of Action to Control TB, 2010–2015, to serve as a guide for future programming and tool for sustainability of TB control efforts.

Philippines: Case Detection Under DOTS



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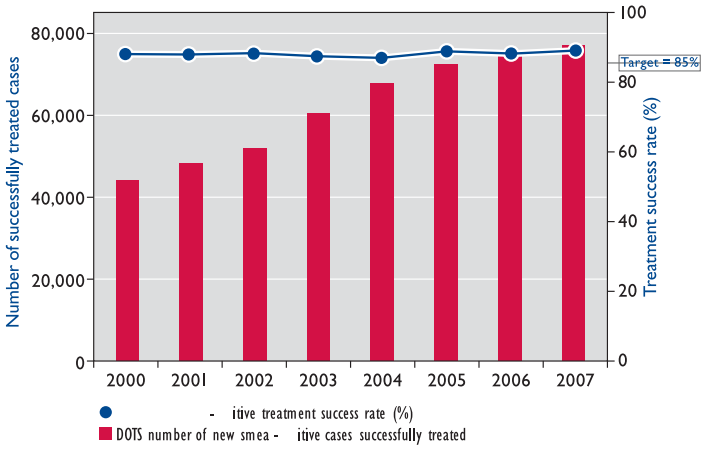
Philippines: Treatment Success Under DOTS



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Russia had an estimated 151,000 new TB cases in 2008 and has the third highest estimated number of MDR-TB cases in the world (approximately 43,000 in 2007). XDR-TB is a serious problem in the country and may account for as much as 6 percent of all MDR-TB cases. The Agency provides support and technical assistance at both the federal and regional levels to expand and to improve the quality of TB control services. **With USAID assistance, case detection increased from 67 percent in 2004 to 73 percent in 2008.** Average treatment default rates in the nine USAID-assisted regions were lower, at 6 percent compared to the national average of 10 percent, demonstrating good progress in improving DOTS quality where USAID is working.

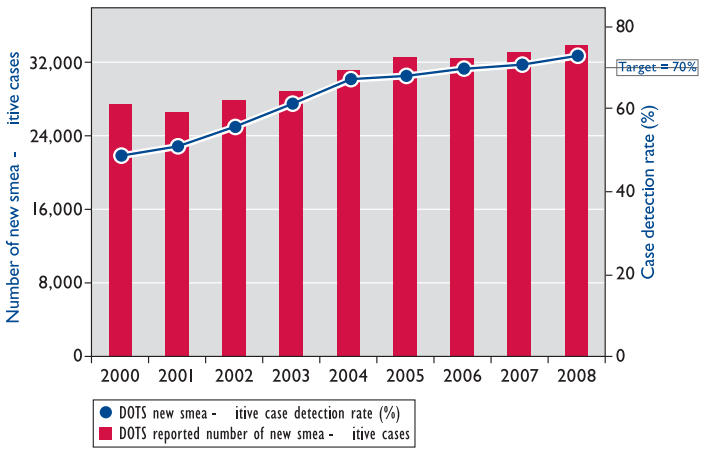
In 2009, USAID continued its efforts to expand and to enhance DOTS in both the civilian and prison populations. USAID trained 947 health professionals, Russian Red Cross members, and prison staff in DOTS and trained and engaged more than 1,000 community volunteers in TB control activities. USAID has also been very effective at advocating for increased government funding for TB control at both the federal and regional levels. Federal funds for TB control increased from $100 million in 2005 to more than $900 million in 2009.

Also in 2009, USAID supported MDR-TB treatment programs in 10 regions, with all supported regions demonstrating high compliance with international standards and receiving or maintaining Green Light Committee (GLC) approval, allowing these regions to purchase high-quality second-line anti-TB drugs through the GLC. USAID and the CDC continued to provide technical assistance and support to two "Centers of Excellence" – for MDR-TB treatment in Orel and for airborne IC in Vladimir. The CDC has provided training in IC, retrofitted ventilation systems in hospitals, improved laboratory capacity, and helped to expand TB screening in HIV/AIDS clinics and HIV testing in TB facilities.

USAID contributed to several additional key accomplishments in TB prevention and control in 2009:

- Established modern airborne IC systems at eight leading provincial TB facilities and laboratories.
- Facilitated coordination between TB and HIV/AIDS services at the regional administration level; integrated TB-HIV management into some primary care facilities. In 2009, 99 percent of TB patients receiving care through USAID-supported programs were tested for HIV.
- Assisted with the establishment of specialized wards for TB-HIV co-infected patients in several TB facilities.

Russia: Case Detection Under DOTS



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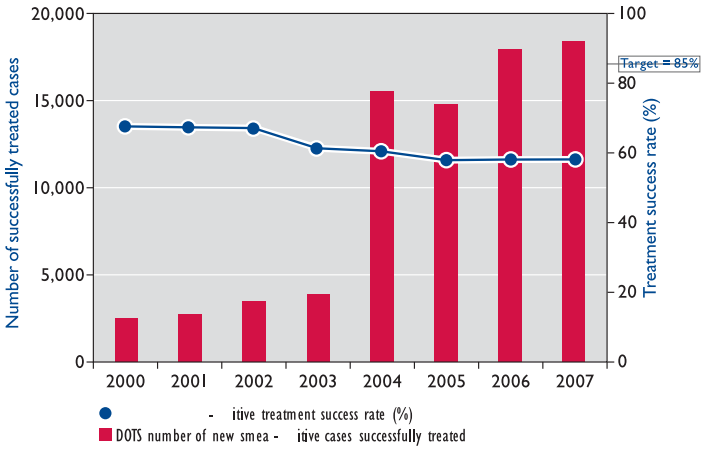
Russia: Treatment Success Under DOTS



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SOUTH AFRICA

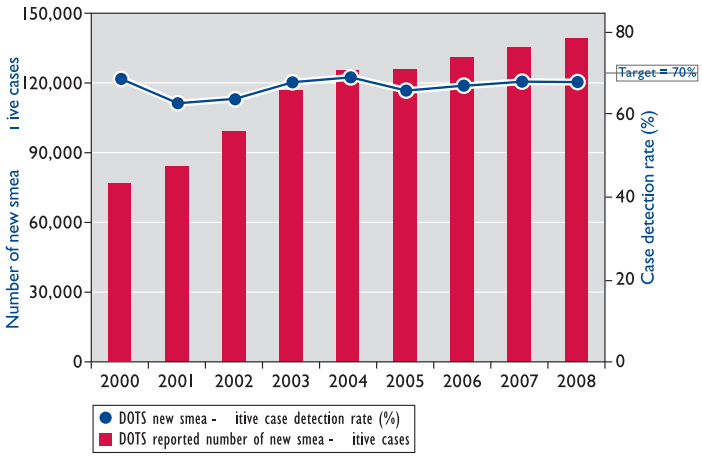
South Africa ranks fourth on the WHO list of high MDR-TB-burden countries. There were an estimated 477,000 new TB cases in 2008 and 16,000 MDR-TB cases in 2007. With USAID support, the case detection rate reached 68 percent in 2008, and the reported number of smear-positive cases has steadily increased since 2005. Treatment success increased from 69 to 74 percent between 2004 and 2007. Progress has been constrained by the country's HIV/AIDS epidemic, with approximately 71 percent of TB patients co-infected with HIV.

In 2009, USAID supported TB prevention and control activities in 14 (of 53) districts in five provinces, covering about 30 percent of the country's total TB burden. Six of the districts are among the 18 districts identified as "priority" by the NTP based on poor health status, poor health service delivery, and poor access to treatment. In supported districts, the Agency assisted the NTP to increase access to DOTS, to improve the quality of DOTS services, and to expand MDR-TB prevention and control activities.

Specifically, USAID supported training for 3,177 health providers in DOTS and MDR-TB clinical management using training materials jointly developed by USAID and the NTP. DOTS was integrated into the services provided by the Hospice Palliative Care Association, with all hospices in USAID-supported districts now having a nurse on staff who has been trained in DOTS. Additionally, USAID provided technical assistance to improve MDR-TB reporting and recording systems; supported the development and dissemination of information, education, and communication materials about MDR-TB; and supported a number of workshops, meetings, and roundtable discussions for health care professionals working with MDR-TB patients on topics ranging from public health software applications to community care for MDR-TB patients. **As a result of this effort, services were in place to initiate the treatment of 4,031 MDR-TB patients.**

Working with PEPFAR, USAID scaled up efforts to coordinate TB and HIV control at both the program management and service delivery levels. **As a result, about 77 percent of HIV clients in 212 USG-supported facilities were screened for TB, representing a 23 percent increase from 2008.** About 75 percent of TB patients utilizing USG-supported services were screened for HIV, representing a 17 percent increase from 2008.

South Africa: Case Detection Under DOTS



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South Africa: Treatment Success Under DOTS

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Also in 2009, USAID and PEPFAR assisted the NTP to establish a nationwide TB-HIV reporting system.USAID contributed to several additional achievements in TB prevention and control in 2009:

- Through a CDC-USAID partnership with the Government of South Africa, technical assistance was provided to establish the International Training and Research Center at the South Africa Medical Research Council; training materials were updated; and courses on management of MDR-TB and XDR-TB were conducted.
- Conducted IC risk assessments in approximately 25 percent of facilities in USAID-supported districts; distributed national IC guidelines and used the guidelines to train health care workers in IC; and conducted a study on the prevalence of TB in health care workers to improve future IC policy.
- Supported the development and dissemination of television and radio messages about TB symptoms, treatment compliance, and TB-HIV co-infection as part of the "We Beat TB" campaign.

TANZANIA

Tanzania had an estimated 81,000 new TB cases in 2008. **Tanzania has surpassed the WHO global target for treatment success, with an 88 percent treatment success rate in 2007, and met the global target for case detection of 70 percent for the first time in 2008.** The TB epidemic is exacerbated by HIV/AIDS, with approximately 41 percent of TB patients co-infected with HIV. Since 2004, the number of new cases has been gradually declining due to efforts to control TB by the Government of Tanzania, USAID, and other partners; improved coordinated TB-HIV services; and an overall decline in HIV.

USAID has been supporting and assisting Tanzania's NTP since 2005. In 2009, the Agency focused most of its efforts on expanding DOTS into the private sector, improving laboratory-based TB diagnostic capacity, collaborating with PEPFAR to integrate TB and HIV/AIDS services in 26 districts and municipalities, and increasing community awareness about TB and TB-HIV co-infection.

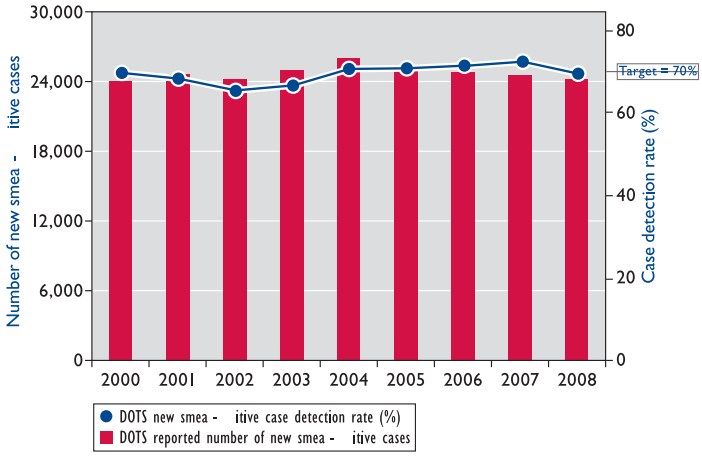
Specifically, **USAID expanded DOTS training to 45 new facilities in the private sector and trained 60 private health care providers on DOTS-based diagnosis and treatment and TB case management.** The Agency also trained 30 traditional healers and 30 pharmacists on TB and TB-HIV co-infection and developed and disseminated a TB screening tool for use by traditional healers and pharmacists. To improve laboratory-based TB diagnostic capacity, USAID renovated the central TB reference laboratory, purchased new microscopes and other laboratory equipment, and trained 201 laboratory staff.

