

# TB CAP Final Report 2005-2010





The 8 partners which together make TBCTA, the coalition which implemented TB CAP



CENTERS FOR DISEASI







International Union Against Tuberculosis and Lung Disease Health solutions for the poor







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Front Cover: TB Patient - Nigeria Back Cover: Kids with TB Message - Namibia

### Abbreviations

ACSM	Advocacy Communication Social Mobilization	MIS	Management Information System
AFB	Acid Fast Bacilli	M&E	Monitoring and Evaluation
ART	Anti-retroviral Therapy	MoH	Ministry of Health
ATS	American Thoracic Society	MoHSS	Ministry of Health and Social Security
BSL	Biosafety Level	MOST	Management and Organizational Sustainability Tool
BHC	Basic Health Center	MRC	Medical Research Council
BRAC	Bangladesh Rural Advancement Committee	MSH	Management Sciences for Health
BPHS	Basic Package of Health Services	Mth	Munugement ociences for ricultin Mycobacterium Tuberculosis
CAR	Central Asian Benublics	MTRC	Mycobacterium Tuberculosis Mycobacterium Tuberculosis Compley
2HJ	Community Health Supervisor		Namibia Business Coalition Against AIDS
CHW	Community Health Worker	NACOR	National AIDS Coordination Program
CPT	Cotrimovazale Preventive Therapy	NACOD	National AIDS Control Program
	Community Record DOTS		National AIDS CONTINUE Flogram
	Community Based Organizations	NAF	National ADS Program
CDU	Community Dased Organizations		National Coordinating Committee
	Contara for Diagona Control and Provention		Non-governmental Organization
		NIDCH	National Institute of Diseases of the Chest and Hospital
		NRL	National Reference Laboratory
	Culture and Drug Susceptibility lesting	NSA	National Situation Analysis
	National Center for Tuberculosis and Leprosy Control	NIBLCP	National TB and Leprosy Control Program
LOE	Center of Excellence	NTRL	National TB Reference Laboratory
CSCP	Community Sputum Collection Points	NTLP	National TB and Leprosy Program
DJCC	Directors Joint Consultative Committee	NTP	National TB Program
DTCL	District TB and Leprosy Coordinator	PEPFAR	President's Emergency Program for AIDS Relief
DoH	Department of Health	PICT	Provider Initiated Counseling and Testing
DOT	Directly Observed Treatment	PIH	Partners in Health
DOTS	Directly Observed Treatment Short Course	PLHIV	People Living with HIV/AIDS
DR	Drug Resistance	PMU	Program Management Unit
DRS	Drug Resistance Survey	PMDT	Programmatic Management of Drug Resistant TB
DST	Drug Susceptibility Testing	PP	Private Practitioner
ECSA	East, Central and Southern Africa	PPM	Private-Public Mix
EP	Extra Pulmonary	PPP	Public-Private Partnership
EQA	External Quality Assurance	PSM	Procurement and Supply Management
FIND	Foundation for Innovative New Diagnostics	PTP	Provincial TB Program
FLD	First Line Drugs	QA	Quality Assurance
GDF	Global Drug Facility	ReTRAC	Gadjah Mada (Regional Training Institute Asia)
GF	Global Fund	SNRL	Supra National Reference Laboratory
GFATM	Global Fund for AIDS, Tuberculosis and Malaria	SLD	Second Line Drugs
GLC	Green Light Committee	SLDST	Second-Line Drug Susceptibility Testing
HBC	High Burden Countries	SOP	Standard Operating Procedures
HCW	Health Care Worker	SS+	Sputum Smear positive
HEW	Health Extension Worker	SS-	Sputum Smear negative
HRD	Human Resource Development	STB	Ston TB
IC	Infection Control	STTA	Short Term Technical Assistance
ICF	Intensified Case Finding	ТА	Technical Assistance
IEC	Information, Education and Communication	TB	Tuberculosis
IMAI	Integrated Management of Adolescent and Adult Illness	TB CAP	Tuberculosis Control Assistance Program
IPLS	Integrated Pharmaceutical logistics System	TBCTA	Tuberculosis Coalition for Technical Assistance
IPT	Isoniazid Preventive Therany	TB-IC	Tuberculosis Infection Control
IR	Intermediate Besult	TB TEAM	The TR Technical Assistance Mechanism
חדפו	International Standards of TB Care	TOT	Training of Trainor(c)
ΙΛΤΛ	Janan Anti-Tuberculosis Association		Tractment Success Pate
	Japan Anti-Tuberculosis Association	I ON LICH	Indulient Success hale
	KNCV Tuboroulogic Foundation		Cadiah Mada University
	Line Drohe Assey		Gaujan Maua Oniversity
	Line Live Assay	02AID	United States Agency for International Development
	Light Einitting Dioue		
	IVIUSE AL-RISK FEISUIIS Multidrug Desistence	VAAU	viet ivam Administration of HIV/AIDS Control
ועוטה אחם דם	wuitidrug nesistance	VUHW	volunteer Community Health Worker
	iviuitidrug-nesistant luderculosis	WHU	vvorld Health Urganization
ווטועו	iviycodacteria Growth Indicator Tube	XDR-IR	Extensively Drug Resistant Tuberculosis

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#### Introduction

This is the final report of the Tuberculosis Control Assistance Program (TB CAP) implemented by the Tuberculosis Coalition for Technical Assistance (TBCTA). TBCTA consists of the following eight organizations: KNCV Tuberculosis Foundation (Prime Contractor), the American Thoracic Society (ATS), Centers for Disease Control and Prevention (CDC), FHI 360, The International Union Against Tuberculosis and Lung Disease (The Union), the Japan Anti-Tuberculosis Association (JATA), Management Sciences for Health (MSH) and the World Health Organization (WHO). TB CAP collaborated closely with the Stop TB Partnership and several other national and international public health organizations. This report provides an overview of TB CAP's activities and accomplishments during its five-year implementation period, October 1, 2005 to September 30, 2010. Information on core-funded, regional and country projects is provided.

TB CAP expanded its technical and geographic portfolios during its period of performance. Starting with ten countries in 2005, TB CAP interventions expanded to 25 countries by 2010, covering a combined population of more than 1 billion people. The total budget increased from \$8 million in the first year to over \$50 million in the fifth and final year.

#### **Overall Performance**

TB CAP focused on five measurable outcomes to be met by the end of five years:

- 90% of public clinics are implementing DOTS
- At least 70% case detection rate
- At least 85% treatment success and/or cure rate
- 75% of countries meeting MDR-TB quality standards as defined by TB CAP
  100% of countries where noticewide TB and HIV program are effectively.
- 100% of countries where nationwide TB and HIV program are effectively coordinated

TB CAP achieved and exceeded two of its five expected outcomes in its fifth year. The percentage of public sector clinics implementing the Directly Observed Treatment Short Course (DOTS) strategy reached 94% in the 23 TB CAP countries and the Treatment Success Rate (TSR) reached the 85% target level. However, the Case Detection Rate (CDR) reached 56% and remains short of the 70% target. The most impressive achievement was in the number of countries meeting the three Multidrug-Resistant Tuberculosis (MDR-TB) quality standards. TB CAP started with a baseline of only one country in Year 1, which had increased to 17 countries (74%) by its final year, thus almost achieving the 75% target. TB CAP also made notable progress in effective TB/HIV program coordination. The program started with a baseline of zero countries in Year 1, which increased to 17 countries (74%) by its final year.

At the end of the program four countries (17%) (Kenya, Mexico, Namibia and Zambia) had achieved all five measurable outcome targets, nine countries (39%) achieved four and 18 countries (78%) achieved three.

#### Main Achievements of the Past 5 Years

TB CAP contributed to the **notification of 4.2 million smear-positive cases** in 23 countries during the period 2005-2010. During the last three years of implementation in the 23 program countries, TB CAP's contribution exceeded 900,000 cases per year. The program began with a 2005 baseline smear- positive CDR of 55% in six countries and reached 62% in 2010 in 23 countries. TB CAP's investments in laboratory strengthening through training, renovation and the provision of equipment and supplies contributed considerably to the increase.

TB CAP contributed to the successful **treatment of 2.8 million cases** in 23 countries during 2005-2009. TB CAP started with a 2005 baseline TSR of 77% in six countries, reaching 85% in 2008 and maintained this level in 2009 in 23 program countries. In 2005 only one out of six countries (17%) met the 85% TSR, whilst in 2009 11 out of 23 countries (48%) reached or exceeded the 85% target rate.

#### **Global Projects**

TB CAP implemented **137 core-funded projects** during the five-year program period, all of which were global in nature. They directly contributed to changes in global policies, development of standards, guidelines (several of these standards and guidelines have been adopted by the Global Fund (GF) for use in its applications), tools, international trainings, forums, conferences and meetings.

TB CAP developed **57 tools, guidelines, handbooks, training curricula and global reports** during the five years using core funds (Table 1). These products address the following seven technical areas:

- 1. Universal and Early Access;
- 2. Health Systems Strengthening (HSS);
- 3. Infection Control (IC);
- 4. Laboratories;
- 5. Monitoring and Evaluation (M&E);
- 6. Programmatic Management of Drug Resistant TB (PMDT);
- 7. TB/HIV Collaborative Activities.

The core investments have led to changes in countries beyond TB CAP. Firstly, both TB CAP countries and other countries not benefiting from TB CAP's direct assistance have started to adapt, adopt and translate many of the tools and guidelines, thus aligning their national TB control programs with global policies. Secondly, TB CAP has used both core and Mission funding through buy-ins to test, revise, fine-tune and adapt the tools and guidelines in different geographic settings. This has led to a further improvement in global policies and also in country implementation of TB control.

### **TB CAP Tools**

#### Table 1: TB CAP Toolbox

Title	Area	Туре
International Standards for Tuberculosis Care (ISTC)	Access	Guideline
ISTC Handbook	Access	Handbook
ISTC Training Modules and Facilitator Modules	Access	Guideline
Patients' Charter	Access	Guideline
Improving the Diagnosis and Treatment of Smear- negative TB	Access	Guideline
Guidelines for Control of Tuberculosis in Prisons	Access	Guideline
Practical Guide to Improve Quality TB Patient Care	Access	Guideline
Quality Assurance of Chest Radiography	Access	Handbook
Quality Improvement of Chest Radiography Reading	Access	Handbook
Implementing the WHO STOP TB Strategy for NTPs	Access	Handbook
TOMAN'S Tuberculosis Case Detection, Treatment and Monitoring	Access	Handbook
Guide to Engage Social Security Organizations	Access	Report
Guidance on TB and TB/HIV Care and Control in Workplaces	Access	Report
An Update about the Role of Women in Tuberculosis	Access	Report
A Tool for National Situation Assessment	Access	Tool
QUOTE TB: Measuring the Quality of TB Service	Access	Tool
QUOTE TB LIGHT	Access	Tool
Patient-Centered Approach Package	Access	Tool
Manual on Measuring Provider Contributions	Access	Tool
PPM Toolbox	Access	Tool
Scaling Up PPM: Lessons from Global Fund TB Grants	Access	Report
Guidelines for Purchasing Lab Products	Laboratories	Guideline
Standard Operating Procedures (SOPs)	Laboratories	Tool
Management Information System (MIS)	Laboratories	Tool
Logistics/Supply Management Tool	Laboratories	Tool
External Quality Assurance Package (EQA)	Laboratories	Tool
Culture & DST Package	Laboratories	Tool
A Roadmap for Laboratory Strengthening	Laboratories	Tool
A Training Package and a Manual on Bio-safety for Laboratories	Laboratories	Curriculum

### Laboratory Tools

TB CAP Toolbox

Title	Area	Туре
Guidelines to Develop TB Nursing Curriculum for LAC Region	HSS	Guideline
Planning the Development of Human Resources for Health	HSS	Handbook
The Uses of Mapping Software in Tuberculosis Control Programs	HSS	Report
Proceedings of HRD Platform Meeting The Hague 2008	HSS	Report
Proceedings of HRD Platform Meeting The Hague 2009	HSS	Report
The Platform HRD Lessons Learnt	HSS	Report
TB Literacy Toolkit	HSS	Tool
Practical Steps for Engaging Hospitals in TB Care and Control	HSS	Tool
The Management and Organizational Sustainability Tool (MOST)	HSS	Tool
Tool to Estimate Patients Costs	HSS	Tool
Planning and Budgeting Tool	HSS	Tool
Updated Facility Level Training Modules	HSS	Curriculum
TB-IC M&E Operations Research Templates	IC	Guideline
Simplified Checklist for IC Targeting Community Workers	IC	Guideline
Essential Actions for Effective TB-IC Safety Without Stigma	IC	Guideline
Implementing the WHO Policy on TB Infection Control	IC	Guideline
Manual for TB Specific DQA Tool	M&E	Guideline
A Guide for Integrating HIV Testing in MDR Surveillance	PMDT	Guideline
Engaging CBOs in TB/HIV Collaborative Activities	TB/HIV	Guideline
Guidance for Management of TB in HIV-infected Children	TB/HIV	Guideline
Pediatric Guideline	TB/HIV	Guideline
SOPs for Implementation of TB Activities at HIV/AIDS Service Delivery Sites	TB/HIV	Guideline
Lessons Learned in Scaling Up TB/HIV Collaborative Activities	TB/HIV	Report
Implementation of Collaborative TB/HIV Activities Through PPM	TB/HIV	Report
A Review of Country Level TB/HIV M&E Systems	TB/HIV	Report
Best Practices Manual for TB/HIV Services Integration	TB/HIV	Report
Revised Recording and Reporting System for TB/HIV	TB/HIV	Tool

See Annex pages 104-114 for detailed descriptions of all the tools

TB CAP TOOLBOX

### **5** Intermediate Results

TB CAP worked to achieve its objectives by focusing on five key intermediate results (IRs), each of which has specific outputs. These IR's are;

- **IR1: Increased political commitment to DOTS**
- **IR2: Strengthened and expanded DOTS programs**

IR3: Increased public and private sector DOTS participation and collaboration IR4: Increased and strengthened TB and HIV/AIDS coordinated activities IR5: Improved human and institutional capacity

TB CAP adopted a two-step integrated approach for addressing all five Intermediate Results (IRs) mentioned above. The first step was to integrate core and regional project initiatives with country work. As stated above, core-funded tools, guidelines, etc. were developed and tested in collaboration with countries. A closer look at Table 1 reveals that TB CAP developed products addressing all five IR areas. The second step was to develop TB CAP country work plans integrating all five IRs. TB CAP ensured that country work plans addressed each and every IR, by systematically identifying the gaps and designing activities to address at least one predefined output under each IR.