USAID partnered with PEPFAR to provide comprehensive TB-HIV services at an additional 136 facilities, bringing the total to 457 facilities now providing such services. More than 17,000 (93 percent) of the nearly 19,000 newly registered TB patients in project-supported sites received HIV testing.

USAID assistance and support contributed to several additional TB prevention and control achievements in 2009:

- Increased community awareness about TB by developing and implementing a new school-based TB curriculum and training 152 primary school teachers in TB and TB-HIV co-infection.

Tanzania: Case Detection Under DOTS



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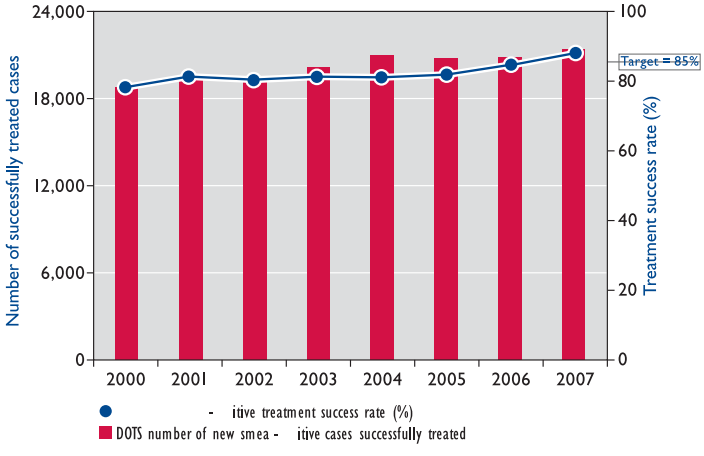
Tanzania: Treatment Success Under DOTS



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In a Patient's Own Words: 'TB Is Curable, and Treatment Is Free of Charge'

Although treatment success is increasing and more patients are being cured, many people with TB are either unable to access high-quality care or are unaware that such care exists. In 2009, USAID scaled up efforts to raise community awareness about the services available to people who are concerned that they might have TB.

In Tanzania, USAID partnered with PEPFAR to develop and pilot an advocacy, communication, and social mobilization tool known as "photo voice." Sixty former and current TB and TB-HIV patients were issued cameras and instructed how to use the cameras and document their experiences. Their photographs and stories were used to develop and print 4,000 TB and TB-HIV co-infection awareness posters, which were distributed to pharmacies, public health facilities, markets and other public places, and schools. Here is what one of the posters says:

My name is Lucas Z., and I'm aged 22. I come from Mbarika village, but I now live with my sister here in Misungwi town because of my illness. I was diagnosed with TB in July 2008. This was after a long period of unsuccessful treatment by several traditional healers at my village who tried different concoctions and massaged me with a hot piece of rock that burned my skin and caused a lot of pain. I am grateful to my sister who took me to Misungwi District Hospital where I realized that treatment for TB was free of charge. I now feel better and am regaining my strength. I now can help my sister with her daily charges at home, such as cleaning around the house.

My advice to all is if you have a chronic cough, chest pain, and fevers for three weeks or more, suspect TB and seek care at the nearest health facility.

- Partnered with PEPFAR to develop and pilot "photo voice," a tool for communicating messages about TB and TB-HIV co-infection and engaging the community in TB control efforts.
- In collaboration with PEPFAR, developed IC training materials and trained 102 workers on IC.

UGANDA

Uganda had an estimated 98,000 new TB cases in 2008. While Uganda has yet to reach the WHO global targets for case detection and treatment success, both rates have been steadily increasing since USAID began its support of the NTP in 2001. **The case detection increased from 46 percent in 2004 to 54 percent in 2008, and the treatment success increased from 68 percent in 2004 to 75 percent in 2007.**

A major focus of USAID activity in Uganda has been expanding DOTS in urban settings and at the community level. **In FY09, USAID supported efforts to increase the capacity to provide DOTS-based services in 33 new TB treatment centers in Kampala, resulting in a dramatic increase in treatment success from 16 percent to 88 percent.** Treatment success rates have improved significantly since USAID began supporting the community health workers, in some districts surpassing both the national average and the global target. **Treatment success in the district of Manafwa increased from 70 percent in 2006 to 95 percent in 2008.** Additionally, USAID expanded community-based DOTS programs in four districts, reaching a total of 31 districts, and supported more than 136 community health workers to follow up and deliver anti-TB drugs to patients in the community.

To increase laboratory-based diagnostic capacity and bring TB diagnosis closer to the community, USAID supported the establishment of 29 additional TB diagnostic laboratories in seven districts and funded the procurement of microscopes and the training of 68 nursing assistants. The Agency also provided training in quality assurance procedures for the staff of 41 laboratories in six districts.

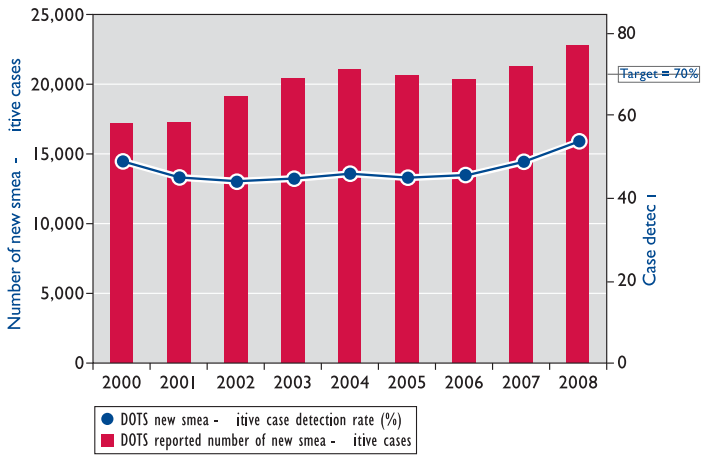
USAID contributed to several additional achievements in 2009:

- Scaled up IC measures by supporting TB risk assessment trainings for health care workers in 12 districts. Following the trainings, risk assessments were conducted in all supported districts and IC plans developed for many facilities. By the end of the year, many facilities were already implementing their new IC plans, with IC officers assigned to monitor progress.

- Increased private sector involvement in TB control by engaging 27 private sector health facilities in early case detection and by supporting the NTP to conduct operational research and identify gaps in TB care in private health facilities.

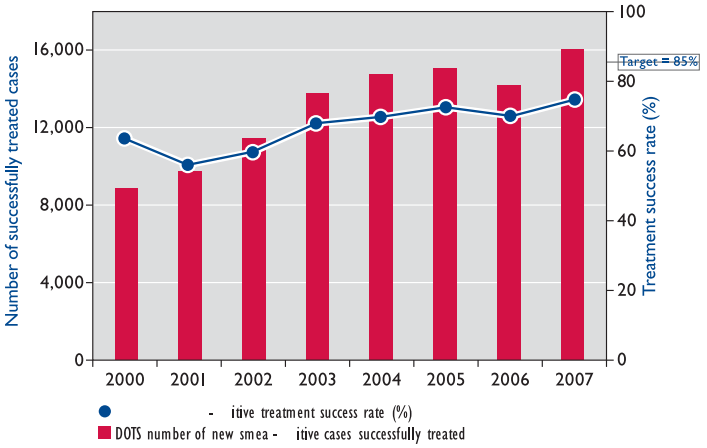
- Collaborated with PEPFAR to improve integration of TB-HIV services, resulting in nearly 11,000 HIV-positive patients receiving TB treatment and nearly 13,500 TB patients receiving HIV counseling and testing.

Uganda: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Uganda: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.
Note: DOTS treatment success rate for 2008 will be reported in the 2010 *Global Tuberculosis Control* report.

Ukraine[9] experienced a dramatic rise in TB during the 1990s and is ranked 11th among WHO's 27 high MDR-TB-burden countries, with an estimated 9,800 cases in 2007. An estimated 19 percent of all TB cases are MDR-TB. As a result of coordinated advocacy efforts by USAID and WHO, Ukraine adopted the WHO-recommended DOTS strategy for TB control in 2006. Ukraine continues to have very high case detection, although estimates of TB burden need to be validated to ensure all cases are detected and treated. Recent data on treatment success (59 percent) highlight the underlying problem of drug-resistant TB and the need to improve the quality of TB services in Ukraine.

USAID assisted the MOH to expand quality DOTS coverage to a total of seven regions and two cities, including expansion of DOTS services to two new regions (Odeska and Luganska *oblasts*) in 2009. **This effort is making a difference. In USAID-assisted regions, the average incidence rate of TB declined by 8.7 percent as compared to a decline of 5.9 percent in Ukraine overall.**

Although laboratory confirmation of TB cases has improved over the last two years, clinicians still rely on X-rays to diagnose the majority of cases, which is not as reliable as microscopy. In a continued effort to strengthen Ukraine's laboratory capacity and increase laboratory diagnosis of TB, USAID supported 31 review meetings and trainings in laboratory-based diagnostic procedures, reaching a total of 1,500 laboratory specialists and technicians. **The Agency assisted with implementation of laboratory quality control procedures in eight regions, resulting in 92 percent of USAID-supported laboratories demonstrating high proficiency in laboratory-based TB diagnosis.**

9. Due to lack of data and unreliable estimates, no case detection or treatment success graphs are presented for Ukraine.

Integrating TB Services into Primary Health Care: What One Committed Woman Can Do

Irina A., a bacteriologist who has been working for 10 years as head of the TB laboratory in Feodosia, Crimea, remembers when chest X-rays were the main TB diagnostic tool. She said that not only did the method have "questionable efficacy for TB case detection," but also it was "far from cost-effective." So when USAID invited Irina to a training workshop on international standards for laboratory TB diagnosis in 2005, she accepted the invitation. She learned about smear microscopy, quality control procedures and, in her own words: "I learned that though an abnormality on a chest X-ray may lead a clinician to suspect TB, he cannot confirm whether a person has TB without laboratory confirmation."

When she returned from the training, Irina used her new knowledge and skills to reorganize her laboratory and teach her staff how to prepare slides for examination and achieve reliable microscopy results. Later, she gave a presentation on the changes she had made. "I had never spoken in public. I work in the laboratory, and bacterium and microbes are my only listeners," Irina said half-jokingly. But she enjoyed the experience and wanted to learn how to become a better public speaker. USAID invited her to attend several additional trainings, including a training-of-trainers program, so that she could lead her own USAID-supported trainings for laboratory technicians in primary health care facilities.

Now, not only is Irina being invited to other cities to conduct similar trainings, but her efforts in Feodosia have led to TB laboratories in all primary health care facilities using smear microscopy and quality control procedures. As a result, the number of smear-positive cases detected in Feodosia has increased 10 times and, more importantly, the number of patients referred to TB dispensaries for treatment has increased considerably.

Having well-trained laboratory technicians in primary health care facilities is vitally important to Ukraine's TB control program. As Irina said, "Their knowledge and expertise allow for timely TB diagnosis and referral of the patient with a smear-positive result to a TB dispensary, which, in turn, helps break the epidemiological chain of the disease."

To address the problem of MDR-TB, USAID assisted the MOH to develop Ukraine's first protocol on management of drug-resistant TB and supported regional representatives to attend a WHO training course on MDR-TB and XDR-TB management. A training course was also conducted on TB culture and drug sensitivity testing for Ukrainian laboratory specialists. The Web-based tool – e-TB Manager© – was adapted for Ukraine, translated into Ukrainian, and introduced at the National TB Control Center.

USAID support and technical assistance contributed to several other significant achievements in TB prevention and control in 2009:

- Supported efforts to improve TB control in the Ukraine prison population; USAID collaborated with the Prison Support Network to improve adherence to TB treatment among prisoners both before and after release and conducted a workshop on TB infection control for 27 prison hospital physicians.
- Assessed TB-HIV policy and practices in Ukraine and used the results of the assessment to make revisions in TB-HIV practices in accordance with international standard; improved TB-HIV service collaboration by training 123 Ukrainian health care providers in TB-HIV co-infection clinical practices.
- Reviewed the performance of the TB drug management systems in three *oblasts* and used the results to develop an action plan to strengthen existing first- and second-line TB drug management systems.

ZAMBIA

In **Zambia,** TB remains a major public health threat, and it is the leading cause of disease and death in people living with HIV/AIDS. In 2008, 68 percent of TB patients with known HIV status were HIV positive, which is among the highest TB-HIV co-infection rates in the world. **With USAID and other cooperating partners' support, the global target of 85 percent for treatment success was achieved for the first time in 2006 and sustained in 2007.** With a case detection rate of 52 percent, Zambia remains below the global target of 70 percent. Although the country experienced a three-fold increase in TB incidence due to HIV/AIDS – from 24,000 cases in 1990 to a high of 73,000 in 2003 – the number of reported new cases has been significantly declining since 2003 due to an overall decline in HIV, intensified efforts to control TB, and improved coordinated TB-HIV services.

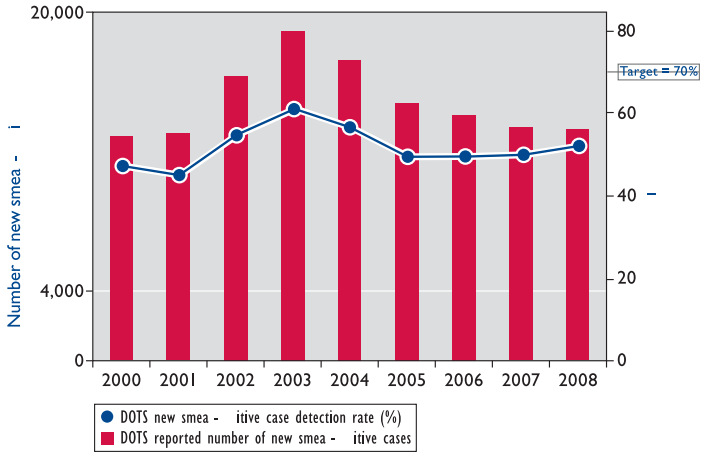
To increase case finding and ensure that people diagnosed with TB receive the treatment they need, in FY09, USAID stepped up efforts to improve community-based DOTS programs. The Agency provided 4,505 "TB treatment supporters" with supplies, bicycles for transportation, and other tools that make it easier for the supporters to do their jobs. Refresher training in TB case finding, patient treatment, and follow-up care was provided to 182 TB treatment supporters.

Also in 2009, in collaboration with PEPFAR, USAID supported the training of 1,034 health workers in HIV counseling and testing and scaled up district-level TB-HIV coordinating body meetings. **As a result, 22,292 women and 22,318 men received comprehensive TB-HIV care. Not only was this double the number of people who received such care in USG-supported facilities in 2008, but also it reflects an improvement in gender equity. In 2009, the number of women and men receiving services was almost equal compared to 2008, when 10 percent more men than women received similar care.**

USAID contributed to several additional achievements in 2009:

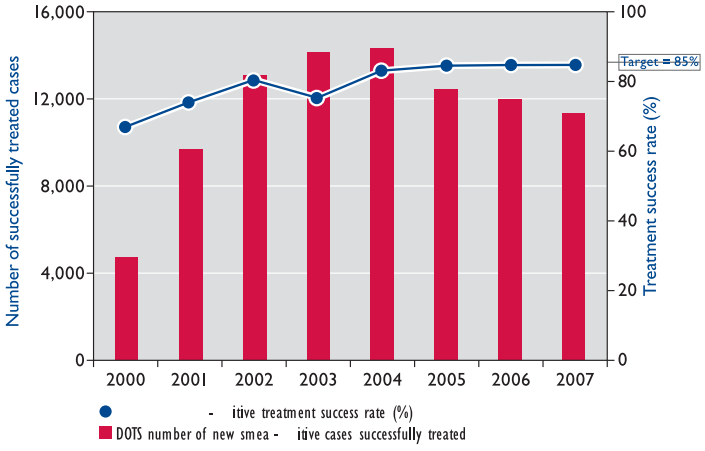
- Supported renovations of five microscopy laboratories and trainings for 135 laboratory staff in laboratory diagnosis and quality assurance procedures.
- Developed guidelines for the management of drug-resistant TB and supported the MOH's successful procurement of second-line TB drugs for use in treating MDR-TB.
- Supported trainings in IC for 77 health care workers and conducted IC risk assessments at two TB reference laboratories and three hospitals.

Zambia: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report,* WHO, December 2009.

Zambia: Treatment Success Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report,* WHO, December 2009.
Note: DOTS treatment success rate for 2008 will be reported in the 2010 *Global Tuberculosis Control* report.

ZIMBABWE

Zimbabwe had 95,000 estimated new TB cases in 2008. While the treatment success of 78 percent is close to achieving the global target, the 2008 case detection rate was just 24 percent, reflecting Zimbabwe's fragile political situation, which has had a significant impact on health care delivery.

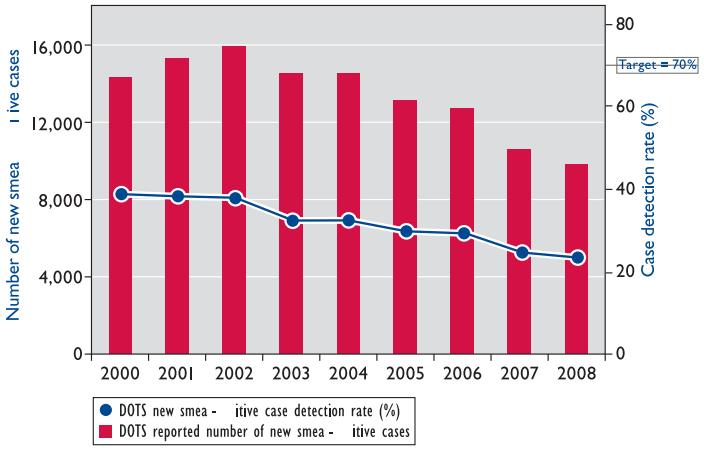
USAID support for TB control in Zimbabwe began in 2009. Achievements in Shurugwi, one of eight districts in the Midlands province, exemplify the positive impact that USAID has already made. In a baseline field assessment conducted by USAID in 2008 in Shurugwi, only 14 percent of all TB diagnoses were confirmed with a laboratory test. As a result, the diagnosis in the majority of patients suspected of having pulmonary TB was never confirmed, and therefore those cases of TB that are most infectious were not identified and managed appropriately. In 2009, USAID conducted trainings in DOTS and laboratory diagnosis and supplied Shurugwi's diagnostic laboratory with necessary supplies. The Global Fund grant provided motorcycles to three health technicians, enabling them to travel to the health facilities, to collect sputum specimens, and to transport the specimens to the laboratory. **As a result, there was a threefold increase in the detection of patients with symptoms of TB, and the percentage of patients receiving laboratory-confirmed diagnoses increased from 14 to 87 percent. The other Midlands districts are now following the Shurugwi example.**

In 2009, a total of 302 district and rural health center workers across all eight Midlands districts were trained on the basics of TB control and case management of drug-resistant TB.

USAID contributed to additional TB prevention and control achievements in 2009:

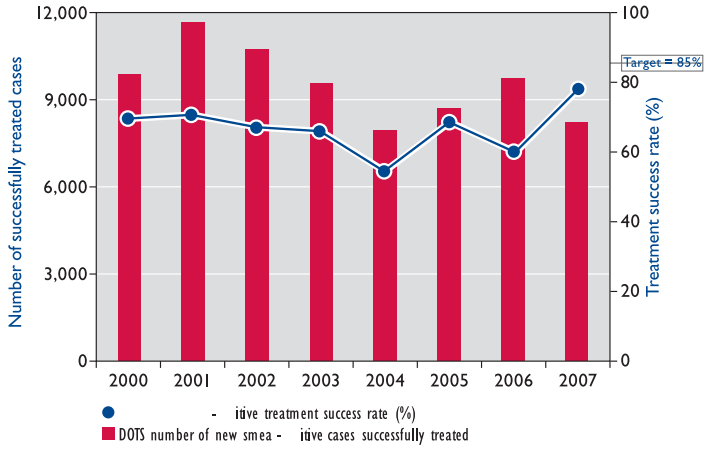
- Supported the NTP to develop Zimbabwe's first-ever TB strategic implementation plan (a five-year plan for 2009–2013).
- Assisted the NTP and National Antiretroviral Therapy Program to work together to develop national TB-HIV guidelines.
- Piloted a drug distribution system in Midlands and used the lessons learned to design a similar distribution system for TB laboratory consumables.

Zimbabwe: Case Detection Under DOTS



Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report*, WHO, December 2009.

Zimbabwe: Treatment Success Under DOTS



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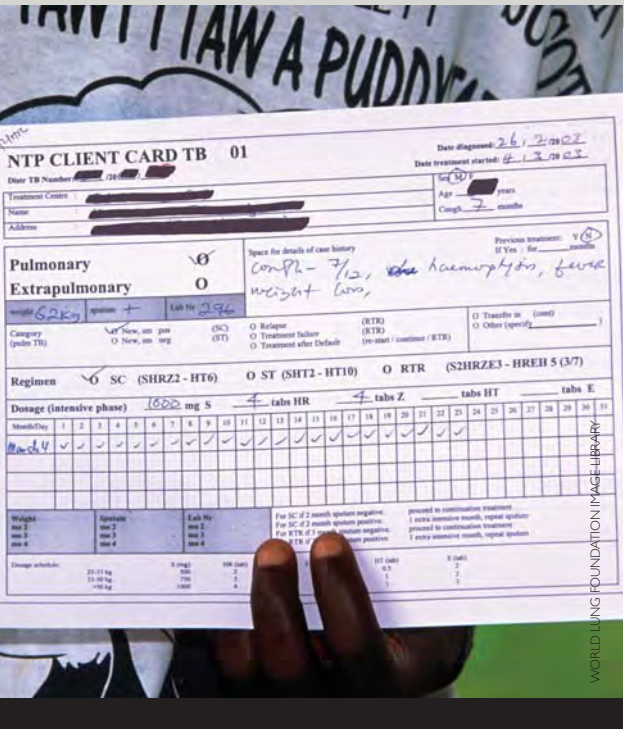
CHAPTER 3
Strengthening Health Systems through TB Control



A TB patient shows his TB treatment card.

Improvements in tuberculosis (TB) case detection and treatment success at the country level reflect more than effective TB programs; they are also good indications of well-functioning health systems. Recognizing the critical role that well-functioning primary health care plays in preventing the spread of TB and minimizing TB-related illness and death, the U.S. Agency for International Development's (USAID's) country-level TB control programs are closely aligned with national priorities to strengthen health systems.

A key principle of the Global Health Initiative (GHI), one of the priorities of the U.S. Government's (USG's) TB Strategy is to strengthen health systems. USAID's TB program expands partnerships between private and public sector providers and increases access to TB services, accelerates human resource planning and development, improves laboratory systems, and strengthens information management systems and supply chain management systems. This chapter describes how USAID's FY09 TB activities contributed to overall improvements in the performance of health systems.