#### **Regional Projects:**

TB CAP implemented **regional projects** in Africa, Central Asian Republics (CAR) and Eastern Europe. The projects achieved the following notable results, especially in the areas of PMDT and IC.

**Africa Region** - Establishment of a PMDT Center of Excellence (CoE) in East Africa: TB CAP recognized the urgent need for a center that can provide examples of best practices in PMDT in the African environment, including addressing the overlapping HIV and TB epidemics and particularly in terms of establishing standardized diagnostic practices, treatment protocols and IC policies. Significant progress was made towards this goal. A CoE was established in Rwanda which has started functioning as a training center for surrounding countries. The CoE will provide followup on-the-job training in the supported areas/countries.

Africa Region - Establishment of a New TB Supranational Reference Laboratory (SNRL) in East Africa: TB CAP implemented a three-year project to create a new SNRL in East Africa. TB CAP partners provided assistance to the national laboratories in Tanzania and Uganda to ensure that both are staffed with well-trained and competent personnel, quality management systems are in place and microscopy network systems are optimized, including a functioning external quality system. It is expected that the Uganda national laboratory will achieve SNRL status in the near future.

Africa Region - ECSA: TB CAP supported the East, Central and Southern Africa Health Community (ECSA) secretariat to raise awareness on MDR-TB within the 14 ECSA member states.

**CAR** - Improvement of MDR-TB Case Management in Five CAR Countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan): TB CAP assisted these countries to strengthen case management through the development of Standard Operating Procedures (SOPs), training and mentoring. The project also developed a support system for MDR-TB patients on treatment to ensure adherence to treatment. As of the end of TB CAP, a total of 228 MDR-TB patients have been enrolled for treatment in year one, with no drop-outs and very few side effects.

**Eastern Europe** - TB-IC Country Workshops in the Eastern Europe Region: TB CAP supported the scale-up of TB-IC in the Eastern Europe and Central Asian regions. 60 health care personnel in total were trained from 10 countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Uzbekistan).

#### **Country Projects:**

TB CAP invested over 85% of project funds in **country** activities. Selected highlights from country work can be seen on pages 8 & 9. Detailed information on country activities and achievements can be found in the country section of this report.

In 2005, TB CAP had a baseline of average 75% of public clinics in six countries were implementing DOTS. Out of these six countries only two countries where 100% public clinics were implementing the DOTS strategy. In 2010, 100% public clinics were implementing the DOTS strategy in 14 out of 23 TB CAP countries (61%).

TB CAP helped all 23 countries to prepare national plans and budgets using its **Planning and Budgeting Tool**. The Tool has been used as the basis for resource mobilization efforts at the national level and, most importantly, in the context of Global Fund applications.

TB CAP resources were used to successfully **leverage significant funding for TB control** in many countries. The project has continuously assisted National TB Programs (NTP) with Global Fund proposal development, grant negotiations and implementation. TB CAP not only assisted NTPs by ensuring quality implementation of Global Fund activities but also helped countries where Global Fund activities had been suspended.

Rather than focusing on the isolated treatment of MDR-TB patients, TB CAP adopted PMDT. As a first step, TB CAP assisted NTPs in the development and where appropriate adapt a national MDR-TB policy and related guidelines, thus ensuring political will. Subsequently, TB CAP invested in improving laboratory services, including national surveillance systems and, where appropriate, Drug Resistance Surveys (DRS). As of end of 2010, TB CAP assistance had led to the adoption of this programmatic approach by NTPs in 17 of 23 (74%) project countries. TB CAP also assisted countries to put MDR-TB patients on treatment. In 2009 alone, a total of **2,020 MDR-TB patients were put on treatment** covering 12% of the estimated 17,000 MDR-TB cases in the 12 countries where TB CAP had invested in PMDT. These figures are expected to increase rapidly in the next few years due to the time lag between the interventions and expected results, which is quite lengthy when establishing PMDT.

TB CAP's investment in **External Quality Assurance** (EQA) in laboratories has paid off. There is a remarkable increase in participating laboratories performing TB microscopy with over 95% correct microscopy results **from 33% in 2005 to 83% in 2010**.

TB CAP supported **23 countries in TB-IC implementation** through the development of guidelines and scale-up plans, integration of TB-IC into national strategic plans and other programs, and the organization of TB-IC training.

TB CAP implemented **Community-based DOTS** programs in nine countries covering over 32 million people and where a total of 9,790 additional TB cases were detected.

In 2009 TB CAP countries reported that, on average, **64% of registered TB patients** were tested for HIV. This is significantly higher than the global average of 26%.

In addition to achieving the five measurable outcomes and the IRs, at the beginning of the project the United States Agency for International Development (USAID) communicated that it expected TB CAP to also achieve:

- Significant results attributable to TB CAP funds
- Timely response and quick start-up
- Scale-up of activities
- Sustainable approaches
- Timely and complete reporting
- Leveraging resources
- Collaborative approaches

The partners implementing TB CAP are confident that the project has met all of these expectations.



Sputum Collection Point - Malawi



WALA A TO KUTI TIPEWE BACHIRITSIKA P

ATSOGOLERI OSIYANASIYANA TIWONESETSE KUTI ONSE AMENE AKUTSOKONOLA MASABATA ATATU KAPENA KUPOSERA AFO ATUMIZIOWA KUCHIPATALA

Working in 25 countries, covering a combined population of more than 1 billion people

### **Country Work Highlights**

**Nigeria**: The percentage of TB patients tested and counseled for HIV increased from 10% in 2007 to 73% in 2009. 30% of TB patients were found to be co-infected, out of 20,429 TB patients counseled and tested. **South Sudan**: TB CAP trained clinicians on TB suspect identification, diagnosis, management and prevention. This contributed to an increase in case notification, with the number of TB cases (all forms) notified increasing from 2,701 in 2005 to 5,688 in 2009.

**Ghana**: TB CAP prepared and widely distributed SOPs for case detection, resulting in an increase in the number of TB case notifications from 12,964 in 2007 to 15,286 in 2009, an increase of 18%.

**DR Congo**: In the five TB CAP supported areas, case notification contribution went from 8% in 2005 to 19% in 2009.

**Uganda**: TB CAP's support to improve patient follow-up and recording led to an increase in the TSR from 17% in 2007 to 67% in 2009. HIV testing for TB patients increased from 43% in 2007 to 87% in 2010, and the use of cotrimoxazole preventive therapy (CPT) increased from 49% in 2007 to 95% in 2010.

Zambia: The case notification rate in new smear-positive TB cases in TB CAP-supported - - - - areas, increased from 43% in 2007 to 58% in 2009.

Namibia: TB CAP contributed greatly to the percentage of HIV patients being tested for TB, which rose from 16% in 2004 to 74% in 2009. The percentage of HIV positive TB patients put on cotrimoxazole rose from 0% to 78% during the same period.

**Zimbabwe**: In Midlands province there was a significant and sustained increase in the number of TB case notifications from 83 per 100,000 in 2008 to 195 per 100,000 in 2010. **Mozambique**: In 25 TB CAP supported districts, community volunteers referred 43,463 TB suspects to health facilities. 8,441 were diagnosed with TB over a three year period.

### **Djibouti**: The number of TB cases (all forms) detected increased from 3,095 in 2006 to 3,804 in 2009, representing a 23% increase.

#### Afghanistan:

Case notification in TB CAP provinces increased from 58 per 100,000 in 2007 to 95 per 100,000 in 2009.

**Bangladesh**: A total of 5,814 TB suspects were identified through TB CAP supported sputum collection centers, of which 221 were diagnosed as smear-positive. 3,950 most at-risk people were screened and 3,066 were tested for TB, of which 280 tested positive.

Vietnam: The project developed SOPs and training curricula for laboratory practice (smear, culture, identification, DST, preparation of reagents and lab safety) and guidelines for laboratory maintenance which are being used in laboratory development throughout the country, making the work safer and more accurate.

> **Cambodia**: HIV testing among TB patients increased from 13% in 2006 to 70% in 2009.

Indonesia: In TB CAP supported hospitals in four Java provinces case notification of smear-positive patients increased from 2,000 in 2006 to 8,400 in 2009, while the treatment success rates for the 2006 and 2008 patient cohorts treated in those hospitals showed an improvement from 58% to 72%. The default rate decreased from 28% in 2006 to 13% in 2009.

**Malawi**: In the TB CAP supported districts of Zomba and Mangochi, the in-patient TB death rate dropped from 17% in 2006 to 5% by April 2010.

**Kenya**: TB CAP supported private clinics notified 3,156 cases in 2009 accounting for 3% of the national case finding.

**Ethiopia**: In two TB CAP supported areas, case detection rates increased dramatically: in North Shoa from 23% in 2006 to 29% in 2009; and in East Shoa from 36% in 2006 to 52% in 2009.

### Background

TB CAP was USAID's chief five year mechanism contributing to the global targets for TB control. Its aim was to reach the following specific goals in the TB CAP countries in which there is a significant USAID investment:

- 90% of public clinics implementing DOTS
- At least 70% case detection rate
- At least 85% treatment success and/or cure rate
- 75% of countries meeting MDR-TB quality standards defined by TB CAP
- 100% of countries where nationwide TB and HIV program are effectively coordinated.

Table 2: Expected Outputs for Each TB CAP Intermediate Result

TB CAP achieved its objectives by focusing on five key intermediate results (IRs), each having specific outputs:

**IR1: Increased Political Commitment for DOTS** 

- **IR2: Strengthened and Expanded DOTS Programs**
- **IR3: Increased Public and Private Sector DOTS Participation and Collaboration**
- IR4: Increased and Strengthened TB and HIV/AIDS Coordinated Activities
- **IR5: Improved Human and Institutional Capacity**

IR 1	IR 2	IR 3	IR 4	IR 5
Sustained appropriate level of government funding Ensured political/legal framework	Strengthened TB program leadership and management Strengthened integration of DOTS services in general health services Improved diagnostic capacity: • Strengthened culture and DST • Strengthened sputum smear microscopy • Improved quality of chest x-ray diagnosis Improved prevention and management of MDR-TB Improved equitable access to quality TB care for vulnerable populations Scaled-up TB-IC measures at country level	In s Increased National TB Program coordination and collaboration with public and private sectors	In 4 Improved national policies and coordination between National TB and HIV programs Improved access of HIV positive TB patients to HIV services Improved access of persons living with HIV to TB services	Improved competence of staff at different levels of the health system Improved availability of staff of all categories involved in comprehensive TB control
	Strengthened community-based DOTS			



TB CAP developed a Monitoring and Evaluation (M&E) Framework to monitor and measure the overall success of the project. Selected indicators were measured annually in all countries where TB CAP had a significant investment, which was defined as at least \$300,000 in annual funding over at least two years.

Although TB CAP started with 9 countries in Year 1, only six (DR Congo, Indonesia, Mozambique, Namibia, South Sudan and Zambia) met the definition above and were included in the M&E Framework for annual indicator measurements. Table 2 shows which additional countries were added during each year of TB CAP making 23 countries in total.

Table 3: TB CAP Countries:

Year	Countries
Year 1	DR Congo, Indonesia, Mozambique, Namibia, South Sudan, Zambia
Year 2	+ Cambodia, Djibouti, Malawi, South Africa, Uganda
Year 3	+ Ethiopia, Ghana, Nigeria, Vietnam
Year 4	+ Afghanistan, Bangladesh, Botswana, Pakistan, Zimbabwe, Dominican Republic, Kenya, Mexico

Data collection was conducted by TB CAP in September of each year, with the final annual indicator measurements undertaken in each of TB CAP's 23 countries in September 2010. Annual data collection was implemented using a standardized tool. TB CAP partners were encouraged to work with NTPs to complete the data collection

Figure 1: Percentage of Public Clinics Implementing DOTS Strategy Since 2005

### Measuring the Performance of TB CAP

exercise and provide results to the TB CAP M&E Officer every October. Data collection mainly involved a desk review of existing NTP data and it did not require additional fieldwork. In addition to the NTP, data was obtained from WHO Annual Reports. The data was then compiled, cross-checked, cleaned and validated in consultation with TB CAP country office staff.

#### **Outcome Level Results**

At the outcome level, TB CAP monitored the following indicators:

- 1. Percent of public sector clinics implementing DOTS strategy
- 2. Case detection rate (smear-positive cases)
- 3. Treatment success rate (new smear-positive cases)
- 4. Percent of countries meeting MDR-TB quality standards defined by TB CAP
- 5. Percent of countries where nationwide TB and HIV programs effectively coordinated

The following section describes TB CAP's achievements as regards the five outcome level results.

### 1. Percentage of Public Sector Clinics Implementing DOTS Strategy

The target of having 90% of public sectors clinics in TB CAP countries implementing DOTS was reached in 2010, as shown in the Figure 1. TB CAP started with a baseline of 75% in 2005 and reached 94% in 2010. 100% of public sector clinics were implementing the DOTS strategy in 14 TB CAP countries. The level was as low as 32% in South Sudan and 64% in Afghanistan, countries heavily affected by war and unrest.



### **Case Detection/Treatment Success Rates**

#### 2. Case Detection Rate (smear-positive cases)

TB CAP started with a baseline Case Detection Rate (CDR) of 55% in six countries and reached 62% in Year 4 (23 project countries). As the 2010 WHO report no longer includes estimates of the CDR for smear-positive TB, the results from the final year of TB CAP are based on all forms of case detection and therefore show only a slight increase (Figure 2), from 52% in 2005 to 56% in 2010. The target of a 70% CDR was therefore not achieved.

#### Figure 2: Case Detection Rates in TB CAP Countries



#### 3. Treatment Success Rate (new ss+)

TB CAP started with a baseline Treatment Success Rate (TSR) of 77% in six countries, reached 85% in 2008 in 23 countries and maintained this level in 2009. Figure 3 shows the improving trend in TB CAP's 23 countries. The target of 85% TSR was achieved.