Improving Primary Health Services and Care

USAID assisted National TB Control Programs (NTPs) to strengthen TB services in their primary health care systems by, for example, establishing connections between hospitals and Directly Observed Treatment, Short-course (DOTS), by training primary health care providers in DOTS, and by educating private sector physicians about TB diagnosis and treatment. USAID efforts to expand or to improve the quality of TB services strengthened overall delivery of general health services. For example:

- In Armenia, USAID supported a health system assessment of TB service delivery and then prepared guidelines and supported trainings to improve integration of TB services into primary health care settings.
- In Cambodia, USAID facilitated dozens of trainings, seminars, meetings, and site visits to increase TB awareness in the private sector and to improve the referral of persons with symptoms of TB from private health providers to the public sector DOTS services.
- In Indonesia, USAID assisted the NTP to scale up a successful "Hospital DOTS Linkage" program that connects hospitals (where patients are often diagnosed) to primary health care facilities (which are closer to patients' homes and where patients receive support for the duration of the TB treatment).
- In Kyrgyzstan, USAID completed an assessment of TB delivery services and used results of the assessment to improve the referral system for patients who transfer from TB services to primary health care facilities.

In FY09, USAID-funded programs provided training to more than 63,000 health care workers in DOTS and other components of the Stop TB Strategy.

Developing Human Resource Capacity

A strong health sector workforce is an essential component of a well-functioning health system. In FY09, USAID supported the World Health Organization (WHO) to finalize *Planning the Development of Human Resources for Health for Implementation of the Stop TB Strategy*. Using this guideline, USAID assisted NTPs to develop country-specific human resource plans and to plan and to implement their own trainings. With funding provided by USAID, the U.S. Centers for Disease Control and Prevention (CDC) updated a training package consisting of nine training modules on TB control for the Latin America region. The Agency reached a wide range of health care professionals from both the public and private sectors through a variety of training programs in DOTS and other TB-specific services and in general skills such as infection control (IC), data management, and supervision. Some selected examples:

- In Afghanistan, USAID provided leadership and management training for 78 senior NTP staff members.
- In Azerbaijan, USAID trained 808 primary health care physicians and nurses in management of suspected TB cases and DOTS approach and 57 TB specialists on multidrug-resistant TB (MDR-TB) management.
- In Georgia, USAID trained 413 physicians, primary health care nurses, and pharmacists in TB control among internally displaced persons and minority groups, MDR-TB, and infection control.
- In Indonesia, USAID supported the National TB Program to develop and to implement a comprehensive Human Resource Development plan.

In FY09, USAID-funded programs provided training to more than 63,000 health care workers in DOTS and other components of the Stop TB Strategy.

Building Laboratory Capacity

Effective TB programs and well-functioning health systems both require laboratory networks that provide accurate and reliable diagnostic testing services. USAID's FY09 investments to build laboratory-based TB diagnostic capacity also benefited other disease control efforts that rely on that same laboratory capacity. The Agency improved laboratory services in many ways. For example:

- In Russia, and with technical assistance provided by the CDC, the Bactec MGIT 960 technology for liquid culture was tested and validated in Vladimir and Orel *oblasts* with excellent results.
- In India, USAID accelerated the laboratory accreditation process so that more laboratories could perform cultures (i.e., diagnostic) and drug sensitivity testing.
- In Kenya, USAID supported the initiation of external quality assurance in 531 laboratories.
- In the Philippines, USAID expanded the national laboratory network from 433 (2006) to 516 (2009) and increased the number of laboratories with external quality assurance programs.

Scaling Up Infection Control Measures

IC is a combination of measures aimed at reducing the risk of disease transmission among patients, health workers, and laboratory staff. Airborne IC is a very important component of effective TB control, particularly for reducing transmission of MDR-TB. In FY09, USAID, with technical assistance provided by the CDC, supported development of the *WHO Policy on TB Infection Control in Health-Care Facilities, Congregate Settings and Households,* a guideline for what to do and how to prioritize IC measures to reduce the transmission of TB in various settings. At the country level, USAID provided trainings and supported the scale-up of a range of airborne IC measures, such as better organization of patient flow in health facilities, cough etiquette, and installations of ventilation systems for adequate air flow. Many of these measures also prevent the spread of other airborne infectious disease agents. For example:

Integrating Laboratory Services: Mozambique Realizes a Dream

In December 2009, the Minister of Health of Mozambique led an opening ceremony for the newly rehabilitated Central Hospital Beira Laboratory in the central region of Mozambique. Before the Beira Laboratory expansion, the only other laboratory in the country providing culture and drug sensitivity testing services was the National Reference Laboratory in Maputo City, which is located at the southern tip of the country. The Beira Laboratory now offers those services to the central provinces of Sofala, Zambezia, Manica, and Tete, which together represent the most populated region in the country – an accomplishment that was considered an ambitious dream just five years ago, when USAID began supporting expansion of the country's TB laboratory diagnostic network.

The vision for Beira Laboratory grew even more ambitious when the Minister of Health announced that he wanted to transform the laboratory into a regional diagnostic laboratory for all infectious diseases, not just TB. USAID and PEPFAR have worked together to undertake a $1.2 million overhaul of the Beira Laboratory, turning the laboratory into a comprehensive diagnostic center for a range of infectious diseases, including TB and HIV/AIDS. Support includes procurement of equipment, installation of a data management system, and training of personnel. The dream of a regional reference laboratory for the most populated region in Mozambique has become a reality.

- In Ethiopia, USAID developed IC training materials and used the materials to train 330 health care workers. Following the trainings, 30 hospitals conducted IC risk assessments and developed IC plans.
- In Namibia, USAID finalized IC guidelines and trained 39 health care providers in IC in high HIV prevalence settings.
- In Russia, USAID established IC systems at eight leading provincial TB facilities. With CDC technical support, an IC training course was conducted, attracting participants from Murmansk *oblast*, surrounding regions, and three other former Soviet Union countries. The CDC also conducted an IC assessment at Vladimir TB dispensary and recommended the implementation of various administrative, environmental, and respiratory protection measures.
- In Uganda, USAID supported IC trainings for health care workers in 12 districts. By the end of the year, many facilities in the supported districts had new IC plans in place and were already implementing these new plans.

Improving Information Management Systems

A robust system for monitoring and evaluating multiple health indicators is crucial to understanding the impact of TB control and identifying gaps in the health system. USAID has a long history of utilizing standardized WHO TB indicators, such as case detection and treatment success, to measure progress toward desired outcomes. In 2009, USAID assisted NTPs to report and record a wide range of TB disease burden and other health indicator and performance data, to analyze and evaluate the data, and to use the data to make useful policy and programmatic changes.

- In the Democratic Republic of the Congo, USAID assisted the NTP to develop a national monitoring and evaluation plan.
- In Nigeria, USAID partnered with PEPFAR to harmonize and integrate TB and HIV data reporting and recording formats.
- In Pakistan, USAID assisted the NTP to develop a protocol for a national TB prevalence survey and drafted a field manual of SOPs for conducting the survey.
- In Turkmenistan, USAID improved TB information management through the purchase of new computer equipment and through implementation of a new electronic surveillance and case management system.

Strengthening Commodity Management Systems

A reliable supply of high-quality commodities is vital for all health programs, including TB. USAID improved country-level pharmaceutical management by helping countries to monitor anti-TB drug supplies, forecast future needs, and guarantee quality assurance. The Agency also assisted national efforts to scale up drug storage and distribution capacities. For example:

- In Bangladesh and Tajikistan, USAID supported trainings and provided technical assistance to improve country-level capacity to manage second-line anti-TB drugs for use in treating MDR-TB.

- In the Dominican Republic, USAID assisted the NTP to scale up the use of fixed-dose combination drugs nationwide and to introduce laboratory diagnostic kits (to simplify the management of laboratory commodities and reduce stock-outs).
- In Indonesia, USAID supported the NTP to develop SOPs for second-line drug management and training materials and to adapt e-TB Manager©, a comprehensive Web-based tool for programmatic management of drug-resistant TB, to be used in two pilot sites.
- In Zimbabwe, USAID piloted a drug distribution system in the Midlands province and used the lessons learned to design a similar distribution system for laboratory consumables.

CHAPTER 4
Global Technical Leadership and Research

A street sign in Peru promotes the fight against TB and lists its signs and symptoms.

In addition to being the leading bilateral donor for tuberculosis (TB) control efforts at the country level, U.S. Government's (USG's) international and technical leadership contributes to the development of high-impact TB interventions and evidence-based best practices for use worldwide. USAID's extensive field experience in TB control enables it to inform the research community about field-based needs and priorities, to test new tools and strategies in the field, and to translate research results into policy and practice. The U.S. Centers for Disease Control and Prevention (CDC) is actively engaged in numerous operations research studies. Because of its commitment to a TB control strategy based on the best available evidence, the USG has made impressive progress to ensure greater effectiveness and efficiency of TB programs worldwide.

The USG's fiscal year (FY) 2009 TB research activities reflect a commitment to implementing the "promote research and innovation" principle of the Global Health Initiative (GHI) and demonstrate the USG's contribution to achieving the research goals of the USG TB Strategy. The USG TB Strategy calls for investing in new tools and approaches and operational research to improve case detection and treatment success rates.

This chapter describes how USAID's FY 2009 funding broadened the TB research agenda through clinical trials of new anti-TB drugs and TB diagnostics, field demonstrations of new technologies and implementation approaches, and service delivery research (e.g., research on drug-resistant case management and private sector involvement in TB control); and how the Agency assisted National TB Control Programs (NTPs) to adopt and to expand the use of new evidence-based tools and programmatic guidelines.

New Drugs and Improved Treatment Regimens

Research on new anti-TB drugs is critical to improving TB control because more effective, better tolerated, and shortened regimens can dramatically improve patient outcomes, reduce the toll of TB on patients and their families, and decrease the strain on health systems. In FY 2009, USAID supported the Global Alliance for TB Drug Development (a public-private partnership) to continue phase IIB and III clinical trials of three novel anti-TB compounds designed to shorten the duration of TB treatment.

Beyond the development of new drugs, key USAID-led clinical trials also have an impact on current treatment standards. For example, a USAID-supported study is under way to investigate the interactions between current anti-TB drugs and antiretroviral therapy among TB-HIV co-infected patients in high HIV prevalence settings. A key

challenge in the management of MDR-TB is the long duration (18 months or longer) of the current standard treatment regimens. To address this challenge, USAID supported the development of a protocol to evaluate the efficacy of a shortened (nine-month) treatment regimen for MDR-TB and secured the endorsement from the World Health Organization (WHO) and other global partners to conduct a clinical trial. The Agency is providing technical assistance to several sites in preparation for the clinical trial.

New Diagnostics

USAID supports research on a wide range of innovative diagnostic tools and approaches to accelerate TB case detection, to enhance diagnostic sensitivity and specificity, and to increase the feasibility of diagnostic testing in low-resource settings. USAID also assists efforts to introduce the use of new diagnostic tools and methods into the field. Additionally, the Agency supports research on ways to improve currently existing diagnostic methods.

In FY09, USAID assisted the WHO to adopt two new diagnostic tools into its global policy and to endorse the tools for use in NTPs. One of the tools is an advanced form of microscopy called light-emitting diode (LED) fluorescence microscopy; the other is a faster method to collect and to examine sputum samples from patients known as "front-loading." LED fluorescence microscopy provides the benefit of fluorescence microscopy in terms of enhanced diagnosis of TB, with the added advantages of ease of use and maintenance compared to traditional fluorescence microscopy. "Front-loading," or "same-day diagnosis," refers to the collection and examination of consecutive sputum specimens from a patient and the provision of test results on the same day. Front-loaded diagnosis offers the possibility of completing the TB diagnostic tests in one day, compared to the past practice, which performed two or three sputum examinations over two days or more. Both new tools offer the advantages of reducing the laboratory workload and the turnaround time for test results, thus enabling the initiation of TB treatment sooner.

Diagnosing TB in people living with HIV/AIDS is more difficult than diagnosing TB in an HIV-negative person. To address this challenge, the CDC continued a clinical trial in Botswana to evaluate the use of the QuantiFERON-TB Gold test for the detection of TB infection among people living with HIV/AIDS.

Additionally, USAID supported initiation of work on a model that will simulate the impact of applying different combinations of diagnostic tools and approaches on TB transmission in various settings. Once completed, NTPs will be able to use the model to make informed decisions regarding the adoption of new diagnostic tests.

New Approaches to Manage Drug-Resistant TB

Multidrug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB) pose a serious challenge to TB control and threaten to undermine past progress. USAID supports research, as well as the development of practical tools and guidelines, to assist National TB Control Programs in their response to this threat.

In FY09, USAID continued to support the work of CDC on the Preserving Effective Tuberculosis Treatment Study (PETTS) to compare the effectiveness of WHO's Green Light Committee (GLC)-approved MDR-TB treatment programs versus non-GLC approved programs in preventing resistance to second-line anti-TB drugs used in the treatment of MDR-TB. In FY 2009, the target enrollment of 1,802 patients in PETTS was completed, and baseline specimens and data were collected. Follow-up on the enrolled patients is now under way. In partnership with the GLC, the Agency also supported the launch of the MDR/XDR-TB Assessment and Monitoring Tool to help countries review their drug-resistant TB prevention and treatment programs and to prioritize actions to address gaps in performance. The tool has been widely disseminated, including to all high MDR-TB-burden countries, and more than 150 TB program staff and consultants were trained to use the tool. USAID, with CDC technical assistance, supported development of the *WHO Policy on TB Infection Control in Health-Care Facilities, Congregate Settings and Households*, and regional training-of-trainer courses to roll out the policy.

Increasing the global supply of quality assured second-line TB drugs is a critical priority. USAID assisted four manufacturers of second-line drugs to prepare a total of nine product dossiers for submission to the WHO

Prequalification Project (a rigorous review process to ensure that products meet the international standards for quality, safety, and efficacy). Some of these products are expected to be prequalified by the end of 2010.

Improved Performance and Accessibility to DOTS Programs

In FY09, USAID placed a strong emphasis on country-level operational research to identify barriers, to develop innovative approaches to remove those barriers, and to improve programmatic performance. The Agency also supported field evaluations to guide the adoption and use of new tools in the context of national TB programs. In India, USAID supported studies that resulted in significant changes to the national TB control policy – a change from the definition of a "TB suspect" from cough of three weeks duration to cough of two weeks duration, and a reduction in the number of sputum specimens required for diagnosis of TB from three to two. Launched nationwide in 2009, the new policy will not only help to detect TB cases sooner, but it will also reduce the laboratory workload and make diagnostic testing more convenient for patients. Additionally, USAID supported field evaluation of the line-probe assay, a rapid diagnostic test for MDR-TB, resulting in adoption of the tool in India. In Tanzania, USAID supported field evaluations of line-probe assays and LED fluorescence microscopy, resulting in the introduction of this tool in high-volume laboratories throughout the country.

New Ways to Engage the Private Sector

Since many TB patients initially seek care in the private sector, effective engagement of the private sector in TB control is critical. USAID supports efforts at all levels to pilot, to introduce, and to scale up TB-related partnerships between NTPs and the private sector (and other non-NTP providers of health services). In FY09, the Agency assisted five countries to implement pilot public-private partnerships in TB and assisted an additional 14 countries to scale up already proven TB public-private partnerships. USAID also developed public-private partnership criteria for IC grants, so that applicants can include public-private partnership initiatives in their grant applications, and protocols for implementing collaborative TB-HIV activities through public-private partnerships. Finally, to promote the use of high-quality TB diagnostic and treatment standards by all care providers, private and public, USAID supported implementation of the updated (in 2009) WHO International Standards for Tuberculosis Care in 17 countries. The CDC participated in the technical working group that updated these standards.

Tools to Strengthen Health Systems

USAID supports the development and dissemination of a wide range of tools and programmatic guidelines that benefit not only NTPs, but also primary health care systems. In FY09, the Agency focused most of its activities in this area on strategic planning and budgeting, laboratory performance improvements, commodity management, and human resources development. For example, USAID supported a WHO update of a planning and budgeting tool (first developed in 2007) to assist NTPs in implementing the Stop TB Strategy, incorporating the latest WHO recommendations for MDR-TB and IC. Sixteen USAID-supported countries used the tool. In addition, 17 other countries in Africa and Central America have used this tool, and it is commonly used to prepare Global Fund to Fight AIDS, Tuberculosis and Malaria grant proposals.

To improve the quality of diagnostic laboratory services, the Agency supported the development and launch of a "laboratory toolbox" containing SOPs, a logistics/supply management tool, an external quality assurance package, a TB diagnostic and drug sensitivity testing package, and a management information system. Numerous partners such as the CDC, WHO, and others with expertise in laboratory issues provided technical assistance in the development of the toolbox. Training in use of the toolbox is under way. USAID also supported efforts to strengthen the capacity of supranational reference laboratory networks (SNRLs) and assessed candidate SNRLs in the Africa region. SNRLs provide technical assistance and quality assurance services to national reference laboratories.

Ensuring a reliable supply of commodities is critical for TB control programs. To improve decision making for commodities and other interventions, USAID supported the development and launch of e-TB Manager©, a comprehensive Web-based tool for monitoring the use and availability of first- and second-line anti-TB drugs and

other components of TB and MDR-TB case management. The Philippines integrated e-TB Manager© into its national scale-up of MDR-TB services, and in Brazil, this tool was implemented in 122 MDR-TB treatment centers. Six other countries adopted e-TB Manager©, and WHO's European region endorsed the tool for region-wide implementation. USAID is collaborating with WHO to expand use of e-TB Manager© worldwide.

In the area of human resources, USAID completed operational research on ways to make better use of available human resources in TB control efforts and, in partnership with WHO, finalized *Planning the Development of Human Resources for Health for Implementation of the Stop TB Strategy*.

CHAPTER 5
Partnerships in Global TB Control

Once infected, women of reproductive age are more susceptible to developing TB than men of the same age.

Partnerships are a hallmark of U.S. Government's (USG's) foreign assistance for international tuberculosis (TB) control. While USAID allocates the majority of its annual TB budget to country-level activities, the Agency's financial, technical/programmatic, and advocacy partnerships support global and regional activities, as well. USAID partners with several leading institutions in the global TB community, including the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), the Global Drug Facility, and the World Health Organization (WHO). The Agency is also a member of the Stop TB Partnership, a network of more than 900 international organizations, donors, nongovernmental organizations (NGOs), and individuals working to eliminate TB as a public health problem. Since its creation in 2002, the Global Fund has become the main source of finance for programs to fight AIDS, TB, and malaria, with approved grants of $9.4 billion for more than 600 programs in 144 countries. The Global Fund provides two-thirds of all international financing for TB globally.

USAID's FY09 TB activities reflect a commitment to implementing the "strengthen and leverage key multilateral institutions and global health partnerships" principle of the Global Health Initiative (GHI).

Global Fund to Fight AIDS, Tuberculosis and Malaria

The USG is the largest single contributor to the Global Fund, making this multilateral effort a critical complement to USAID's bilateral assistance program. The Global Fund provides 57 percent of all international financing for TB, and the USG provided more than $4.3 billion of the Global Fund's total received contributions of more than $16 billion as of April 2010.

The USG fosters the success of the Global Fund at multiple levels. At the global level, USAID and the Department of State's Office of the U.S. Global AIDS Coordinator (OGAC) engage in policy dialogue and provide important feedback on programmatic decisions. At the country level, USAID Missions participate in Global Fund Country Coordinating Mechanisms and provide technical assistance for proposal development and grant implementation. In terms of proposal development, USAID, in partnership with technical organizations, helped TB proposals achieve the highest success rate among the three diseases, with 59 percent of TB proposals approved (compared to 55 percent for malaria and 41 percent for HIV/AIDS) in Round 9, an increase from 49 percent in Round 8. Round 9 mobilized $1.5 billion for TB control programs in 35 countries.

Leveraging the Global Fund in India: Increasing Impact through Strategic Coordination and Integration

USAID is making great strides to integrate TB programs with other community development activities while also contributing to the success of grants from the Global Fund. In India, USAID funded the TB Advocacy, Communication, and Social Mobilization (ACSM) Project, which targets 80 high TB-burden districts in 14 states with a population of 176.6 million. Commonly known as the "Jump Start Project," ACSM's dual goals are to 1) accelerate the integration of TB activities into areas such as maternal and child health and women's empowerment and 2) pave the way for a grant from the Global Fund. Led by the NGO Tuberculosis Consortium of eight NGOs with experience in TB, the ACSM Project has engaged numerous smaller NGOs and community-based organizations (CBOs) to integrate TB activities into their work. The results have been impressive. In 2009, 984 NGOs/CBOs were empowered; 971 community support groups were formed; nearly 39,000 persons with TB symptoms were referred for diagnostic tests; and almost 2,900 persons were confirmed to have TB and started on treatment. USAID also helped the Consortium prepare a successful Global Fund Round 9 grant proposal for $69 million for community-level activities.

In terms of grant implementation, USAID and technical partners have helped TB grants earn the highest grant ratings among the three diseases, with 84 percent of TB grants receiving "A" or "B1" ratings (compared to 79 percent for HIV/AIDS and 70 percent for malaria). USAID supports the TB Technical Assistance Mechanism of the Stop TB Partnership, which provides technical assistance to Global Fund grantees for implementation of all components of the Stop TB Strategy. USAID also supports the WHO Green Light Committee (GLC) to provide technical assistance to Global Fund recipients whose proposals include second-line drugs for the treatment of drug-resistant TB.

Stop TB Partnership

The USG is actively engaged in the Stop TB Partnership on a number of levels. USAID and the CDC are on the Coordinating Board of the Stop TB Partnership and are key members of the Stop TB Partnership's technical working groups. USAID staff were also heavily involved in the development of the Stop TB Partnership's Actions for Life – The Global Plan to Stop TB 2006–2015 (Global Plan), and the Agency's FY09 programs were fully aligned with the strategies and objectives described in that plan. Additionally, a USAID grant to the Stop TB Partnership supported strengthening of advocacy, communication, and social mobilization components of country TB programs; the development of national Stop TB partnerships; and monitoring of global financial support for TB control. The National Institutes of Health (NIH) participates in Stop TB working groups on new tools, and PEPFAR participates in the Stop TB working group on TB-HIV/AIDS co-infection.

Global Drug Facility

USAID is the leading bilateral donor to the Global Drug Facility (GDF). A mechanism of the Stop TB Partnership, the GDF provides grants for TB drugs to countries in need and technical assistance and monitoring of GDF grant recipients. Through its grant to the GDF, USAID supported drugs to treat approximately 450,000 patients during FY 2009. USAID financing also helps the GDF operate a direct procurement (DP) service through which countries, NGOs, and other donors can purchase quality-assured drugs at competitive prices through the GDF. Forty-one countries used the GDF DP services to purchase first-line drugs, and 37 countries used the DP service to procure second-line drugs; this included many countries with Global Fund grants, illustrating the important synergy between these mechanisms. The GDF was also recertified as ISO 9001:2000 compliant, demonstrating the organization's high standards of performance.

World Health Organization

The USG benefits from a historical and effective partnership with the Stop TB Department of the WHO. With its mandate to serve Member States, WHO is uniquely positioned to coordinate the global surveillance of TB, TB-HIV, and MDR-TB, and to set technical norms, standards, and strategic directions that generally become policy in disease-endemic countries. The CDC participates in the WHO's Strategic Technical Advisory Group, which provides global technical and policy guidance for international TB control. Additionally, WHO's network of technical experts and partners puts it in a good position to efficiently coordinate country-level assistance in strategic planning, programmatic evaluation, and routine monitoring of progress.