### **Overall Treatment Success Rates**

Figure 4 combines the CDR and TSR indicator results providing a view of each country's performance. Of the 23 TB CAP countries, four (Kenya, Mexico, Pakistan and Zambia) achieved the 70% CDR and 85% TSR targets. The most striking finding is that only 30% of the countries reached or exceeded 70% CDR, while 48% of the countries reached the 85% TSR. During the period 2005-2010, Cambodia, Djibouti, Kenya, Indonesia and South Sudan made significant achievements in both the CDR and the TSR. For example, Indonesia increased the CDR from 39% to 67% in five years whilst also increasing the TSR from 87% to 91% during the same period. Similarly, Kenya increased the CDR from 49% to 85% whilst increasing the TSR from 80% to 85%. See the individual country reports pages 44 to 99 for detailed information on

TB CAP's activities and results. TB CAP's investments in laboratory strengthening through training, renovations and the provision of equipment and supplies in those countries, contributed considerably to the gains in the CDR, but increased efforts are still needed to push the majority of the countries towards higher CDRs. Similarly, TB CAP's investments in DOTS training, developing and the updating of national treatment guidelines and related training, supportive supervision at all levels, technical and financial assistance to improve drug supplies and management have all contributed to increases in the TSR in every country.

Figure 4: Overall Treatment Success Rates in TB CAP Countries



Treatment Success Rate (2009)

### **MDR-TB & TB/HIV Program Coordination**

#### 4. Percentage of countries meeting MDR-TB quality standards

TB CAP had three MDR-TB quality standards to be met by all countries:

- A. Political Will
- B. A surveillance system is in place or Drug Resistance Survey (DRS) is conducted
- C. At least one laboratory in the public sector is performing culture and drug susceptibility testing (C/DST)

Political will is measured by whether there is an officially approved national MDR-TB policy document or guidelines. Table 4 shows that TB CAP made significant progress in this outcome area. From Year 1 to Year 5, TB CAP countries demonstrated sustained improvement. One country (Zambia) achieved all three standards in 2005 and by 2010, 17 countries (74%) had met all three standards.

#### Table 4: TB CAP countries meeting all three MDR-TB quality standards

Year	Number of Countries	Countries Meeting all Three Standards			
2005	1	Zambia			
2006	3	Cambodia, South Africa, Zambia			
2007	7	Cambodia, Ethiopia, Ghana, Mozambique, South Africa, Vietnam, Zambia			
2008	12	Botswana, Cambodia, Dominican Republic, Ethiopia, Ghana, Kenya, Mexico, Mozambique, Namibia, South Africa, Vietnam, Zambia			
2009	15	Botswana, Cambodia, Dominican Republic, Ethiopia, Ghana, Indonesia, Kenya, Malawi, Mexico, Mozambique, Namibia, Nigeria, South Africa, Vietnam, Zambia			
2010	17	Bangladesh, Botswana, Cambodia, Dominican Republic, Ethiopia, Ghana, Indonesia, Kenya, Malawi, Mexico, Mozambique, Namibia, Nigeria, South Africa, Uganda, Vietnam, Zambia			

(It should be noted that in 2009 national DRS surveys were completed in Nigeria and Uganda and also in 2010 in Bangladesh hence these three countries were added to the list).

### 5. Percentage of Countries where nationwide TB and HIV programs are effectively coordinated

To measure the effectiveness of coordination between TB and HIV programs, TB CAP identified four standards which TB CAP countries were expected to meet:

- A. TB/HIV is reflected in both TB and HIV/AIDS strategic plans
- B. Annual work plans are available for TB/HIV, both in TB and HIV/AIDS programs
- C. A coordinating body is in place
- D. A nationwide reporting system for TB/HIV is in place

Ensuring effective coordination of TB and HIV programs was one of the major challenges faced by TB CAP. Table 5 shows that there was no progress in the first two years of the project. In 2007 two countries achieved the standard and by 2009 an additional eight countries did so as well. By 2010, 17 countries (74%) had met all four standards. The standard most frequently lacking was the availability of a nationwide reporting system for TB/HIV. Three countries (Djibouti, Indonesia and Pakistan), have as yet, been unable to meet this standard.

Year	Number of Countries	Countries Meeting all Four Standards			
2005	0	-			
2006	0	-			
2007	2	Uganda, Zambia			
2008	3	Kenya, Zambia, Uganda			
2009	11	Botswana, Ethiopia, Ghana, Kenya, Malawi, Mexico, Namibia, Nigeria, South Africa, Zambia, Uganda			
2010	17	Afghanistan, Botswana, Cambodia, Dominican Republic, Ethiopia, Ghana, Kenya, Malawi, Mexico, Mozambique Namibia, Nigeria, South Africa, South Sudan, Uganda, Zambia, Zimbabwe			

Table 5: TB CAP countries meeting TB/HIV effective program coordination standards

### **Overall Performance**

TB CAP focused on five measurable outcomes which were expected to be met at the end of five years. As Figure 5 illustrates, in its fifth year TB CAP reached and exceeded two of its five expected outcomes. The percent of public clinics implementing the DOTS strategy has reached 95% in the 23 TB CAP countries and whilst the Treatment Success Rate has reached the 85% target level, Case Detection Rate remains short of 70% target.

The most impressive achievement was in the number of countries meeting three MDR-TB quality standards. TB CAP started with a baseline of only one country (17%) and has reached 17 countries (74%) in its final year. TB CAP also made notable progress in effective TB/HIV program coordination, this outcome still remains the most challenging area, with only 17 countries able to meet all four standards.

Figure 5: The Full Picture at the Outcome Level



### The Full Picture

Table 6 provides detailed results for each of TB CAP's 23 countries at the end of the project in 2010. Note that 2009 data is used in the table for the CDR and the TSR because 2010 CDR data will not be published by WHO until October 2011 and 2010 TSR data will not be available until 2012.

Table 6: The full picture at the outcome level by 23 countries in 2010

0tui	% Public Clinics	CDR (all forme) TSR	MDR TB/HIV	Number of Standards Met						
Countries	Strategy	(an forms) 2009	(2009)	Standards	Coordination	5	4	3	2	1
Kenya	100	85	86						$\checkmark$	$\checkmark$
Mexico	100	99	85	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Namibia	100	76	85			$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$
Zambia	100	80	86	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Cambodia	100	60	94			×			$\checkmark$	$\checkmark$
Ghana	100	31	87	$\checkmark$	$\checkmark$	×	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Malawi	100	49	88			×			$\checkmark$	$\checkmark$
Mozambique	96	46	86	$\checkmark$	$\checkmark$	×	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
South Africa	100	76	76			×			$\checkmark$	$\checkmark$
Bangladesh	100	44	92	$\checkmark$	×	×	×	$\checkmark$	$\checkmark$	$\checkmark$
Botswana	100	60	79			×	×	$\checkmark$	$\checkmark$	$\checkmark$
Dominican Republic	85	60	85	$\checkmark$	$\checkmark$	×	×	$\checkmark$	$\checkmark$	$\checkmark$
Ethiopia	93	50	84			×	×	$\checkmark$	$\checkmark$	$\checkmark$
Indonesia	96	67	91	$\checkmark$	$\mathbf{\times}$	×	×	$\checkmark$	$\checkmark$	$\checkmark$
Nigeria	91	19	84			×	×	$\checkmark$	$\checkmark$	$\checkmark$
Uganda	100	44	70	$\checkmark$	$\checkmark$	×	×	$\checkmark$	$\checkmark$	$\checkmark$
Pakistan	100	76	91	×	×	×	×	$\checkmark$	$\checkmark$	$\checkmark$
Vietnam	100	54	92	$\checkmark$	×	×	×	$\checkmark$	$\checkmark$	$\checkmark$
Afghanistan	64	49	87	×		×	×	×	$\checkmark$	$\checkmark$
Djibouti	100	71	79	×	×	×	×	$\mathbf{\times}$	$\checkmark$	$\checkmark$
DR Congo	93	46	87	×	×	×	×	×	$\checkmark$	
Zimbabwe	100	46	77	×		×	×	×	$\checkmark$	$\checkmark$
S. Sudan	32	52	75	×		×	×	×	×	
Percentage Meeting Targets	87%	30%	65%	74%	74%	13%	39%	78%	96%	100%

Between 2005 and 2009 almost 2.8 million cases have been successfully treated.

> STOP TB KIT Categories Land III

STOP TB KIT Categories I and III

STOP TB KIT

TB KIN

STOP TB KIT Categories Land III As seen in Table 6, four countries (17%; Kenya, Mexico, Namibia and Zambia) achieved all five outcome targets, while nine countries (39%) achieved four and 18 countries (78%) achieved three. The percentage of public sector clinics implementing the DOTS strategy is the outcome which the majority of countries (87%) reached,

whereas the CDR is the least achieved outcome, with only seven countries attaining the target in 2009.

Table 7 shows that over the years, all of TB CAP's efforts have contributed to the notification of almost 4.2 million smear-positive cases in the 23 countries.

Table 7: Number of smear-positive cases notified in 23 countries since 2005

Number Notified	2005	2006	2007	2008	2009	2010	Total
Year 1 countries	274,366	288,658	276,026	283,516	290,127	303,632	1,716,325
Year 2 countries		180,076	185,144	190,431	189,444	188,834	933,929
Year 3 countries			157,155	161,344	161,302	172,929	652,730
Year 4 countries				283,964	298,008	288,483	870,455
Total	274,366	468,734	618,325	919,255	938,881	953,878	4,173,439

Table 8: Number of smear-positive cases treated in 23 countries since 2005

Number Treated	2005	2006	2007	2008	2009	Total
Year 1 countries	240,604	257,566	243,503	252,100	278,752	1,272,525
Year 2 countries		136,480	142,025	148,084	155,475	582,065
Year 3 countries			123,843	126,630	143,848	394,321
Year 4 countries				249,446	280,106	529,552
Total	240,604	394,046	509,371	776,260	858,181	2,778,463



**Over 4.1 million smear-positive cases notified in 23 countries.** 

Sputum Slides Drying

### **5 Intermediate Result Achievements**

### **1: Increased Political Commitment for DOTS**

All 23 TB CAP countries have used the **Planning and Budgeting Tool**, and the completed plans and budgets have been used as the basis for resource mobilization efforts at the national level and, most importantly in the context of GF applications.

#### The TB CAP/WHO Planning and Budgeting Tool

The Planning and Budgeting Tool, developed by TB CAP, is based on the Global Plan to Stop TB (2006-2015) and the Stop TB Strategy. The Tool facilitates the development of comprehensive and detailed plans and budgets for TB control at all levels of the health system, overall and for each major component of the Stop TB Strategy. The Tool has instructions, including troubleshooting tips, frequently asked questions, the expected benefits of using the Tool and tips for using Excel. It has been translated into French, Spanish and Russian.

In addition to benefiting TB CAP countries, the Tool has become an important resource for non-TB CAP countries, their technical partners and donors. For example, it is routinely used to develop or refine plans and budgets, is an integral component of work plans at the country level and is used in the development of GF applications and by bilateral donors.

#### **Global Fund Support**

Throughout its five-year implementation, TB CAP provided important assistance to countries working with the GF. By supporting external consultants, TB CAP helped 16 countries develop proposals for GF Rounds 6, 7, 8 and 10. This assistance yielded exciting results, for example, DR Congo received \$8.5 million in Round 6, Cambodia \$7.6 million in Round 7 and Mozambique \$6.7 million in Round 7.

In addition to supporting ad hoc external consultancies, TB CAP's main impact has been continuous assistance to NTPs through its country offices. TB CAP country offices supported proposal development (e.g. in Cambodia, Djibouti, Ghana, Malawi, Mozambique, Namibia, South Sudan, etc.), grant negotiations and served on technical review panels at the country level. In Ghana, TB CAP successfully assisted the NTP in the preparation of a proposal to the GF which resulted in a grant of \$77 million over 5 years. This is a perfect example of how TB CAP resources successfully leveraged significant funding for TB control. In Ethiopia, TB CAP supported the Ministry of Health (MoH) to prepare a proposal for the GF Round 10, the goal of which is to enhance the Ministry's capacity to implement significantly scaled-up MDR-TB activities, specifically in diagnosis, treatment and procurement.

TB CAP has also been instrumental in grant implementation in many countries by complementing Global Fund activities with a focus on the quality of services. For example, in Vietnam TB CAP supported the GF by assisting the NTP to upgrade existing laboratories to Biosafety Level (BSL) 2, and the national and regional reference laboratories in Hanoi and Ho Chi Min City to enhanced BSL2 and moving to BSL3. In Pakistan, TB CAP supported the development of national infection control (IC) guidelines which complement the NTP's DOTS plus initiative funded by the GF. TB CAP also assisted countries where GF activities have been suspended. In Djibouti, during its suspension from funding, TB CAP helped the country avoid shortages of lab reagents, lab equipment, sputum containers and drugs. Due to the delay in commencing phase 2 of the GF Round 5 in Nigeria, TB CAP provided support for the implementation of GF activities, including capacity building of the principal recipient

on procurement and the supply management of TB medicines and commodities. (See the detailed country reports pages 44 to 99, for further information on this topic.)

#### **TB CAP Advocacy Toolkit**

The strategic goal of the Advocacy Toolkit is to increase awareness, knowledge and capacity for policy and advocacy activities by NTPs. The Advocacy Toolkit includes instructions which allow NTP managers, their staff and country partners to understand and use the range of tools and products available, and facilitate their integration into TB control advocacy activities. The Toolkit also provides detailed suggestions on how TB CAP partners can adapt and implement related activities, such as activities on public-private mix (PPM), integration of the ISTC or the Patients' Charter into national TB control policy, and appropriate use of the Planning and Budgeting Tool to educate policy makers.

The second expected output of TB CAP for IR1 was an "ensured political/legal framework". A formally adopted national TB policy is the essential first step in a TB control strategy and all 23 TB CAP countries have adopted a national TB policy. It should be noted that South Africa is an exception, although a formal TB policy has not been discussed and enacted by its Parliament, the country has a TB Strategic Plan for 2007-2011 as well as TB guidelines. Thus, TB CAP considers that the political framework exists and has been ensured in South Africa.

### 2: Strengthened and Expanded DOTS Programs

The nationwide expanded DOTS strategy is the core strategic approach to improve access to timely and quality-assured diagnosis and treatment. TB CAP worked in a wide range of technical areas that together lead to strengthened and expanded DOTS programs. The following sections provide information on the main achievements in each of these areas. Results have been achieved by strengthening management and leadership, improving laboratory systems, community-based DOTS and PMDT.