USAID supports several key WHO activities in TB control:

- *Global monitoring and surveillance and impact measurement*. Each year, with support from USAID, WHO publishes a global TB control report that presents WHO's latest assessment of the epidemiological burden of TB (numbers of cases and deaths) in 198 countries and progress toward the global targets for TB prevalence, deaths, case detection, and treatment success that were established in the Stop TB Partnership's Actions for Life – The Global Plan to Stop TB 2006–2015.
- *Global surveillance for TB drug resistance*. USAID supports WHO to provide technical assistance to countries for MDR-TB surveillance activities and to periodically publish a report on TB drug resistance worldwide.
- *Guidance on the Stop TB Strategy*. USAID supports WHO to develop and to disseminate policies and guidelines and to provide technical assistance related to all of the various components of the Stop TB Strategy, including engagement of the private sector, DOTS, prevention and control of MDR-TB, laboratory strengthening, infection control, and human resource development.
- *Operational research*. USAID supports WHO to identify and to evaluate new approaches to delivering services that improve case detection and treatment outcomes.

Additionally, USAID regional bureaus and country Missions partner with and support WHO regional and country offices to provide technical assistance for program monitoring and strategic planning, training, operational research, prevalence surveys, and the management of regional Centers of Excellence for various aspects of TB control.

Green Light Committee Initiative

The Green Light Committee Initiative helps countries gain access to high-quality second-line TB drugs and to treat people with MDR-TB in line with WHO guidelines, the latest scientific evidence, and country experiences. The Initiative consists of a secretariat, the GLC (an expert review committee comprising WHO and other technical partners), and the GDF (the drug procurement arm of the Initiative). Countries or projects that are approved by the GLC are eligible to purchase quality assured second-line anti-TB drugs at competitive prices through a pooled procurement mechanism coordinated by the GDF, in partnership with the GLC. USAID has supported the GLC Initiative since it was established in 2000. USAID provides funding to the CDC to support the participation of CDC experts on the GLC expert review committee and in the provision of technical assistance to countries.

The Global Fund requires that all proposals that include second-line TB drugs be reviewed by the GLC. The USG's support enables the GLC to provide technical assistance to Global Fund grant applicants and recipients whose proposals include second-line TB drugs. Approximately 67 countries or projects benefitted from GLC technical assistance during FY 2009, addressing such areas as preparation of applications to the GLC, laboratories, IC, clinical management of MDR-TB, and monitoring and evaluation.

U.S. President's Emergency Plan for AIDS Relief

USAID works in close partnership with OGAC at the Department of State, which leads the USG response to TB-HIV co-infection and coordinates all USG agencies (including USAID) that support services for persons co-infected with TB and HIV in PEPFAR countries. In FY09, USAID interventions to address TB-HIV co-infection were closely coordinated with PEPFAR in all 10 countries with overlapping USAID and PEPFAR support: Ethiopia, Haiti, Kenya, Mozambique, Namibia, Nigeria, South Africa, Tanzania, Uganda, and Zambia. Additionally, USAID participated in the PEPFAR TB-HIV Technical Working Group, the PEPFAR Laboratory Technical Working Group, and the annual review of PEPFAR Country Operational Plans. Since 2004, USAID has also been collaborating with other USG

agencies involved with PEPFAR to accelerate efforts to combat TB-HIV co-infection.

U.S. Centers for Disease Control and Prevention and National Institutes for Health

USAID also works in close partnership with the CDC and NIH. The CDC provides critical technical support to international partners on epidemiology and surveillance (including drug-resistant TB), laboratory strengthening, and clinical/operational research that evaluates promising diagnostic and treatment strategies and informs the efficient use of new approaches to TB care. With resources from USAID, CDC supports TB surveillance and surveys (i.e., drug resistance), conducts programmatically relevant research and epidemiological studies that inform national and global TB policy, and provides technical assistance to WHO for global policy development and to USAID priority countries for implementation. Specific examples of research and epidemiological studies include evaluating and implementing approaches to (1) intensified case finding in people with HIV and populations with high HIV prevalence; (2) implementation of isoniazid preventive therapy in people with HIV; (3) improving the diagnosis of TB in HIV-infected persons, including pediatric populations; (4) improving MDR-TB diagnosis and management, including evaluating the implementation and impact of rapid laboratory diagnostics for drug-resistant TB; and (5) improving IC practices in health care and community settings. The CDC also funds the TB Clinical Trials Consortium and the TB Epidemiologic Studies Consortium with resources from Departments of Health and Human Services and Labor appropriations for domestic TB control to fill current TB knowledge gaps in TB diagnostics.

NIH supports domestic and international biomedical research and basic research; studies of pathology, epidemiology, transmission of TB, and drug resistance; research on basic, clinical, and behavioral aspects of TB-HIV co-infection; and identification, preclinical development, and clinical evaluation of new drugs, diagnostics, and vaccines. NIH also provides research training, infrastructure, and capacity building in resource-constrained countries. Once promising tools developed by NIH are ready to be tested in the field and moved into policy, USAID brings these advances to the field and works with WHO and NTPs to support adoption into global-, and country-level policies.

Partnering with PEPFAR: Traditional Healers Champion Comprehensive TB-HIV Services in Malawi

In southern Malawi's rural Mangochi District, many people still consult traditional healers, like 50-year-old Patuma A., who has been running a traditional medicine clinic, the Matukuta Center, for 18 years. She treats up to 20 patients per day, many of whom present with long histories of coughing – a problem that used to worry Patuma. Some patients would respond to Patuma's herbal concoctions, but many did not. "I was left stranded thinking of how best I could assist those clients that did not respond to my herbs," Patuma said.

To address the situation, USAID partnered with PEPFAR and local agencies to educate traditional healers about the signs and symptoms of TB and to address prevailing misconceptions that were leading to delays in diagnosis and treatment. Patuma was one of the 38 traditional healers who attended the workshops.

The herbalists were also invited to partner with nearby health facilities and take a more proactive role in TB case detection. Patuma is now one of 31 herbalists in Mangochi who is participating in a referral system between the herbalists' clinics and nearby health centers. The healers collect sputum samples from persons with symptoms of TB, take the samples to diagnostic laboratories, and refer clients with positive diagnoses to health centers for treatment. Infected patients are temporarily admitted but soon return home, where the healers monitor their treatment adherence. Patuma's Matukuta Center refers about 20 to 40 persons a month for TB screening. The Matukuta Center is also one of six traditional healer clinics that serve as an outreach site for HIV testing and counseling.

Patuma is proud of her work. She said, "Through this partnership, my clients now have access to HIV testing and counseling and TB services. Previously, this was not possible. I have learned to refer TB suspects quickly to the hospital."

Annex A: Tier 2 Countries

Tier 2 Countries	Activities and Achievements
Angola	• Increased community involvement in tuberculosis (TB) prevention by supporting a training-of-trainers workshop for community volunteers. • Improved access to comprehensive TB-HIV prevention and treatment services by establishing HIV counseling and testing services in TB facilities, by updating the national TB manual with a chapter on TB-HIV co-infection, and by working with the U.S. Centers for Disease Control and Prevention (CDC) and the Angolan National AIDS Institute to increase collaboration between TB and HIV programs. • Assisted two TB sanitaria and two TB reference centers in the provinces of Huambo and Luanda to maintain continuous supplies of anti-TB drugs. Following the intervention, none of the supported centers reported any stock-outs. *Highlight: In 2009, USAID trained 2,594 health staff in Directly Observed Treatment, Short-course (DOTS) and assisted provincial Department of Health TB coordinators to develop new DOTS centers and training-of-trainers courses in DOTS.*
Armenia	• Supported a health system assessment of TB service delivery and then prepared guidelines and training materials for implementation of the Practical Approach to Lung Health, an intervention to improve integration of TB services into primary health care settings. • Improved diagnosis and treatment of TB through trainings and the development and adoption of national TB laboratory guidelines. • Assisted the National TB Program (NTP) to develop a 2-year national action plan for TB control, created networks to design and continuously improve (1) the national infection control plan and (2) the national TB monitoring and evaluation system. *Highlight: USAID supported training for 683 nurses, medical education institution faculty members, and community volunteers from rural Armenia using a DOTS-based TB module developed in collaboration with the Ministry of Health (MOH), World Health Organization (WHO), U.S. National Institutes of Health (NIH), and Yerevan State Basic Medical College.*
Azerbaijan	• Assisted the Public Health and Reforms Center in developing clinical practice guidelines on TB detection and treatment (a guideline on TB prevention is in the process of development). • Worked with the MOH to improve drug procurement and distribution and supported monitoring of new legislation banning the sale of first-line TB drugs without a prescription. • Trained 808 primary health care physicians and nurses in management of suspected TB cases and DOTS approach and 57 TB specialists on multidrug-resistant TB (MDR-TB) management. *Highlight: USAID promoted international standards of TB control by assisting the MOH to revise and update its National TB Control Strategy and by facilitating high-level discussions on the importance of out-patient treatment for TB (as opposed to existing policy, which requires universal hospitalization).*
Belarus	• Assessed current level of involvement of primary health care institutions in TB care and established a task force to develop primary health care guidelines for TB care. • Assisted the MOH to develop TB treatment clinical guidelines based on best international standards and to optimize and standardize quality assurance procedures in TB diagnostic laboratories. • Supported a WHO drug resistance survey and assisted the Government of Belarus to establish an efficient drug supply and management system. *Highlight: USAID helped the MOH to coordinate activities financed by the Government of Belarus ($29 million) and the Global Fund to Fight AIDS, Tuberculosis and Malaria ($14.2 million) and to draft a new 5-year TB control policy.*

Tier 2 Countries	Activities and Achievements
Bolivia	• Supported MOH efforts to expand community-based DOTS to TB patients in rural and isolated areas. A total of 146 community health workers and nongovernmental organization (NGO) health technicians were trained using kits developed in collaboration with the MOH, resulting in 1,188 individuals with respiratory symptoms being referred to health centers for evaluation (three times more than were referred in 2008). • Improved TB service delivery by training 608 public sector health care workers in a new six-month treatment protocol (which replaced the previously used 8-month protocol and brought treatment policy into compliance with international standards), pharmaceutical management, data management, and laboratory techniques. • Supported TB advocacy and education activities for high school students, community groups, and local authorities. *Highlight: USAID assisted the NTP to develop its Round 9 application to the Global Fund, which was approved for $9.8 million.*
Djibouti	• Upgraded eight district health centers to offer DOTS services by providing equipment and training in DOTS. • Assisted the NTP to develop a Green Light Committee (GLC) proposal to train health personnel in the treatment of MDR-TB. • Improved infection control at the National Reference TB Center by training staff and procuring masks and respirators. *Highlight: USAID focused on strengthening and decentralizing laboratory diagnostic capacity to bring TB testing closer to the community. One laboratory for every 52,000 persons is now in place, meeting the internationally recommended standard for population coverage. All 15 USAID-assisted diagnostic centers achieved high-quality performance, with more than 95 percent correct results.*
Dominican Republic	• Conducted an evaluation of the NTP, made recommendations for improvements and future activities, and supported the renovation and purchase of new equipment for the NTP office. • Supported DOTS training for 1,220 health care workers. • Assisted the NTP to improve HIV testing of TB patients, achieving 45 percent of registered TB patients being tested for HIV and surpassing the 2009 national target of 32 percent. *Highlight: USAID assisted the NTP to train more than 1,200 people in the use of fixed-dose combination drugs and facilitated the purchase of medicines and other commodities from the Global Drug Facility (of the Stop TB Partnership), which resulted in a savings of $800,000.*
Georgia	• Trained 413 physicians, primary health care nurses, and pharmacists in infection control; MDR-TB; and TB control among internally displaced people and minority groups. • Expanded assistance to Shida Kartli, the region worst hit by war, by supporting the renovation of TB treatment centers, DOTS training, and initiation of infection control measures. • Collaborated with regional TB coordinators, the NTP, and local NGOs to engage Armenian and Azeri ethnic minority populations in TB control by producing and distributing educational materials for both patients and health care staff. *Highlight: USAID supported a community-based approach to improve treatment adherence among TB patients in the Kobuleti region of the Adjara province, resulting in 97 percent treatment success. Before the approach was introduced, treatment success in Kobuleti was 67 percent.*