TB CAP identified the following expected outputs for this result area which are discussed in detail below:

- Strengthened TB program leadership and management
- · Strengthened integration of DOTS services into general health services
- Improved diagnostic capacity
  - » Strengthened culture and DST
  - » Strengthened sputum smear microscopy
  - » Improved quality of chest x-ray diagnosis
- Improved prevention and management of MDR-TB
- Improved equitable access to quality TB care for vulnerable populations
- Scaled-up TB-IC measures at country level
- Strengthened community-based DOTS

### **COUGHING FOR**

#### TB CAP's Support to the NTP in Ghana

Since its inception in 1994, the NTP made remarkable progress in increasing the TB case treatment success rate from 54% in 1995 to 86% in 2008. However, the same cannot be said with TB case detection, which was still hovering around 30%. TB CAP support was therefore tailored to provide systematic assistance to the NTP, to address this challenge. In order to ensure a standardized approach in increasing TB case detection across the country, TB CAP supported the NTP in developing a comprehensive five-year strategic plan (2009-2013) and standard operating procedures (SOPs) for TB case detection and TB-IC.

Recognizing the fact that there was a wide gap between estimated TB incidence (201/100,000 population) and the TB notification rate (64/100,000 population), sustained and unprecedented resources were urgently required. TB CAP assisted the NTP in the development of a technically sound Global Fund Round 10 TB Proposal. In December 2010, the Global Fund approved the Proposal to the tune of \$77.4 million over the next five years. Through this grant, innovative approaches and technologies will be introduced aimed at attaining universal access to TB care and treatment. This grant will also enable Ghana to reduce patient delays to TB diagnosis and treatment.

### TWO WEEKS OR MORE

### YOU MIGHT HAVE TB

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The Tuberculosis Coalition

for Technical Assistance

MANAGEMENT SCIENCES for HEALTH strengthening health programs worldwide

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### 2.1 Strengthened TB Program Leadership and Management

TB CAP country offices have made significant achievements in strengthening the capacity of NTP managers and enhancing technical leadership. In most instances TB CAP appointed technical chiefs of party, who had close - often day-to-day -contact with local managers on policy and managerial issues. Together with other long-term technical officers in different disciplines and posted in different areas of the country and combined with a range of country visits by short-term consultants, TB CAP strengthened NTPs. The following are specific country examples:

In Botswana, TB CAP posted three technical staff to the Ministry of Health (MoH) and the National TB Reference Laboratory (NTRL) to support capacity building and to accelerate the scale-up of community-based TB/HIV collaborative activities, MDR-TB management and TB-IC.

In Ethiopia, TB CAP conducted capacity building activities for Health Extension Workers (HEW) to enhance their involvement in TB prevention and control at the community level. HEWs were able to increase community awareness of TB, and engage community members in both TB suspect identification and contact tracing which resulted in significant improvements in TB case detection.

In Indonesia, TB CAP developed the capacity of health staff, laboratory technicians and TB and HIV program managers in provincial and district health offices to manage TB/HIV co-infection. It also supported non-governmental organizations (NGO) to scale-up intensified case finding. TB CAP developed TB/HIV training modules for TB and HIV staff, information, education and communication (IEC) materials for health providers and the general population, and a revised recording and reporting system to facilitate the incorporation of HIV information at TB sites.

In Mozambique, TB CAP focused on community-based DOTS (CB-DOTS) activities. This required the development of guidelines, including training materials and monitoring tools, and capacity building of NGOs responsible for the implementation of CB-DOTS. Due to the lack of labs performing smear microscopy in remote areas, TB CAP trained 115 nurses in sputum slide smear preparation and fixation. Despite the short implementation period, this intervention seems to be an excellent alternative complementing other approaches to community-based TB care.

In Nigeria, TB CAP supported the NTP in various capacity building workshops for national and State-level program managers and the private sector on provision of DOTS as well as TB/HIV services.

In South Sudan, as a part of the capacity building initiative, TB CAP supported five key NTP officials' participation in international training for TB and TB/HIV management and leadership as well as MDR-TB management.

TB CAP developed the MOST for TB which is designed to improve the management and leadership capacity of NTPs. The tool is used to identify priority managerial challenges in order to prepare a measurable action plan. As of the end of TB CAP, ten countries (Afghanistan, Bangladesh, Ethiopia, Ghana, Kenya, Mozambique, Namibia, Nigeria, Pakistan and Uganda) have used MOST for TB, representing 43% of the 23 TB CAP countries.

### 2.2 Strengthened Integration of DOTS Services in General Health Services

TB CAP countries have expanded case detection in other health programs and sectors, such as prisons and HIV/AIDS programs. Whereas in 2005 only one out of six countries met this indicator, in 2010 22 out of 23 countries (all countries except South Sudan) have expanded case detection into other programs and sectors (Figure 6). TB CAP has invested in interventions to enhance TB case finding. Examples include active screening in prisons in Cambodia and Indonesia, sputum collection points for most at-risk persons (MARPs) in Bangladesh, and case finding and management of TB and HIV in drug rehabilitation health facilities in Indonesia.

Figure 6: TB CAP Countries where NTPs have expanded case detection into other health programs



In Cambodia TB CAP initiated TB/HIV services in four prisons using a combination of active and passive case finding, and offering HIV testing to all those presenting with TB symptoms (see page 28).

In Indonesia, TB CAP provided technical assistance in drafting the National Guideline and Training Modules for DOTS in Prisons, a Policy and Strategic Plan for TB in Prison, several training modules, and supported training for more than 100 medical staff working in prisons.

In Bangladesh, TB CAP provided training to sex workers, people living with HIV/AIDS (PLHIV) and recovered drug users to be TB sputum collectors. This approach helped marginalized populations to better access health services. TB CAP has trained and employed sputum collectors at 42 centers throughout the country.

### 2.3 Improved Diagnostic Capacity

Enhanced diagnostic capability at all levels of the health system allows for faster case detection and reduced time lag in implementing treatment. TB CAP invested heavily in developing tools and guidelines, training and in the renovation and upgrades of both national and district-level diagnostic centers. All country projects have this result area included in their annual work plans. While the country reports section provides detailed information on TB CAP's ongoing efforts to improve diagnostic capacity, the sections below present results for several key indicators monitored by TB CAP.

#### The average population per laboratory performing TB microscopy

There are large differences amongst the 23 TB CAP countries regarding the average population per laboratory. According to 2010 data, the figure is as low as 37,000 per laboratory in Kenya to over 208,000 per laboratory in South Sudan. While there are big differences among countries, analysis reveals that 16 (70%) of the 23 TB CAP countries have made moderate to significant improvements in reducing the average

population per laboratory. In Mozambique and Zambia, for example, TB CAP assisted the NTP in training nurses on slide sputum microscopy and established new microlaboratories in selected districts. Other examples of results from countries are:

### The percentage of laboratories performing TB microscopy with over 95% correct microscopy results

TB CAP has been compiling External Quality Assurance (EQA) data from countries since 2005. There has been a steady increase in the number of countries providing EQA data over the years. In 2005 only two countries were able to report EQA data and by Year 5, 19 (83%) of the 23 TB CAP countries provided EQA data (Figure 7). EQA for smear examination remains a challenge in many countries and even if done, is not always countrywide. Countrywide EQA requires regular on-site evaluation of laboratories or a countrywide system for sending slides from the central laboratory to the peripheral sites for resource intensive blinded slide rechecking.

Table 9: The Average Population per Laboratory Performing TB Microscopy in Selected Countries

		Baseline	2010	Percentage Change
Country	Year	Population p	er Laboratory	
Ethiopia	2007	111,134	48,569	56
Malawi	2006	135,627	64,905	52
Mozambique	2005	93,103	50,523	46
Indonesia	2005	75,000	49,650	34
Zambia	2005	58,750	50,428	14





Figure 7: The number of TB CAP countries providing EQA data

Figure 8 shows the EQA data collected from those TB CAP countries reporting. There is a remarkable increase in the number of laboratories performing TB microscopy with over 95% correct microscopy results, from 33% to 83%. At the same time, it should be noted that in many countries, the number of laboratories participating in the EQA are limited with the data from Afghanistan, Cambodia, Ethiopia and Uganda being limited to TB CAP-supported geographic areas. Detailed data for each country can be found in the country report section of this document which begins on page 44.

Figure 8: The Percentage of Laboratories Performing TB Microscopy with over 95% Correct Microscopy Results



### The number of countries providing TB C/DST which meets international quality standards

Figure 9 summarizes the performance of TB CAP countries in providing TB Culture and sensitivity testing (C/DST) which meets international standards. TB CAP measures the level of TB C/DST services on a scale of 0-4. Scoring definitions are:

- 0 = Country has no Culture
- 1 = Country has a national TB laboratory policy on C/DST
- 2 = Country has a national reference laboratory with C/DST service
- 3 = Country has a functional network of TB C/ DST service (with national QA system)
- 4 = Country provides TB C/DST services meeting international quality standards

The number of countries providing C/DST which meets international quality standards (Score 4) increased from one country (Zambia) in 2005 to ten in 2010, or 43% of the TB CAP countries. The ten countries are: Bangladesh, Indonesia, Kenya, Malawi, Mexico, Mozambique, Namibia, South Africa, Uganda and Zambia. It should be noted that development of this capacity is a lengthy and resource-intense process, starting with the introduction of culture services and ending with linking the national reference laboratory to a supranational reference laboratory to ensure international standards. In many countries TB CAP has laid the groundwork and the investments will eventually lead to improved quality of C/DST services.

Figure 9: The number of Countries Providing Quality TB C/DST Services



Whilst in 2005 only Zambia met this standard, in 2010 Indonesia, Mozambique, Namibia, Malawi, South Africa, Uganda, Bangladesh, Kenya and Mexico also met this standard.



### 2.4: Improved Prevention and Management of MDR-TB

MDR-TB is a specific form of drug resistant TB that poses many programmatic challenges for initiating and scaling-up prevention and treatment. A programmatic approach and interventions are required in multiple areas, for example, diagnosis, drug supply and management, treatment and socio-psychological support for patients over a prolonged period of time.

TB CAP's Planning and Budgeting Tool (see IR 1) ensures that programmatic management of drug resistant TB (PMDT) is systematically addressed during strategic planning and budgeting. 19 international DR-TB consultants were trained to use the tool, especially in countries with a high burden of MDR-TB.

TB CAP organized three international MDR-TB courses in Mexico, training a total of 94 medical personnel. In 2007, a regional MDR-TB training course was supported by TB CAP for 21 participants from French speaking African countries. Also, MDR-TB management courses for Green Light Committee (GLC) approved countries were conducted in Latvia and the Dominican Republic for 48 health professionals. During the last year of the project, TB CAP conducted two MDR-TB consultant courses in Peru and India for a total of 59 consultants.

For the rapid scale-up of PMDT, TB CAP has supported the training of health care workers (HCWs). In total 838 HCWs, pulmonologists and doctors from Cambodia, Ethiopia, Indonesia, Malawi, Mexico, Namibia and Nigeria have been trained.

Ethiopia, Malawi, Nigeria and Uganda were assisted in the preparation of PMDT guidelines. In Indonesia and Mexico, TB CAP also supported the revision of guidelines. Indonesia, Malawi, Namibia, Nigeria and Zimbabwe were supported in the preparation of GLC applications, all of which were successful.

In addition, TB CAP offered an integrated package of the various components of lab strengthening, including expansion of culture and DST services. With TB CAP support, the number of countries with laboratories providing both culture and DST has reached 20. In 2010, 20 TB CAP countries out of 23 (except Afghanistan, Djibouti and South Sudan) have at least one laboratory in the public sector performing both culture and DST. Approaches were tailored to the local situation and geared towards increasing access to diagnosis and treatment of MDR-TB. In Mozambique, for example, this resulted in the decentralization of culture capacity to two regional laboratories. In Bangladesh and Djibouti, the procurement of equipment, consumables and reagents was essential to enable access to the services. In Botswana, the capacity of the National Reference Laboratory was improved through the introduction and validation of the Mycobacteria Growth Indicator Tube (MGIT) liquid culture technique and rapid Mycobacterium Tuberculosis (Mtb) identification tests, along with the development of standard operating procedures (SOPs) and training for lab technicians on DST for first-line drugs.

TB CAP also supported Drug Resistance Surveys (DRS) is several countries. In Bangladesh, TB CAP supported the DRS through protocol development, data analysis and dissemination of findings. For the DRS in Malawi, in addition to providing technical assistance (TA), TB CAP procured all of the consumables. Similarly, TB CAP supported the DRS in Namibia and Nigeria. In Vietnam, routine surveillance of MDR-TB in HIV/TB high prevalence settings was carried out, while in Indonesia TB CAP provided TA in finalizing the overall plan for MDR-TB surveillance.

All these efforts have led to increases in the number of MDR-TB patients put on treatment in TB CAP countries. In 2008 1,323 MDR-TB patients were put on treatment in 12 countries. The number increased to 2,020 in 2009 (Table 10).

Countries	2008		20	Estimated Total	
	GLC	Non-GLC	GLC	Non-GLC	Cases/Year
Bangladesh	190	122	144	90	2914
DR Congo	307	0	336	0	2155
Ethiopia	0	30	50	78	944
Indonesia	3	0	99	0	3834
Kenya	40	32	29	10	1148
Malawi	0	21	0	9	217
Mexico	0	36	230	3	567
Mozambique	0	184	3	451	833
Namibia	0	351	0	275	227
Nigeria	0	0	17	0	1147
Uganda	0	7	0	7	166
Vietnam	0	0	20	169	2918
Total	540	783	928	1092	17070

#### Table 10: MDR-TB patient's status in 12 TB CAP countries

# UNENDO VOLUNTADES-PARA PREVENIR LA TUBECULOSIS

COMO SE PREVIENE LA TUBERCULOSIS? DETECTANDO LAS PERSONAS CON SÍNTOMAS Y HACIENDO DIAGNÓSTICO TEMPRANO DANDO UN TRATAMIENTO OPORTUNO

Targeted training and education on TB saved countless lives.

TB Information painted on a wall - Dominican Republic

The following three regional projects implemented by TB CAP have also helped to expand the PMDT approach:

Africa Region - Establishment of a PMDT Center of Excellence (CoE) in East Africa:

TB CAP recognized the urgent need for an African center that can provide examples of best practices in PMDT in the African environment, including the overlapping HIV and TB epidemics, particularly in terms of establishing standardized diagnostic practices, treatment protocols and IC policies. Significant progress has been made in this regards. Rwanda was selected to develop the CoE for which a unique three-party arrangement was established among the School of Public Health, the NTP Central Unit and the National Reference Laboratory. The CoE will provide follow-up on thejob-training in the supported areas/countries.