Tier 2 Countries	Activities and Achievements
Ghana	• Supported the NTP to develop the National Tuberculosis Health Sector Five-Year Strategic Plan (2009–2013). • Expanded diagnostic laboratory capacity by supporting training in quality assurance procedures for 15 regional laboratory supervisors and procuring 10 new microscopes. • Conducted a TB mortality audit to investigate potential reasons for the high TB mortality rate, resulting in recommendations to the NTP of interventions to reduce TB deaths and improve recording and reporting. *Highlight: USAID conducted operational research studies aimed at identifying gaps in case detection. Based on the results of the studies, the Agency supported improvements in data recording and the follow-up of individuals who submit sputum samples at the two largest TB referral centers in Ghana.*
Haiti	• Provided technical assistance to the MOH to improve the technical content of Haiti's Global Fund Round 9 proposal, which was approved for approximately $12.2 million (the proposal previously rejected by the Global Fund). • Trained new technicians entering the laboratory workforce. • Collaborated with U.S. President's Emergency Plan for AIDS Relief (PEPFAR) to increase HIV testing among TB patients by improving referral services, increasing outreach activities, and increasing diagnostic testing capacity in hard-to-reach TB treatment facilities, resulting in 73 percent of TB patients in USAID-supported programs being tested for HIV (compared to 65 percent nationally). *Highlight: USAID assisted the National Plan to Fight Tuberculosis to improve TB case finding in the primary health care system, resulting in detection of 3,844 cases in USAID-supported primary health care facilities.*
Kazakhstan	• Expanded and improved the quality of TB services by training 183 health care workers on DOTS, conducting a training course on TB counseling for 20 nurses, and conducting five training workshops on laboratory-based diagnosis and drug sensitivity testing. • Assisted the Kazakhstan Association of Family Practitioners to implement the WHO Practical Approach to Lung Health strategy and to organize a National Family Medicine Conference focused on integrating TB services into primary health care. • Produced and disseminated information and educational materials aimed at promoting awareness of TB and MDR-TB among patients, community leaders, and health care workers. *Highlight: USAID assisted the Government of Kazakhstan to launch a new 2-year program to scale up drug-resistant case management in both civilian and prison populations throughout the Almaty and Eastern Kazakhstan provinces. The new program was based on a successful USAID-funded pilot project at the Almaty City TB Dispensary.*
Kyrgyzstan	• Conducted 14 monitoring trips to 48 primary health care and TB facilities among all provinces and provided recommendations to the NTP for improving TB services. • Completed an assessment of Kyrgyzstan's TB delivery services and then, based on results of the assessment, improved continuity of care for patients who transfer from the TB system to primary health care facilities by developing a roles-and-responsibilities methodology and checklists for detection, registration, and treatment and referral of TB cases. • Supported attendance of TB specialists to attend workshops on MDR-TB and prison TB control and participation in a study tour of WHO pilot sites for MDR-TB management in Kazakhstan, Kyrgyzstan, and Uzbekistan. *Highlight: USAID supported 29 trainings for 348 health care workers on a range of topics: DOTS, advanced diagnostic and drug sensitivity testing, counseling of TB patients, logistics management information systems, and basic laboratory practices.*

Tier 2 Countries	Activities and Achievements
Malawi	• Increased TB diagnostic and drug sensitivity testing capacity by renovating, staffing, and equipping the Central Reference Laboratory and refurbishing four additional TB microscopy centers. • Assisted the NTP to conduct a survey of anti-TB drug resistance. • Worked in partnership with PEPFAR to increase the number of TB patients tested for HIV, resulting in 90 percent of TB patients at USAID-supported sites being tested for HIV. *Highlight: USAID assisted the NTP to bring TB services closer to the community by establishing 173 sputum collection sites, training 122 community volunteers to manage the new sites, and conducting community education and communications activities to increase awareness of TB.*
Mexico	• Conducted an evaluation of the MDR-TB and extensively drug-resistant TB (XDR-TB) response at the national level and in six states. • Increased the capacity to manage MDR-TB by launching a U.S.-Mexico MDR-TB Expert Network that links the expertise of the CDC's TB regional Training and Medical Consultation Centers to national and local Mexican TB partners. A training-of-trainer's workshop was conducted on MDR-TB diagnosis and treatment and a national MDR-TB management guideline was developed. A community MDR-TB program was piloted in rural Chiapas, and infection control pilot projects were supported in three states. • Supported TB advocacy and public education efforts by developing Mexico's first TB radio awareness campaign and piloting the campaign in five cities. *Highlight: USAID expanded and enhanced DOTS by training 2,279 heath care workers, conducting regional exchanges where leaders from different states shared best practices, and supporting the training of health promoters (community volunteers who help people with symptoms seek diagnosis and help TB patients adhere to treatment).*
Namibia	• Improved MDR-TB services by training 38 physicians in MDR-TB case management, updating a nurses' training curriculum with the latest information about TB drug resistance, conducting quarterly regional MDR-TB meetings, and recruiting a medical officer to coordinate the NTP's MDR-TB program. • Finalized national infection control guidelines and trained 39 health care providers on infection control in high HIV prevalence settings. • Assisted the NTP to develop Namibia's Second National Strategic Framework for TB and conducted 20 regional quarterly TB review meetings to assess progress. *Highlight: USAID increased the capacity of the NTP to expand community-based DOTS by establishing regional training centers and training 187 health workers at the centers. As a result of USAID support, 12 of Namibia's 13 administrative regions now have well-established community DOTS programs.*
Peru	• Provided training for a total of 277 physicians and other health care workers. • Trained 60 staff from the National Strategy for TB Prevention and Control on methods for improving the quality of services for patients with TB, MDR-TB, and XDR-TB. • Assisted the Country Coordinating Mechanism for the Global Fund to oversee a $29.7 million Round 5 grant. *Highlight: USAID assisted the MOH to develop and to implement a National Multi-Sector Strategic Plan for TB Prevention and Control and to adapt the plan to the shifting roles and responsibilities of regional governments under decentralization. A key component of the plan was expanding laboratory capacity to diagnose MDR-TB.*

Tier 2 Countries	Activities and Achievements
Senegal	• Increased laboratory-based diagnostic capacity by refurbishing three laboratory facilities in the Dakar and Kaolack regions, where more than half of Senegal's TB burden exists. • Increased HIV testing among TB patients. In USAID-supported regions, 52 percent of TB patients were tested for HIV compared to the nationwide average of 44 percent. • Increased community involvement in TB control by training 1,031 community workers in TB services; creating 33 community support groups for TB patients; and broadcasting 125 radio programs on TB in USAID-supported regions. *Highlight: USAID supported DOTS training for 879 health care workers. In USAID-supported regions, treatment default decreased from 12 to 6 percent, and treatment success increased from 79 to 87 percent, surpassing the global target of 85 percent.*
Southern Sudan	• Built NTP capacity by assisting the MOH to develop Southern Sudan's first TB control strategic plan (2009–2013) and a TB control operational plan for 2009. • Increased laboratory diagnostic capacity by renovating and equipping two state laboratories and conducting trainings in laboratory diagnosis and external quality assurance. • Provided technical assistance to the NTP to establish TB monitoring and evaluation procedures and to develop a reliable data management system. *Highlight: USAID continued efforts to expand DOTS coverage by training 91 health workers. The Agency also assisted the MOH to develop clear policy and guidelines for ensuring that women participate equitably in DOTS trainings and other TB capacity building activities.*
Tajikistan	• Assessed Tajikistan's TB control efforts through a desk review of policies and reports and onsite evaluations of health care facilities. • Improved logistics management for TB drugs by monitoring the TB drug supply in 59 cities, four provincial TB centers, and the Republican TB Hospital; collecting expired TB drugs from health care facilities; and facilitating the registration of six TB drug formulations for use in Tajikistan. • Provided technical assistance to the MOH and WHO to conduct a study assessing community knowledge and attitudes about TB; and supported World TB Day communication activities. *Highlight: USAID conducted a study on primary health care involvement in TB control to identify gaps in service and then addressed those gaps by organizing or assisting workshops for 47 regional TB coordinators on standard TB diagnostic and treatment protocols and the importance of supervised treatment.*
Turkmenistan	• Assisted the NTP to develop national guidelines on TB detection and treatment and prepare the country's first-ever application to the Global Fund. The Round 9 grant application was approved by the Global Fund for approximately $7.3 million. • Increased laboratory capacity to diagnose TB by supporting development of a new strategic plan for upgrading TB laboratory services, providing training on laboratory diagnosis, procuring equipment, and renovating laboratory facilities. • Improved TB information management through the purchase of new computer equipment and implementation of a new electronic surveillance and case management system. *Highlight: USAID assisted the Ministry of Health and Medical Industry to improve the quality of DOTS services by training 382 health care workers and worked with WHO to expand DOTS into the penitentiary system.*
Uzbekistan	• Promoted integration of TB services into primary health care by developing and incorporating updated TB practices into medical and nursing education and training programs and by adding TB sessions to the basic nursing training program. • Developed a logistics management information system in accordance with MOH and Drug Policy Center recommendations and installed the new system in DOTS centers throughout the country. • Enhanced community involvement in TB prevention by supporting workshops for community leaders, and trainings for journalists and media broadcasters. *Highlight: USAID built political support for TB control and assisted the NTP to develop a new TB control policy document for 2010–2015. The Agency also strengthened acceptance of DOTS by health specialists and provided training for 424 health care workers.*

Annex B: Case Detection Rates and New Sputum Smear-Positive TB Cases Registered, Cured, Completed, and Successfully Treated

Focus Countries	DOTS Case Detection Rate (%), 2008	TB Treatment Outcomes – 2007 Cohort				
		Registered No. of Cases on Treatment (A)	No. Cured (B)	No. Completed (C)	No. Successfully Treated (B+C)	% Successfully Treated [(B+C)/A] *100
Focus Countries Tier 1						
Afghanistan	61	13,213	10,859	663	11,522	87
Bangladesh	61	104,307	94,778	1,030	95,808	92
Brazil	75	38,133	12,626	14,839	27,465	72
Cambodia	56	19,429	17,686	566	18,252	94
DR Congo	66	65,975	54,576	2,784	57,360	87
Ethiopia	32	38,078	25,652	6,341	31,993	84
India	70	592,414	497,893	14,613	512,506	87
Indonesia	80	160,617	130,973	15,224	146,197	91
Kenya	68	38,360	28,689	4,040	32,729	85
Mozambique	47	18,214	14,231	183	14,414	79
Nigeria	24	44,070	31,070	4,890	35,960	82
Pakistan	58	88,374	67,758	12,672	80,430	91
Philippines	67	86,566	68,765	8,240	77,005	89
Russia	73	31,857	17,436	942	18,378	58
South Africa	68	143,222	91,653	14,208	105,861	74
Tanzania	70	24,520	20,440	1,041	21,481	88
Uganda	54	21,303	6,539	9,470	16,009	75
Ukraine	100	11,068	5,925	608	6,533	59
Zambia	52	13,378	10,447	882	11,329	85
Zimbabwe	24	10,583	7,455	768	8,223	78
Total Tier 1	**60 (average)**	**1,563,681**	**1,215,451**	**114,004**	**1,329,455**	**82 (average)**

Focus Countries	DOTS Case Detection Rate (%), 2008	TB Treatment Outcomes – 2007 Cohort				
		Registered No. of Cases on Treatment (A)	No. Cured (B)	No. Completed (C)	No. Successfully Treated (B+C)	% Successfully Treated [(B+C)/A] *100
Focus Countries Tier 2						
Angola	77	21,422	10,224	5,589	15,813	74
Armenia	71	490	269	74	343	70
Azerbaijan	48	1,356	668	114	782	58
Belarus	83	1,987	1,326	140	1,466	74
Bolivia	77	5,686	4,687	138	4,825	85
Djibouti	47	1,205	873	109	982	81
Dominican Republic	60	2,373	1,711	129	1,840	78
Georgia	130	1,975	1,184	339	1,523	77
Ghana	30	7,429	5,756	495	6,251	84
Haiti	60	7,915	5,624	845	6,469	82
Kazakhstan	74	6,140	4,206	0	4,206	69
Kyrgyzstan	65	1,718	1,390	65	1,455	85
Malawi	37	8,065	6,707	124	6,831	85
Mexico	100	11,432	8,927	625	9,552	84
Namibia	71	5,114	3,658	542	4,200	82
Peru	93	14,056	12,168	730	12,898	92
Senegal	40	7,109	5,112	397	5,509	77
Southern Sudan*	40	12,958	7,777	2,366	10,143	78
Tajikistan	49	2,073	1,618	95	1,713	83
Turkmenistan	130	1,288	1,013	64	1,077	84
Uzbekistan	48	6,326	4,544	466	5,010	79
Total Tier 2	**68 (average)**	**128,117**	**89,442**	**13,446**	**102,888**	**79 (average)**
Totals (Tier 1 + Tier 2)	**64 (average)**	**1,691,798**	**1,304,893**	**127,450**	**1,432,343**	**80 (average)**

Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report.*
* Data reflect national figures.
Percentages are rounded.