Africa Region - ECSA: Taking into account the success of the 2009 global TB control and patient care ministerial meeting of high M/XDR-TB burden countries in Beijing,



China, USAID invited TB CAP to support 14 Eastern, Central and Southern Africa (ECSA) member states in the development of a paper on enhancing awareness of MDR-TB in ECSA member states. TB CAP provided the ECSA Health Community with technical support to write a background paper, which was presented at the Directors Joint Consultative Committee (DJCC) and subsequently at the ECSA Health Community Ministerial Conference in February 2010. TB CAP also supported the 52nd ECSA Health Ministers Conference in Harare. During the conference there were plenary and parallel sessions on MDR-TB, presentations from Lesotho, Mauritius, Malawi and Swaziland, the Regional Centre on Quality in Health Care (RCQHC) and CoE-Rwanda, and updates on the implementation of the Health Ministers' resolutions by ECSA.

**CAR** - Improve MDR-TB Case Management in Five CAR Countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan): TB CAP implemented a regional project to improve MDR-TB case management in five CAR countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). An enhanced MDR-TB case management model was scaled up in the East Kazakhstan Oblast, adapting MDR-TB case management protocols geared to the needs and specifics of the Oblast and its prison system. PMDT plans were also developed for Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. As shown in Figure 10, social support was strengthened. In total, 228 MDR-TB patients were enrolled during the project period (April-November 2010), with no drop-outs and very few side effects.

Figure 10: Number of enrolled MDR-TB patients receiving different types of psychosocial support provided by TB CAP (April-November 2010 period)



### 2.5 Improved equitable access to quality TB care for vulnerable populations

Over the last five years the idea of a patient-centered approach has been embraced by the global TB community. This approach defines the patient as an individual who is placed at the center of the health care system and interventions. Specifically this means that the health system and interventions are designed with respect for the patient's rights, preferences, values and needs. Under this approach, the patient is treated as a partner rather than just a recipient.

During the last two years of the project, TB CAP developed the "Patient-Centered Approach" Package which includes five tools and a strategy for applying a patient-centered approach. The five tools are: QUOTE TB Light, A Practical Guide to Improve the Quality of TB Patient Care, A Tool to Estimate Patient Costs, The TB Literacy Toolkit and a Revised Patients' Charter. The patient-centered approach strategy is based on five key areas: 1) engage all stakeholders; 2) recognize patient rights; 3) enable partnerships; 4) empower and activate patients and communities; and 5) monitor and document. The Package is designed to support NTPs in the implementation of a patient-centered approach. Implementing the strategy does not automatically ensure patient-centeredness, but it does enable TB patients to participate and have their voices heard by the TB programs providing care. The tools and strategy included in the Package can contribute to establishing partnerships through improved communication and igniting the spark of empowerment of TB patients, as well as increasing their access to quality TB services.

Until the Patient-Centered Approach Package was launched, TB CAP had invested very little in this area. However the project did monitor the following two key indicators in all countries:

- Number of TB CAP countries that have developed a pro-poor policy
- Number of TB CAP countries measuring socio-economic status to document equitable access

Table 11 indicates that, as expected, countries measuring socio-economic status all have an official pro-poor policy. Six countries are neither measuring access nor do they have a pro-poor policy.



Table 11: TB CAP Countries Which Have an Official Pro-poor Policy and Measuring Socio-economic Status to Document Equitable Access, 2010

		Have an official pro-poor policy						
		Yes			No		Total	
	Yes	Mozambique	Vietnam	Mexico			6	
Measuring socio-economic status to document equitable access		Zambia	Botswana	Ghana				
	No	Cambodia	Bangladesh	S. Sudan	DR Congo	Ethiopia		
		Indonesia	Dominican Republic	Uganda	Namibia	Kenya	17	
		Djibouti	Pakistan	Zimbabwe	S. Africa	Malawi		
		Nigeria Afghanistan						
	Total	17			6		23	

#### **Cambodia - TB in Prisons**

There are 25 prisons in Cambodia which together accommodate more than 13,000 inmates. Many are crowded, poorly ventilated and often lack access to health services. Many of the inmates are from socio-economically disadvantaged populations and are inherently vulnerable to TB, so it is not surprising that TB case notification rates in prisons are much higher than in general population.

TB CAP piloted TB/HIV collaborative activities in four prisons to identify and successfully treat TB patients, and to prevent the emergence of MDR-TB. Working with the NTP, the General Department of Prisons and prison health staff, the project is also strengthening voluntary HIV counseling and testing for TB patients and TB suspects in prisons, as well as helping prisoners living with HIV access opportunistic infection services and anti-retroviral therapy through strong linkages with the provincial health department. Systematic active TB case-finding was implemented through mass screenings, routine detection and diagnosis activities.

In 2009, TB screening detected 155 TB cases (7.4%) among the 2100 prisoners, 41 (48%) of them being smear positive cases. The TB case notification rate was 18 times higher than that reported at the NTP for the general population. In 2010, 108 TB cases (3%) were diagnosed among 3,543 prisoners in the four prisons, 30 (28%) of them were smear positive TB cases.

Treatment outcomes were available for 217 TB patients by December 2010, of these, 197 (90.8%) were successfully treated, 8 (3.7%) had died and 1 (0.5%) treatment failed. Among the 1364 prisoners who consented to HIV testing, only 10 were HIV-positive (0.7%).

Rapid mass screening, where all prisoners are pro-actively screened for TB, enabled quick identification and initiation of treatment for diagnosed TB patients, and thereby minimized ongoing transmission of TB. Rapid mass screening coupled with the routine approach of screening prisoners who self report with TB symptoms, appear to be complementary in controlling the TB epidemic in close settings.

The director of the first pilot site for this activity, reported that prior to the project, between 30 to 60 inmates died of TB each year. Following the initiation of this project, only two deaths related to TB were reported in 2009 and no deaths in 2010. Encouraged by the success of these projects, the NTP is committed to expanding cover to all the remaining prisons in the coming years.



### 2.6 Scaled-up TB-IC Measures at Country Level

Table 12: TB CAP Support for TB-IC implementation

Country	TB-IC National Guidelines	TB-IC Country Implementation	TB-IC Integration	TB-IC Training
Afghanistan	$\checkmark$			✓
Armenia		✓		
Bangladesh	$\checkmark$	✓	$\checkmark$	✓
Botswana	$\checkmark$			
Cambodia	$\checkmark$	✓		✓
Djibouti	$\checkmark$	✓		✓
Ethiopia	✓	✓	$\checkmark$	✓
Georgia		✓		
Ghana	✓			
Indonesia		✓	$\checkmark$	✓
Kazakhstan		✓		
Malawi	✓			✓
Mexico				✓
Mozambique				1
Namibia	✓			
Nigeria				✓
Pakistan	✓			
Philippines	✓			
Tajikistan		$\checkmark$		
Uzbekistan		✓		
Uganda	✓			✓
Vietnam	✓	✓	4	✓
Zambia	✓	✓	✓	✓
Zimbabwe				$\checkmark$

TB CAP has scaled up TB-IC through the implementation of a variety of activities. The primary investment has been to ensure that there are a sufficient number of people trained both nationally and internationally in TB-IC. TB CAP supported 11 international consultants to attend a course organized by the Harvard University School of Public Health, "Building Design and Engineering Methods for the Prevention and Control of Airborne Infections".

TB CAP organized five international training courses in Gaborone, Jakarta, Conakry, Cotonou and Riga, involving 119 participants from 56 countries. In its final year, through two regional training institutes, the Medical Research Council (MRC) in South Africa and the University of Gadjah Mada (UGM) in Indonesia, TB CAP trained 36 participants from 20 countries in TB-IC. TB CAP also supported the scale-up of TB-IC in the Eastern Europe and Central Asian regions. Sixty health care personnel were trained from Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

TB CAP supported the Stop TB Partnership TB-IC Subgroup to organize its annual meetings. Under the auspices of the Subgroup, an implementation framework on how to implement the WHO Policy on TB-IC was developed and published (see annex page 109). Four research templates on: the roles of different tests in diagnosing TB; the impact of a minimum TB-IC package; voluntary job-relocation of HIV-positive HCWs to a lower risk workplace; and reducing delays in diagnosis and treatment to minimize the transmission of TB were developed. TB CAP directly contributed to the development of national guidelines in 15 countries, the development of scale-up plans in 12 countries, the integration of TB-IC in national strategic plans and other programs in four countries, and TB-IC training in 13 countries (Table 12).

### 2.7 Strengthened Community-Based DOTS

TB CAP scaled-up its investment in CB-DOTS in nine country projects. Table 13 shows that by the end of the project, over 33 million people were covered by CB-DOTS services and a total of 26,000 additional TB cases had been detected.

The nine TB CAP country projects established partnerships with community-based organizations (CBOs), NGOs and village health workers in selected geographical areas in order to strengthen TB case finding and treatment support activities, as well as bringing access closer to the community. Social mobilization activities were also included to increase awareness of TB in the community and address issues of stigma. As Table 13 shows, CB-DOTS activities have contributed significantly to TB case detection.

Community Sputum Collection Points (CSCPs) were an innovative approach taken by TB CAP in Malawi and Bangladesh which allow for TB diagnostic services to be brought directly to the community. Sputum collection points are managed by community volunteers at a local center established within a community and supported by community sensitization activities. At the CSCP each person is screened for TB symptoms and asked to provide a sputum sample which is transported to a nearby health facility equipped with microscopy services for diagnosis. Within a few days the results are communicated to the CSCPs and if an individual tests positive for TB they are referred for treatment.

The establishment of CSCPs in Malawi became a TB CAP focus, as it was necessary to increase access to TB services for poor and isolated communities. TB CAP was the first organization to adopt this new practice and establish CSCPs in the rural districts of Mangochi and Zomba. By 2010, a total of 220 CSCPs were operating, covering a population of 1.5 million. During the three years of implementation, a total of 3,789 TB suspects were identified, of which 334 were smear-positive TB (9%).

The Bangladesh CSCPs were established in the fourth year of TB CAP in partnership with the Damien Foundation. The project targeted remote areas as well as sex workers, who are especially vulnerable to TB/HIV and are difficult to reach with regular TB services. After only one year, TB CAP was successful in establishing 92 CSCPs which referred 9,764 suspected TB cases, of which 501 had TB.

Country	CB-DOTS Population Coverage	TB Suspects Referred	Referral per 100,000	TB Cases Detected	Percentage Detected
Afghanistan	3,800,000	5,761	152	676	12%
Bangladesh	1,326,797	9,764	736	501	5%
DR Congo	1,149,521	1,047	91	428	41%
Ethiopia	8,000,000	940	12	n/a	n/a
Malawi	1,300,000	2,621	202	250	10%
Mozambique	8,200,000	11,516	140	2197	19%
Nigeria	1,955,127	2,281	117	n/a	n/a
Namibia	1,702,121	n/a	n/a	12,736	n/a
Uganda	6,330,500	51,837	831	9220	18%
Total	33,764.066	85,767	254	26,008	30%

Table 13: Overview of eight TB CAP CB-DOTS Countries during October 2008 and September 2010

#### The Impact of TB-IC Training in Uganda

15

NE MOVES

The training of health care workers (HCWs) on TB risk assessment in a facility was completed in all 12 TB CAP-supported districts. By the end of TB CAP, mentoring on the correct implementation of TB-IC measures had been completed. A review of TB-IC administrative measures in 105 health facilities showed that:

- 70% had TB-IC plans;
- 95% had a TB-IC officer in place;
- 85% separated coughers from non-coughers;
- 81% were conducting health education on cough etiquette;
- 90% were using the intensified case finding (ICF) tools for TB screening.

These results show that the majority of objectives in TB CAP's TB-IC program in Uganda were met.

#### **3: Increased Public and Private Sector DOTS Participation and Collaboration**

TB CAP supported countries to initiate and scale-up the engagement of all health care providers through PPM approaches, promote standardized and evidence-based practices among health care providers and to disseminate and apply the ISTC. Technical assistance was provided to countries through TB CAP-supported strategic meetings, training, preparation of key strategic documents, exchange of country experiences, development of practical tools, planning workshops and the preparation of generic guidance to engage various types of health care providers.

TB CAP assisted in the development of the "National Situation Analysis" (NSA) tool to help countries undertake an NSA, a pre-requisite for implementing and scaling up PPM.

The public-private unifying tool, the ISTC, developed by the previous TBCTA project (2000-2005), was used to engage professional societies and associations in TB care and control in order to strengthen TB management practices. Importantly, lung specialists became involved, they manage large numbers of TB cases and also influence the practices of their peers. TB CAP assisted in the dissemination and implementation of the ISTC, including its translations into 10 languages and the development and use of relevant training materials.

The mix of health care providers and the health-seeking behavior of people when they develop symptoms of TB vary within and across countries. NTPs in different countries have successfully engaged diverse providers, ranging from traditional healers and pharmacies, to tertiary care hospitals and health insurance organizations. Based on these experiences, several guidance documents were produced which addressed:

- · Working with the business sector
- Involving informal providers
- Collaborating with social security and health insurance organizations

The culmination of TB CAP's support was the compilation and packaging of a PPM toolkit which has 14 generic tools (see box).

One of the challenges of PPM implementation and scale-up, is the monitoring and measurement of the contribution of diverse health care providers to TB control. Some modifications to routine recording and reporting systems are necessary to determine

the extent of the contribution of PPM to case detection and treatment success. To guide countries in this matter, a document describing the ways to record and report on PPM effectiveness was prepared with TB CAP support.

In order to understand the extent and type of investments which NTPs make in scaling up PPM, TB CAP supported an analysis of the PPM components in approved Global Fund grants. The analysis helped not only in determining the magnitude of investments (around 5% of the total investments), but also revealed the regional differences in provider mix and priority non-program care providers targeted by TB programs. For example,



countries in the Africa region tend to work more with NGOs whereas the private commercial sector is the main PPM partner in Asia.

Support from TB CAP has allowed for significant global progress in PPM implementation. By 2009, 16 of the 22 high burden TB countries had appointed a focus person for PPM and had completed a national situation assessment using the NSA tool. Also, 14 of the high burden TB countries had developed national operational guidelines and begun to scale-up PPM.

The impact of TB CAP support on PPM activities has been important both inside and outside the countries where TB CAP projects were implemented. In 2010, for the first time, countries reported the contribution of PPM implementation to TB case notifications for the year 2009. It is important to note that in countries with scaled up PPM activities, about a fifth to a third of all case notifications were from non-program care providers (Table 14).

The number of countries piloting or scaling up PPM approaches for DOTS has also increased dramatically over the five years of TB CAP. There were no countries either piloting nor scaling up in 2005 which is the baseline year (Figure 11).

Table	14:	Country	Contribution	to	PPM	Implementation
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Country	Coverage	Provider Type(s)	Contribution
Cambodia	Countrywide Pharmacies, Private Practitioners		6550 (17%)
Ghana	Countrywide	Diverse Public, Private	2124 (15%)
Indonesia	Countrywide	Public, Private Hospitals	38362 (13%)
Mexico	33 Million	Social Security Organizations	3438 (29%)*
Nigeria	Countrywide	Private Hospitals	29418 (34%)
Pakistan	Countrywide	Private Practitioners, NGOs, Hospitals	43162 (14%)

Sputum smear positive cases

32 million people covered by CB-DOTS services

aninistry of Health & Socia TB DOTS POINT NO. WALVISBAY COMMUNITY TB DOT POINT USAID Stop NIH Lots TB **CB-DOTS** Point Container - Namibia

Figure 11: Number of TB CAP countries piloting or scaling up PPM approaches for DOTS.




## 4: Increased and Strengthened TB and HIV/AIDS Coordinated Activities

Since its launch, TB CAP has made TB/HIV collaborative activities one of its five core areas of focus. TB/HIV collaborative activities have been scaled-up in most TB CAP countries. Interventions have focused on improving the policy environment for collaborative activities as well as supporting the scaling-up of key components of integrated TB/HIV care.

TB CAP has provided both technical and financial support at global, national and subnational levels. The project has contributed to improved policies, diagnosis, referral and treatment of TB and HIV/AIDS patients in countries with a high prevalence of both HIV and TB. Interventions to decrease the burden of HIV in TB patients through HIV testing and counseling, cotrimoxazole preventive therapy (CPT) and HIV/AIDS care and support (including anti-retroviral therapy [ART]) have shown improvements in most high burden settings.

TB CAP contributed significantly to the enhancement of overall political commitment and knowledge at the country level and generated momentum in scaling up TB/HIV activities.

Services aimed at providing HIV care to TB patients, especially HIV counseling and testing, CPT and TB diagnosis and treatment in co-infected patients were effectively scaled-up in most countries. An average 64.3% of registered TB patients were tested for HIV in TB CAP countries compared to the African average of 56% (WHO Report 2010) (Figure 12). Eleven of the 23 TB CAP countries achieved at least 70% HIV testing of TB patients (Botswana, Cambodia, Dominican Republic, Kenya, Malawi, Mozambique, Namibia, Nigeria, South Sudan, Uganda and Zambia).

Effective program coordination standards and M&E systems for TB/HIV programs were strengthened. By the end of TB CAP, all 23 countries had implemented joint planning at the national level for collaborative TB/HIV activities between the NTP and the National AIDS Control Program (NACP). 16 out of 23 countries have fully implemented the revised recording and reporting system.

TB CAP developed and disseminated important generic TB/HIV tools and best practices to ensure access to quality services. Emphasis has been placed on updating and adapting to new knowledge as well as optimizing existing tools to enhance country level policy development for scaling up collaborative TB/HIV activities. TB/ HIV tools and documents TB CAP has developed address the following topics: lessons learned in scaling up collaborative TB/HIV activities; engaging community-based organizations in TB/HIV collaborative activities; enhancing public-private partnerships in TB/HIV activities; and supporting communities for universal access to HIV/ AIDS and TB care through a literacy package and curriculum. SOPs for facility-level implementation of services have also been prepared. The development of "TB and HIV Programs on the Management of TB in HIV-infected Children: Recommendations for a Public Health Approach (2009)" and the documentation of best practices in the integration of TB and HIV/AIDS services are two of the project's key achievements in addressing the challenge of TB and TB/HIV in children as well as adults. For the complete list of TB/HIV tools please see Annex 1 page 103.

TB CAP has been instrumental in enhancing political commitment for collaborative TB/HIV activities at the country level. Technical working groups were supported to

revise and adapt existing global tools and policies to develop country specific policies and guidelines. Revised TB/HIV M&E systems were introduced and harmonized among the relevant stakeholders.

17 countries (Bangladesh, Botswana, Cambodia, DR Congo, Dominican Republic, Ethiopia, Ghana, Indonesia, Kenya, Malawi, Mexico, Mozambique, Namibia, Nigeria, Uganda, Zambia and Zimbabwe) achieved important collaborative TB/ HIV activity goals. These countries made substantial progress in service provision and integration through: inclusion of TB/HIV in strategic and annual work plans; establishment of national, regional and local coordinating bodies; implementation of WHO-recommended TB/HIV reporting systems; testing of TB patients for HIV; and integration of TB-IC strategies into national TB and HIV/AIDS programs.

TB/HIV activities have also been augmented by supporting other key cross-cutting health system strengthening interventions, such as laboratory strengthening, community TB care, TB-IC and human resource development. Efforts to scale-up activities through interventions involving NGOs, CBOs and the private sector were increased. Engagement of HIV/AIDS implementers (PEPFAR partners) has been emphasized to strengthen collaboration and coordination and to ensure the scale-up of TB care to people living with HIV (PLHIV), particularly intensified case finding (ICF) and TB-IC activities and, to a limited extent, Isoniazid Preventive Therapy (IPT).

In countries with concentrated HIV epidemics and a high TB burden (Bangladesh, Cambodia and Indonesia) support has been characterized by interventions focused on high-risk populations. Collaborative TB/HIV activities were enhanced among MARPs, especially in prisons and drug rehabilitation facilities.

Another key achievement at the country level was the development of national TB/ HIV policy guidelines and strategic plans in most TB CAP countries, including TB/ HIV integration manuals (frameworks) in Botswana, Cambodia, Ethiopia, Ghana, Indonesia, Kenya, Malawi, Namibia and Nigeria. Workshops using 'MOST for TB' were conducted in Ghana, Kenya and Namibia to enhance coordination and collaboration between the national TB and HIV/AIDS programs. TB CAP teams provided technical assistance to HIV implementing partners to ensure the scale-up of TB care in HIV/AIDS care settings through the organization of training, development of joint guidelines and M&E tools, and joint supervision of activities in Indonesia, Nigeria, Uganda and Zambia.

Provider initiated HIV counselling and testing (PICT) for newly registered TB patients was expanded and a significant increase in the testing of TB patients for HIV was achieved.

## Afghanistan National Tuberculosis Control Program

بروگرام ملی کنترول توبرکلوز افغانستان به جنسبه بررسی ربعوار ولایتی خوش آمدید

## **Community-Based DOTS in Afghanistan**

Welco

TB CAP in Afghanistan assisted the NTP in launching innovative approaches to ensure early case detection, diagnosis, treatment and adherence. A Community Based DOTS (CB-DOTS) approach was applied in four provinces of Afghanistan in mid 2009. Under this approach, DOTS was provided through community health workers (CHWs) to people suspected of having TB identified in their communities.

From April 2009 until Dec 2010, 6148 CHWs, 498 community health supervisors (CHS) were trained on TB suspect identification, referrals and DOTS provision to TB patients. In addition, 977 community awareness rising events in bazaars and schools were conducted and 190 billboards displayed TB messages in remote areas.

In short, 27% (10,303) of the total TB suspects identified were referred by CHWs and of them, 12% (1252) turned out to be sputum smear positive. Moreover, 1252 (31%) of all TB cases (4018) in four provinces were identified by CHWs in addition 60% (2170) of 3670 TB patient received DOTS from CHWs. More interestingly, the treatment success rate for TB patients receiving DOTS from CHWs was 96% whilst the rate for the same provinces in 2009 before the introduction of CHWs was 85%. In addition, the default rate for those who received DOTS from CHWs was four times lower compared to the national average.

## **Review Meeting**

Canadian Intern



Scale-up of ART to TB patients progressed in most TB CAP countries. However, some policy, service delivery and M&E issues were bottlenecks which prevented the achievement of higher levels of coverage as well as the reporting of activities. Most TB programs do not provide ART at TB clinics and lack the standard recording and reporting system for ART which leads to incomplete data. The average ART coverage for TB patients co-infected with HIV from the 19 TB CAP countries which reported data by the end of Year 5 was 46.1%, which is a higher coverage compared to the global average of 40%.

The provision of TB care to PLHIV globally has been slow, but has shown a steady increase in services in TB ICF, TB-IC and IPT (The three I's). The major challenge remains the lack of optimal recording and reporting of activities, especially on TB screening in PLHIV. The number of countries reporting data on TB screening of PLHIV increased from five in Year 4 to 11 in Year 5, with an overall increase in the absolute number of cases. In Bangladesh, Cambodia and Indonesia, TB CAP supported TB intensified case finding and care for PLHIV through MARPs-focused interventions, especially in prisons and drug rehabilitation facilities.

## 5: Improved Human and Institutional Capacity

TB CAP focused on improving human resource capacity and institutional capacity. The human resource development (HRD) projects aimed to increase the pool of competent TB workers at all levels in a sustainable and systematic fashion using a two-pronged strategic approach:

- Developing generic HRD tools and guidelines
- Harmonizing training at regional, national and international levels

This approach includes decentralizing and institutionalizing some of the training courses organized by regional training institutes and country-level training institutions through the integration of the Stop TB Strategy into all pre- and in-service training programs. All training programs have a participant follow-up component to monitor training efficiency and impact, and to provide trainees with new in-service training. Sustainability was a critical component of TB CAP. Training was aimed at capacity building at both NTPs and training institutions. As such, HRD is an essential component of a country's NTP medium-term development plan.

## Platform Meetings:

Four HRD platform meetings were organized to share and address specific problems related to human resources. These meetings created a unique forum for exchange on HRD issues among countries from Africa, Asia, Latin America and Eastern Europe. Each meeting generated many lessons learned, with subsequent meetings building on the outcomes of the previous ones. The platform meetings served to keep HRD high on the agenda of NTPs and MoHs.

## E-Portal:

The objective of the e-portal for HRD is to build and sustain a community for HR focus persons and create peer networks for sharing guidelines, articles, tools, best practices and field experiences. The e-portal is also used to provide ongoing support to individuals and groups of professionals. It serves as a link between people in programs at the country level and resource persons/experts in the HR field. Members of the e-portal for HRD are HR focus persons from NTPs, HR consultants and HR

experts from all TB CAP partner organizations. There are currently 73 members registered, representing 31 different countries.

### Training Institutes:

An significant challenge is the lack of training institutes in Africa and Asia providing internationally recognized training. In response TB CAP developed a project to build sustainable TB training capacity in two existing training institutes. Gadjah Mada University in Indonesia was selected to become a regional TB training institute for Asia, and the National TB and Leprosy Training Center in Zaria, Nigeria performed the same purpose in Africa. Both institutes already had considerable expertise and experience in TB control in their respective regions as well as a clear vision for the training methodology suitable for adult learning as well as guality control systems. Capacity building was done in different ways - through workshops, follow-up visits, (co)facilitating sessions in international training courses, support in the development of specific tools (e.g. training needs assessment), evaluation of courses, marketing, building up a network and support in developing curricula. The institutes now deliver regional TB training courses that meet international technical and educational guality standards. Zaria has organized three courses and trained 67 people from 15 different countries. Gadiah Mada has offered a total of seven courses and trained 140 people from 26 countries. In Zaria, six of the 26 participants from the most recent course were sponsored with resources other than from TB CAP. At Gadiah Mada, selfsponsorship is steadily increasing, six of the 18 participants were self-sponsored on the last course.

## Consultants:

TB CAP organized various training courses to expand the pool of international TB consultants. In total 170 consultants were trained in different disciplines (Table 15). Consultants were selected for their expertise and their availability for consultancies after the training.

Course	Date	Total	Female	Male
PPM DOTS	2006	19	5	14
TB/HIV	2006	24	8	16
Laboratory	2006-2007	35	19	16
TB-IC	2008-2009	48	25	23
Training Course for Architects & Engineers	2008	10	2	8
HRD	2008	19	13	6
Harvard course for Engineering Controls	2008-2009	15	5	10
MDR-TB management GLC consultants	2010	59	19	40
	TOTAL	229	96	133

### Table 15: TB CAP Consultancy Courses Conducted

## **170 New Consultants trained in Zaria, Nigeria**

## **TB CAP Mozambique CB-DOTS**

Rogério Julião Mabunda (32) was born and raised in Lionde, a small village in Mozambique. He grew up dreaming of going to work in the South African mines, and to be like others in his community who returned once every year with lots of nice things for their wives, families and girlfriends. He was desperate to go so that he could earn money and return to marry his sweetheart. With the help of his uncle, he was able to get a job at a mine and he returned home twice bringing money, clothes, furniture and food and in due course he also got married.

Everything was going well until the beginning of 2007 when he started to feel sick. He had a constant cough and fever, he lost his appetite and gradually lost weight. As his condition worsened, he decided to seek medical assistance at the mine clinic where he was given a variety of drugs which he took, but he never got better. After five months of illness, he could no longer cope with his strenuous job. He was forced to abandon it and return home. He was so sick that he thought he was going home to die.

Two days after his arrival, he was visited by the CB-DOTS volunteer, Martina Chilaúle, who quickly suspected TB. She advised him to visit the health center for a test and to get medical assistance. However, his family refused to take him. They preferred to take him to a well-known traditional healer. A week later, the volunteer went to check on Rogerio, but she could not find him because he had been made to stay at the traditional healer's home to undergo purification ceremonies to rid him of bad spirits. The community volunteer did not give up. After many conversations, she managed to persuade Rogerio's family to take him to the local health center. As soon as they arrived, he was transferred to Carmelo's Hospital in Chokwe city where he was admitted and tested for TB, as well as counselled and tested for HIV. Rogerio tested positive for both TB and HIV. He started TB treatment in June 2007 and after two weeks added ART. His health improved greatly over the three weeks he was in the hospital.

Once better, he selected Martina to become his "TB treatment supporter" and to continue DOTS at home. Every week over the first two months, Martina brought him his TB drugs and he took them every day. After another six months of treatment the second lab control was also negative and he was classified as a cured TB patient. He continued with ART, has remained healthy and has gained weight.