Annex C: Treatment Outcomes for New Sputum Smear-Positive TB Patients Reported from DOTS Services

Focus Countries	TB Treatment Outcomes – 2007 Cohort							
	Registered No. of Cases on Treatment	% Cured (A)	% Completed (B)	% Died	% Failed	% Defaulted	% Transferred	% Successfully Treated (A+B)
Focus Countries Tier 1								
Afghanistan	13,213	82	5	2	1	2	5	87
Bangladesh	104,307	91	1	3	1	2	2	92
Brazil	38,133	33	39	5	1	10	12	72
Cambodia	19,429	91	3	3	0	1	2	94
DR Congo	65,975	83	4	4	1	4	2	87
Ethiopia	38,078	67	17	4	1	3	5	84
India	592,414	84	2	5	2	6	1	87
Indonesia	160,617	82	9	2	1	4	2	91
Kenya	38,360	75	11	4	0	7	4	85
Mozambique	18,214	78	1	10	1	5	5	79
Nigeria	44,070	71	11	5	2	9	2	82
Pakistan	88,374	77	14	2	1	4	2	91
Philippines	86,566	79	10	2	1	4	3	89
Russia	31,857	55	3	12	16	10	5	58
South Africa	143,222	64	10	8	2	8	5	74
Tanzania	24,520	83	4	6	0	3	3	88
Uganda	21,303	31	44	5	0	15	5	75
Ukraine	11,068	54	5	14	12	10	5	59
Zambia	13,378	78	7	6	1	3	5	85
Zimbabwe	10,583	70	7	8	0	6	8	78
Average Tier 1	**1,563,681**	**71**	**10**	**6**	**2**	**6**	**4**	**82**
	(total)							

Focus Countries	TB Treatment Outcomes – 2007 Cohort							
	Registered No. of Cases on Treatment	% Cured (A)	% Completed (B)	% Died	% Failed	% Defaulted	% Transferred	% Successfully Treated (A+B)
Focus Countries Tier 2								
Angola	21,422	48	26	3	2	18	3	74
Armenia	490	55	15	6	11	12	1	70
Azerbaijan	1,356	49	8	3	2	11	24	58
Belarus	1,987	67	7	9	10	2	6	74
Bolivia	5,686	82	2	4	1	5	5	85
Djibouti	1,205	72	9	1	1	14	2	81
Dominican Republic	2,373	72	5	3	1	8	2	78
Georgia	1,975	60	17	2	6	9	3	77
Ghana	7,429	77	7	9	1	3	3	84
Haiti	7,915	71	11	5	1	7	4	82
Kazakhstan	6,140	69	0	4	20	5	2	69
Kyrgyzstan	1,718	81	4	3	4	6	2	85
Malawi	8,065	83	2	9	3	1	2	85
Mexico	11,432	78	5	6	1	6	3	84
Namibia	5,114	72	11	5	3	5	4	82
Peru	14,056	87	5	2	2	4	1	92
Senegal	7,109	72	6	4	2	10	6	77
Southern Sudan*	12,958	60	18	3	1	7	2	78
Tajikistan	2,073	78	5	5	6	5	2	83
Turkmenistan	1,288	79	5	5	6	5	1	84
Uzbekistan	6,326	72	7	7	6	6	2	79
Average Tier 2	**128,117**	**71**	**8**	**5**	**4**	**7**	**4**	**79**
	(total)							
Average All Countries	**1,691,798**	**71**	**9**	**5**	**3**	**6**	**4**	**80**
	(total)							

*Data reflect national figures.
Source: Data are from the dataset used to produce the publication *Global Tuberculosis Control: A Short Update to the 2009 Report.*
Percentages are rounded.

Definitions:

Cured: A patient who was initially sputum smear-positive and who was sputum smear-negative in the last month of treatment and on at least one previous occasion.
Completed: A patient who completed treatment but did not meet the criteria for cure or failure.
Died: A patient who died from any cause during treatment.
Failed: A patient who was initially sputum smear-positive and who remained sputum smear-positive at month five or later during treatment.
Defaulted: A patient whose treatment was interrupted for two consecutive months or more.
Transferred out: A patient who transferred to another reporting unit and for whom the treatment outcome is not known.
Not evaluated: A patient for whom the outcome was not reported.
Successfully treated: A patient who was cured or who completed treatment.

Annex D: Total Number of New MDR-TB Patients Initiated on Treatment in 2008

Focus Countries	Total Reported on Treatment, 2008
Focus Countries Tier 1	
Afghanistan	0
Bangladesh	98
Brazil	363
Cambodia	57
DR Congo	202
Ethiopia	43
India	30
Indonesia	0
Kenya	0
Mozambique	0
Nigeria	0
Pakistan	0
Philippines	520
Russia	1,423
South Africa	4,031
Tanzania	0
Uganda	
Ukraine	
Zambia	0
Zimbabwe	0
Total Tier 1	**6,767**

Focus Countries	Total Reported on Treatment, 2008
Focus Countries Tier 2	
Angola	
Armenia	88
Azerbaijan	80
Belarus	0
Bolivia	18
Djibouti	0
Dominican Republic	71
Georgia	481
Ghana	0
Haiti	27
Kazakhstan	2,714
Kyrgyzstan	
Malawi	0
Mexico	60
Namibia	278
Peru	1,120
Senegal	
Southern Sudan	0
Tajikistan	
Turkmenistan	
Uzbekistan	
Total Tier 2	**4,937**
Total (Tier 1 + Tier 2)	**11,704**

Notes: Reported number of MDR-TB patient treatments includes both GLC and non-GLC projects. Countries shaded grey had no data available for 2008.
This Annex presents data that was confirmed as of July 2010.

Source: Data provided by USAID country Missions and GLC Secretariat, WHO, Geneva.

Annex E: USAID FY 2009 Tuberculosis Budget

TB Program (* = Tier 1 Focus Countries)	FY 2009 ($)	Direct Patient Services	Direct Patient Services (percentage)	Governance, Finance, Strategic Information	Research	Programs Support
Afghanistan*	5,234,000	4,734,000	90.4%	-	-	500,000
Armenia	600,000	100,000	16.7%	500,000	-	-
Azerbaijan	496,000	446,400	90%	49,600	-	-
Bangladesh*	5,000,000	2,604,600	52.1%	936,800	1,322,600	136,000
Belarus	240,000	-	-	240,000	-	-
Bolivia	1,226,000	1,026,000	83.7%	100,000	-	100,000
Brazil*	3,500,000	2,400,671	68.5%	-	710,000	389,329
Cambodia*	3,868,000	2,188,167	56.6%	800,000	600,000	279,833
Democratic Republic of the Congo*	4,485,000	3,998,000	89.1%	200,000	-	287,000
Djibouti	250,000	140,000	56%	75,000	-	35,000
Dominican Republic	1,289,000	875,700	67.9%	375,300	-	38,000
Ethiopia*	5,000,000	4,275,000	85.5%	350,000	-	375,000
Georgia	900,000	857,500	95.3%	-	17,500	25,000
Ghana	595,000	500,000	84%	39,000	-	56,000
Haiti	1,289,000	1,089,000	84.5%	150,000	-	50,000
India*	10,000,000	8,560,000	85.6%	-	1,100,000	340,000
Indonesia*	10,000,000	8,135,889	81.4%	1,103,927	450,000	310,184
Kazakhstan	1,514,000	1,037,878	68.6%	306,122	-	170,000
Kenya*	2,876,000	2,500,000	86.9%	376,000	-	-
Kyrgyzstan	1,441,000	895,500	62.1%	383,500	-	162,000
Liberia	400,000	376,000	94%	-	-	24,000
Malawi	1,389,000	1,193,401	85.9%	-	157,599	38,000
Mexico	700,000	700,000	100%	-	-	-
Mozambique*	2,973,000	1,573,000	52.9%	1,200,000	-	200,000
Namibia	1,934,000	1,400,000	72.4%	-	280,000	254,000

TB Program (* = Tier 1 Focus Countries)	FY 2009 ($)	Direct Patient Services	Direct Patient Services (percentage)	Governance, Finance, Strategic Information	Research	Programs Support
Nigeria*	5,045,000	4,045,000	80.2%	1,000,000	-	-
Pakistan*	4,468,000	1,500,000	33.6%	2,810,000	-	158,000
Peru	595,000	345,000	58%	200,000	-	50,000
Philippines*	5,455,000	3,967,650	72.7%	1,348,202	60,000	79,148
Russia*	8,567,000	7,298,263	85.2%	465,237	-	803,618
Senegal	843,000	693,000	82.2%	150,000	-	-
South Africa*	10,000,000	8,500,000	85%	700,000	800,000	-
Southern Sudan	595,000	512,000	86.1%	-	-	83,000
Tajikistan	1,405,000	970,500	69.1%	303,500	-	131,000
Tanzania*	2,478,000	2,145,000	86.6%	60,000	118,000	155,000
Turkmenistan	785,000	317,000	40.4%	293,000	-	175,000
Uganda*	2,182,000	1,785,000	81.9%	-	265,000	132,000
Ukraine*	2,491,000	2,052,561	82.4%	-	-	438,439
Uzbekistan	1,455,000	795,500	54.7%	318,500	-	341,000
Zambia*	3,075,000	2,900,000	94.3%	100,000	-	75,000
Zimbabwe*	1,587,000	1,587,000	100%	-	-	-
USAID Africa Regional (AFR)	2,577,000	2,063,498	80.1%	270,002	-	243,500
USAID East Africa Regional	1,785,000	1,482,700	83.1%	-	-	302,300
USAID Eurasia Regional	1,635,000	1,587,000	97.1%	-	-	48,000
USAID Global Health (GH)	30,500,000	16,307,000	53.5%	2,921,165	9,424,000	1,847,835
USAID Latin America and Caribbean Regional	808,000	303,000	37.5%	315,000	-	190,000
USAID Regional Development Mission-Asia	5,753,000	4,831,838	84%	376,700	130,246	414,216
USAID South America Regional	300,000	-	-	300,000	-	-
Global Health/International Partnerships – Global Drug Facility	15,000,000	15,000,000	100%	-	-	-
Total	**176,583,000**	**132,595,216**	**75.1%**	**19,116,555**	**15,434,945**	**9,436,402**

Cover photo
A 7-year-old TB patient enjoys a book in a hospital in South Africa.

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