During the last TB World Day he was invited to tell his story. He accepted and also decided to openly disclose his HIV status. Rogério said: "I'm very happy with the CB-DOTS project because it helped me. I was very sick, but today I am cured and I am taking anti-retroviral treatment. I feel good and I am sure that I will remain healthy as long as I continue my treatment and follow the medical recommendations. I want to be part of these activities as a volunteer and I would like to be a TB supporter for others TB patients."

# TUBERCULOSE

## Strategic Plans:

At the country level, TB CAP has focused on the development of HRD strategic plans for TB control and the upgrading/revision of pre-service curricula to reflect the Stop TB Strategy. Good progress has been made in the development of HRD strategic plans with the handbook, "Planning the Development of Human Resources for Health for Implementing the Stop TB Strategy", developed by TB CAP, being a very useful tool in their development, along with the input from the platform meetings, e-portal discussions and hands-on support from HRD consultants.

By the end of TB CAP, 22 out of 23 countries had initiated the process of developing HRD strategic plans. Seven countries had finished a plan and officially incorporated it

into their strategic TB country plan (Figure 13).

The proportion of countries which have an HRD focal person in the NTP Central Unit increased from 47% in the first year to 74% at the end of TB CAP. Eight out of 23 countries have pre-service curricula for nursing and medical schools which reflect the Stop TB Strategy. Four countries reported that they are still in the process of upgrading/revising their pre-service curricula.





Spreading the word on TB using innovative means







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Shoe Shine Boy with TB Message - Dominican Republic

## **Country Sections**

In this section of the report each TB CAP country is reported on in detail.



## Afghanistan

Population: 27 million Estimated TB Incidence (all cases per 100,000 pop): 223 Estimated number of new TB cases: 45,676

## Background

TB is one of the main public health burdens in Afghanistan. The country ranks 22nd on the list of 22 high burden TB countries. According to the WHO's Global Tuberculosis Control Report 2009, approximately 46,000 new TB cases occur annually in Afghanistan.

Years of war have ravaged the country, leaving the overall health system, including the TB control program, in need of significant support and technical assistance. Beginning in 2008, with MSH serving as the coordinating partner and in collaboration with KNCV and WHO, TB CAP began working closely with the NTP to build its capacity and thereby improve TB control. The TB CAP program in Afghanistan focused on the following key result areas: increasing political commitment to DOTS; strengthening and expanding the DOTS program, including community and urban DOTS; improving access to quality DOTS; increasing NTP coordination and collaboration with the public and private sectors; and improving the competence of staff at different levels of the health system.

## **Key Results**

The TB CAP approach led to substantial achievements in various areas of the TB control program. Government funding increased, which allowed for new positions to be added to the NTP in 2010. The NTP conducted two research projects: a vulnerable group assessment and a TB knowledge assessment of clients and staff. DOTS was strengthened in already-existing health facilities and extended to new health facilities and communities, including both staff training and the provision of equipment. 7,092 community health workers (CHWs) were trained in DOTS, and over two guarters of 2010, 816 health facility staff were trained in data analysis and interpretation, gap analysis and action plan development. A Memorandum of Understanding (MOU) was signed between the acting Minister of Health and the private sector which has improved coordination between the public and private sectors. An urban DOTS task force was established and private hospitals began to engage in DOTS provision. Suspect management and case detection improved at both CB-DOTS and urban DOTS health facilities: 40,298 suspects were identified and examined and 4,769 sputum smear-positive TB cases were identified. Case detection in CB-DOTS provinces increased from 58 to 95 per 100,000.

With a population of approximately 5 million, Kabul has some of the worst TB indicators in the country. In 2008, TB case notification was only 38% compared to 73% for the country as a whole. The cure rate was 54% compared to 85% for the whole country. The city has a high population density, overcrowded housing, poor sanitary facilities and a high number of Internally Displaced People (IDP), which poses a particular challenge for TB control efforts. To address these challenges, TB CAP collaborated with the NTP in the design of the Urban DOTS model.

TB CAP Country Highlight Case notification in TB CAP-supported provinces increased from 58 per 100,000 in 2007 to 95 per 100,000 in 2009.

## Urban and CB-DOTS:

Urban DOTS is a multi-sector (public, private and NGO) approach which ensures the involvement of all health care providers in DOTS implementation. Urban DOTS was piloted in Kabul in July 2009 and was continued to be used until March 2011. The TB CAP-designed model includes the expansion of DOTS to public and private health facilities, training of health facility staff on DOTS, equipment provision, regular supervision and monitoring, health facility renovation, enhanced recording and reporting, implementation of SOPs for case detection and diagnosis, and the involvement of private and public non-Ministry of Public Health (MOPH) service providers through the development of the Urban DOTS task force. This approach resulted in significant improvements in both TB case detection and diagnosis.

TB CAP sub-contracted the implementation of the CB-DOTS activities to the Bangladesh Rural Advancement Committee (BRAC) to replicate its experience working with other fragile states in delivering DOTS to communities in need. 23,000 CHWs are currently functioning in Afghanistan covering approximately 80% of the country's population. The NTP recognized the importance of engaging these volunteers as their assistance is invaluable when it comes to achieving its objectives. TB CAP designed a CB-DOTS approach aimed at expanding DOTS deep into communities. The CB-DOTS approach focused on the following activities: strengthening microscopy; training CHWs and community health supervisors (CHS); orienting health workers (nurses, doctors, midwives, lab technicians and pharmacists); improving the provision of DOTS by CHWs; motivating and encouraging CHWs; implementing community level awareness activities; strengthening the reporting and recording systems at the peripheral level; developing a model of integrated activities at the provincial level; providing technical and financial assistance for lab equipment; and upgrading Basic Health Centers (BHC).

From 2009 to 2010, TB CAP trained 6,431 CHWs on DOTS, upgraded 10 BHCs with lab services, distributed 16,109 CHW booklets and raised awareness during various types of community meetings. Such activities resulted in a significant improvement in suspect identification and referrals by CHWs, suspect management in health facilities and increased sputum smear-positive case detection and diagnosis. For the first time, CHWs were involved in suspected TB case findings, referrals, accompanying TB suspects to diagnostic centers and providing DOTS to patients. They also provided information to communities through the distribution of posters and pamphlets, and conducted individual counseling on TB and treatment. Meetings in bazaars, at schools and with religious leaders were conducted to increase knowledge and practices, encourage early care-seeking behavior and adherence to TB treatment.

In total, 32,592 TB suspects were identified in four provinces where CB-DOTS was implemented, of which 3,072 cases were diagnosed as new sputum smear-positive

## Afghanistan

TB cases. Suspected cases referred by CHWs made up 40% of the total suspected cases identified in CB-DOTS provinces. The positivity rate of suspected TB cases referred by CHWs is approximately 13%, whilst among all suspects it is 10% and among urban health facilities it is 11%.

## Urban DOTS was also successfully implemented with the following achievements:

DOTS was expanded to 36 private and public health facilities; 15 health facilities were renovated; 260 health workers from public and private health facilities were trained on DOTS; recording and reporting systems were improved; Urban DOTS task force meetings were conducted monthly; and eight private hospitals were engaged in DOTS implementation. In addition, TB CAP provided the NTP with the technical and financial support needed to conduct regular and effective supervision and monitoring meetings, and DOTS packages (training, diagnosis and treatment packages) were distributed to all health facilities implementing Urban DOTS.

Implementation of the Urban DOTS model has produced good results, health facilities which had not reported a single TB case for the past several years were able to detect TB cases. Suspect management improved dramatically from zero suspects managed to around 10,074 within three quarters. Case detection increased from 143 new sputum smear-positive cases in quarter 4 of 2008 to 316 cases in quarter 2 of 2010. In total, 10,074 TB suspects were identified and examined, of which 1,694 were diagnosed as sputum smear-positive TB cases. In addition, the case notification rate

for new sputum smear-positive TB cases rose from 17/100,000 to 37/100,000 and case notification increased from 32/100,000 to 88/100,000 between quarter 4 of 2008 and quarter 2 of 2010.

TB task force meetings, which had not been conducted for over a year, became more regular. The meetings are now conducted weekly and are chaired by the NTP senior leadership. Meeting minutes are prepared by the NTP and disseminated immediately to partners and stakeholders. More importantly, this is the only decision-making body in the TB control program. Decisions are made in a participatory fashion, with progress tracked by the NTP and its partners.

## TB-IC:

TB-IC, an important but neglected area, was first introduced to the NTP in 2009. SOPs for TB-IC were developed and integrated into SOP training. In total, 586 individuals were trained on SOPs and TB-IC committees were established in seven provincial hospitals. The application of TB-IC measures led to increased satisfaction with and commitment to the DOTS program. TB-IC measures contributed to a safer work climate for health workers, as well as a safer environment for clients and communities.



## Afghanistan

### Policies, Guidelines and Procedures:

TB CAP assisted the NTP in the development of policies, guidelines and procedure manuals. National TB Guidelines and the SOPs for Case Detection, Treatment and Diagnosis were revised. TB CAP contributed to the development of the NTP's first national M&E plan, a TB information system procedures manual, a consolidated work plan for the NTP and a database to ease the data collection, data analysis and feedback provision to different levels of the NTP and the health system. In addition, the SOPs for TB-IC were developed and translated into Dari and Pashto and 3,000 copies will be distributed throughout the country. This will lead to a safer work place for health workers and ultimately will increase staff motivation and client/ community satisfaction through improved TB-IC. TB CAP also incorporated IC into the SOPs training module. TB CAP provided TA to the NTP to develop its first NTP HRD strategic plan and related tools for its implementation. The HRD strategic plan was finalized and will be used by the NTP for staff recruitment, appraisals and retraining. Community, client and staff awareness regarding TB was also addressed by TB CAP. 90,000 IEC materials, 33,000 treatment packages, 20,000 diagnostic packages and 16,000 flipcharts for CHWs and health facilities were distributed throughout the country. Out-dated training curricula were reviewed and updated with technical assistance from TB CAP and a consolidated NTP plan, national M&E plan and a TB information system (TB IS) procedures manual was developed. The first-ever TB IS database was developed and piloted in four provinces and will be extended to the 13 USAID priority provinces and later to the national level.

### Human Resource Strengthening:

Human resource capacity has been an ongoing challenge for the NTP. TB CAP's staff competency approach increased the availability of capable staff at various levels of the Afghan health system, contributing to enhanced leadership and management competence at all levels. TB CAP assisted the NTP with staff training at various levels, including community and health facility levels. For example, 1,316 staff were trained on the SOPs for Case Detection, Diagnosis and Treatment, TB-IC and recording and reporting, and 138 staff were trained on MOST for TB. In addition, 816 health facility staff were oriented on data analysis, interpretation and use at the health facility level for performance planning, implementation, monitoring and supervision. TB CAP assisted the NTP in strengthening its capacity to manage, lead and monitor the TB control program at different levels. For example, 178 senior NTP staff from the national and provincial levels attended 'MOST for TB' and leadership development program (LDP) trainings/workshops. During these workshops, the NTP analyzed its current stage of development and drafted a plan for its improvement. The NTP is now chairing and organizing the weekly TB taskforce meetings.

## Infrastructure:

TB CAP recognizes the importance of good infrastructure in the successful implementation of quality DOTS. The project renovated 38 health facilities to provide a safe work environment for health workers, clients and communities. Renovation of 30 more health facilities is planned and in addition, 10 BHCs were upgraded in four provinces. To improve staff capacity at facility and community levels, 2,000 training packages were distributed to all health facilities in all 34 provinces. TB-IC is a new concept and an essential component of a TB control program. TB CAP assisted the NTP and the Basic Package of Health Services (BPHS) implementers to improve sputum collection areas at the health facility level. Assessments of hospitals and clinics were conducted, with recommendations on how to improve TB-IC provided to the NTP/MOPH. The TB-IC measures applied to most of the health facilities included shifting the location of DOTS rooms as well as sputum collection and waiting areas.



## Bangladesh

Population: 164.4 million Estimated TB Incidence (all cases per 100,000 pop): 223 Estimated number of new TB cases: 353,103

## Background

TB is a major public health problem in Bangladesh. The country ranks sixth on the list of the 22 high burden TB countries. The incidence of TB (all forms) is estimated at 223 per 100,000 per year, and the incidence of new smear-positive patients is 100 per 100,000 per year. TB mortality (all forms) is estimated at 45 per 100,000 per year. 27 countries account for 85% of all MDR-TB cases, with Bangladesh ranking fifth (14,506 estimated cases, 2007). It is also estimated that 3.5% of new and 20% of previously treated patients are suffering from MDR-TB.

The NTP has achieved high treatment success rates, meeting the global target of 70% case detection and 85% treatment success in 2006. The program has successfully treated over 92% of the new smear-positive cases registered in 2007, and has detected over 73% of the estimated new smear-positive cases in 2008.

## **Key Results**

## C/DST:

TB CAP has contributed to improvements in TB diagnostic capacity, including the strengthening of C/DST, sputum smear microscopy and diagnostic capacity for smear-negatives and childhood TB.

TB CAP provided intensive TA to the TB C/DST services. Several visits by consultants and experienced technicians from the Antwerp SNRL resulted in a rapid improvement in the NTRL's performance. This was complemented by quality assurance (QA) of DST via repeated rechecking of NTRL routine results as well as annual rounds of panel testing. The performance of the NTRL is now much improved, with both low contamination and false negative culture rates, and almost 100% correct DST results for first-line drugs. TA was also given to set up regional culture/DST laboratories in the cities of Rajshahi and Chittagong. The Rajshahi laboratory's performance is excellent, whilst Chittagong is still in the early phases. Finally, TB CAP contributed to improvements in the safety, capacity and overall performance of the Damien Foundation reference laboratory (C/DST) in the district of Netrakona. A new safety cabinet was procured and the laboratory benefited from regular TA visits.

Although Bangladesh has a good TB program in place, there are insufficient wellfunctioning facilities and a lack of capacity to diagnose smear-negative and extrapulmonary TB. Of the patients reported since 2003, only 25 to 30% were diagnosed with smear-negative or extra-pulmonary TB, when compared to the expected rate of 50-55%. In order to increase diagnostic capacity, TB CAP upgraded laboratories by procuring the necessary laboratory equipment and renovating many facilities.

## **TB CAP Country Highlight**

A total of 5,814 TB suspects were identified through TB CAP-supported sputum collection centers of which 221 were diagnosed as smear positive. 3,950 most at risk persons (MARPs) were screened, and 3,066 were tested for TB of which 280 were smear-positive.

It was also determined that the country should improve the efficiency and performance of diagnostic services by expanding LED fluorescence microscopy. TB CAP procured LED fluorescence microscope modules and conducted a training of trainers (TOT) for 17 master trainers. TB CAP assisted in the development of a laboratory manual for fluorescence LED microscopy and SOPs for C/DST. 11 LED modules were procured and the remaining 30 modules have been ordered.

Detection of childhood TB in Bangladesh is a much neglected area. TB CAP provided TA to develop different training courses. A technical working group for childhood TB was also created involving both personnel from the NTP and the Bangladesh Pediatric Association, thereby boosting national ownership.

EQA is an important aspect of diagnostic capacity, TB CAP conducted an assessment which led to nine performance review workshops in which 180 EQA coordinators and controllers participated. One of the important recommendations from the EQA workshops was to orient EQA coordinators and to train EQA first controllers. TB CAP organized an EQA orientation course for 33 coordinators to develop their capacity, introduce an SOP on QA and EQA, and to provide practical training on EQA procedures.

As the diagnosis of smear-negative patients was an issue, TB CAP conducted training for 19 radiologists on Quality Assurance of Chest Radiography. They acquired the skills and knowledge necessary to assess and assure the quality of chest radiography. This was the first country-specific training and also the first time this type of training had been conducted in Bangladesh.

## Strengthened Leadership and Management by Assisting and Supporting NTP at the National Level:

Yearly performance reviews were initiated in all 472 sub-districts of the country under TB CAP. This activity engaged a vast number of health professionals at the community level to share their achievements and challenges with managers and policy makers. Over two years, approximately 69,000 health workers participated and their suggestions and recommendations for the TB program were given to the NTP and incorporated into future planning.

A high level advocacy meeting was organized to strengthen the Urban TB control program by increasing opportunities and improving partnerships with the City Corporations. As the City Corporations' health networks operate separately under the Ministry of Local Government, this meeting gave them the opportunity to discuss collaboration and coordination with MoH staff and the NTP. Coordination between these two ministries is required to make Urban TB control a success. These coordination efforts need to continue in the future.

## Bangladesh

Web-based electronic recording and reporting was initiated, with individual patient data entry. The NTP decided to use the e-TB Manager software, which was customized for Bangladesh, the relevant staff from pilot sites were trained on the software and the pilot has already begun.

## Improved Diagnostic Capacity:

Case finding and referral services were intensified at the community level by supporting the Damien Foundation (one of the NTP's key stakeholders), to successfully establish 50 sputum collection centers in 10 districts in Dhaka and Rajshahi Divisions. A total of 5,814 TB suspects were identified through the sputum collection centers, of which 221 were diagnosed smear-positive.

## Scaled-up TB-IC Measures at Country Level:

TA was provided to assess the NRL, Infectious Disease Hospital, the Chest Disease Clinic-Dhaka, HIV treatment and care centers and MDR-TB Hospital in Netrokona District for TB-IC. Informed by these assessments, a training plan was developed, and a TB-IC TOT was given to 28 participants from the government and NGO sectors. Following the TOT, orientations on TB-IC were conducted in 411 out of 472 sub-districts in the country, approximately 13,000 health workers were oriented.

TB CAP supported the establishment of a model site for TB-IC at the Chittagong Chest Disease Hospital. The project assisted in developing IC SOPs and guidelines for the facility and trained staff. Administrative controls were put in place and personnel protective equipment was procured and recommendations were also made for the necessary engineering controls in the facility.

## **TB/HIV Collaborative Activities:**

There have been minimal activities linking TB and HIV services in Bangladesh. TB CAP expanded access to TB services for populations most at risk of contracting HIV (MARPS) who do not usually have access to health services. 42 sputum collectors and DOTS providers, mostly peers, were trained and deployed to HIV centers for MARPS (sex workers, migrants, drug users and clients of sex workers, some of whom are usually refused health services). Barriers were broken and health services were provided to people who really needed them. 3,950 MARPs were screened and 3,066 were tested for TB, of which 280 tested positive. Along with screening TB suspects, the sputum collectors held 4,477 sensitization meetings within the community creating an increased awareness of TB issues in the country.

## MDR-TB:

MDR-TB is an emerging problem in Bangladesh. There are 27 countries which account for 85% of all MDR-TB cases and Bangladesh ranks fifth. Currently, there are only four hospitals treating MDR-TB patients. To reduce the burden of MDR-TB patients on the hospitals and increase adherence to treatment, Bangladesh developed a policy stating that MDR-TB patients would be hospitalized for six months during the intensive treatment phase then discharged to continue treatment at home. Under this new policy TB CAP supported the first-ever training in Bangladesh on ambulatory MDR-TB management. 260 participants were trained to supervise MDR-TB treatment at the community level. This allowed many patients in the ambulatory phase to be discharged, freeing up much-needed space in hospitals for new MDR-TB patients. TB CAP renovated the central drug storage facility to meet the required standards, and procured storage racks, air conditioners and dehumidifiers to ensure proper storage of MDR-TB drugs. To improve the morale of MDR-TB patients at the National Institute

of Diseases of the Chest and Hospital in Dhaka, TB CAP provided a vocational trainer and a counselor for MDR-TB patients and established a library at the hospital.





## Bangladesh







## Botswana

Population: 2million Estimated TB Incidence (all cases per 100,000 pop): 503 Estimated number of new TB cases: 6560

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## Background

Botswana is a middle income country which is plagued by two of the most serious epidemics in the world today. It has one of the highest TB notification rates, 477/100,000 in 2007, with 60-80% of TB/HIV co-infection. The 4th Drug Resistance Survey (2007-2008) showed an increase of MDR-TB prevalence in new cases from 0.8% in 2002 to 2.5%. The number of XDR-TB patients increased from 3 in 2008 to 5 in 2010.

## National TB program reviews conducted in 2006 and 2009 identified several serious challenges in TB control including:

- Fragmented and non-user friendly services for HIV-infected TB patients and inadequate cooperation between the TB and HIV/AIDS programs
- Sub-optimal coverage of peripheral laboratories with acid fast bacilli (AFB) microscopy EQA and training programs
- A need to strengthen culture and DST services for TB control through increased capacity and improved performance, including usage of a supranational laboratory for second-line drug testing and EQA
- Inadequate human resources.

Given the ongoing challenges faced by the Botswana NTP (BNTP), TB CAP support has been strategically important in strengthening program management for patients dually infected with TB and HIV, laboratory services for TB control, and human resource development.

TB CAP was approached by the USAID country mission to support capacity building and accelerate the scale-up of community-based TB/HIV collaborative activities, MDR-TB management, and TB-IC through the recruitment and posting of three TB CAP technical staff in the Botswana Ministry of Health (BMoH) and the National TB Reference Laboratory (NTRL).

## Three technical staff were recruited:

- 1. TB Technical Advisor to the National Health Laboratory: This position focused on capacity building, the development of quality-assured C/DST services, and the introduction of new laboratory technologies.
- Chief Medical Laboratory Technician: This position focused on the development and expansion of EQA of the sputum smear microscopy network, quality assurance of this service in general, and AFB microscopy training for peripheral laboratories.
- TB/HIV Technical Advisor: This position was seconded to the Central Unit of the BNTP. The TB/HIV Advisor assisted the Program Manager of the BNTP on collaborative TB/HIV activities and related components of the Stop-TB Strategy.

TB CAP also provided supervision and technical support through backstopping, country visits, facilitating the training of recruited staff, targeted missions addressing

## **TB CAP Country Highlight**

The number of laboratories enrolled in the blind re-checking program increased from 12% to 73%, and the number of labs receiving support visits increased from 20% to 100%

HRD issues, preparation of the Global Fund Proposal Round 10, and assistance to the MoH in developing a Human Resource Strategic Plan for TB control.

## **Key Results**

The NTRL capacity was strengthened as evidenced by its capacity to process steadily increasing numbers of specimens for culture and DST. New rapid techniques were introduced, such as MGIT 960 for the isolation of Mycobacteria, and rapid immune-chromatographic test for the identification of Mycobacteria tuberculosis complex. Technical support for the introduction of a laboratory information system was also been provided. The time to Mycobacterial culture positivity has decreased from an average of 20 days on solid Lowenstein-Jensen media to 9.4 days on MGIT 960, whereas the turn-around time for the identification of Mtb has decreased to four weeks.

## Laboratory and Microscopy:

Beginning in July 2009, AFB EQA and AFB microscopy training programs were significantly strengthened. All 51 of Botswana's laboratories performing AFB microscopy received and participated in panel testing annually. By September 2010 the number of laboratories enrolled in the blind re-checking program increased from 12% to 73%, and the number of labs receiving support visits increased from 20% to 100%. AFB microscopy training is being done on monthly basis. The number of laboratory technicians trained increased from 26 to 171. TB CAP assisted the MoH to strengthen Mycobacterial culture/DST services by facilitating the accreditation process of the NTRL, developing a Quality Management System, and introducing rapid techniques for TB laboratory diagnostics. TB CAP assisted in strengthening the laboratory network through support of AFB microscopy training and EQA programs.

## **TB/HIV Collaborative Activities:**

Significant progress has been made in strengthening of TB/HIV collaboration activities. TB/HIV guidelines have been developed and at least 30 facilities received TB/HIV support visits.

## Botswana



Airflow Measuring - Botswan

NTRL Staff - Botswana

## Cambodia

Population: 14million

Estimated TB Incidence (all cases per 100,000 pop): 495 Estimated number of new TB cases: 70,949

## Background

Cambodia ranks 21st on the list of 22 high burden TB countries. An estimated 64% of Cambodians are infected with TB and a substantial number of cases remain undetected. As of 2007, around 13,000 Cambodians died annually from the disease. There were almost 71,000 new TB cases in Cambodia in 2006, with an estimated incidence of 495 cases per 100,000. TB CAP initiated work in the country in March 2007 focusing on assistance to the NTP in developing a foundation to decentralize program management and provide quality DOTS services according to local needs. Country activities involved five of TB CAP's coalition partners: FHI 360, JATA, KNCV, MSH and the WH0. Within a short period of time, TB CAP established itself as the main source of TA to the NTP, leveraging the technical strengths of its coalition partners to provide coordinated assistance.

At the national level, TB CAP played a key role in assisting the NTP in the development of policies and guidelines, including a national strategic plan for TB Control, 2011-2015, with budget. It also organized TOTs on new technical areas, provided assistance in conducting surveys, studies and evaluations, and mobilized resources for the NTP. TB CAP contributed significantly to: progress made in the area of TB/HIV, including the "Three I's"; addressing high risk groups, such as prisoners and children, and improving capacity for the diagnosis of smear-negative TB patients.

TB CAP is represented in all NTP technical working groups, some of which it helped to establish or revive, and also in the Inter-Agency Coordination Committee (ICC). In addition, TB CAP worked closely with other USAID-funded TB partners in Cambodia, facilitating regular meetings of partners where experiences can be shared and coordination improved.

## **Key Results**

## Improvement in Diagnostic Capacity:

HCWs are responsible for collecting sputum, preparing smears and sending them to the nearest microscopy centre for reading. Most of the workers collecting sputum smears have no background or training in laboratory practices, therefore quality has been a concern. Another issue related to diagnosis has been the lack of capacity and access to additional tests, such as chest radiography for the diagnosis of smearnegative pulmonary TB. To address these issues, TB CAP supported: diagnostic capacity improvement by providing formal training on improving smear making skills for health center staff, smear assessment training for TB laboratory technicians, X-ray reading skills for referral hospital staff, assisting hospitals to form diagnostic committees for smear-negative cases, establishing referral systems from health centers to referral hospitals and conducting joint supervision with NTP staff for mentoring and on-the-job training.

### TB CAP Country Highlight

Between 2008 and 2010 the proportion of laboratories enrolled in the blind rechecking program increased from 12% to 73%, and the proportion of labs receiving supervision visits increased from 20% to 100%

Starting in five provinces, the diagnostic capacity improvement projects were expanded to 10 provinces by 2010. Reports from regular monitoring and supervision indicate that the TB health staff have made remarkable improvements in diagnostic capacity. Agreement rates for radiological diagnosis of smear-negative TB cases (active TB) between the cross checker from CENAT and the referral hospital staff increased from 85.6% in quarter 4 of 2009 to 91% in quarter 1 of 2010 (i.e. within six months). The baseline agreement rate for the diagnosis of smear-negative pulmonary TB was 62.6%. Overall, TB CAP contributed to a significant improvement in the diagnosis of smear-negative TB. In 2006, the percentage of smear-negative TB as a proportion of total pulmonary cases was 34% which increased to 46% in 2009.

## TB/HIV:

Though the prevalence of HIV infection among TB patients has decreased in recent years, from a high of 11.8% in 2003 to 6.4% in 2009, Cambodia still has one of the highest burdens of TB/HIV co-infection in the Southeast Asia region.

To strengthen TB/HIV collaboration, TB CAP facilitated regular meetings of the TB/ HIV Technical Working Group, at which both national programs and key partners are represented. TB CAP trained staff from both programs on TB/HIV clinical management skills and organized workshops to develop and run a TB care review meeting for capacity building. To facilitate HIV testing, TB CAP supported the transportation of blood samples from TB patients to voluntary counseling and testing sites for HIV tests and encouraged TB screening of PLHIV. TB CAP contributed to the development of the SOPs for the "Three I's", and more recently, the revised framework for TB/ HIV. In collaboration with the national AIDS program (NCHADS), TB CAP has been implementing pilot projects for the "Three I's" in three provinces since July 2010. In these pilot sites, evidence-based algorithms are used to maximize the opportunity to diagnose and treat TB as early as possible among HIV patients. PLHIV unlikely to have active TB are provided with IPT and the necessary IC practices are being implemented to reduce the risk of TB transmission.

TB CAP has contributed to an expansion in the implementation of TB/HIV collaborative activities which now cover all 77 health operational districts (OD). TB CAP supports activities to promote HIV testing of TB patients. The uptake of HIV testing among TB patients increased from 13% in 2006 to 70% in 2009, and the provision of ART services for co-infected patients continues to improve. TB CAP completed an evaluation of the various options for testing TB patients for HIV, the 2009 National HIV sero-prevalence survey among TB patients, and the annual TB/HIV workshops at the national level.

## Cambodia

## TB-IC:

TB CAP facilitated the first initiatives on TB-IC in Cambodia, which until recently received little attention. The focus of initial activities was on conducting situational assessments, developing plans and guidelines, building capacity and piloting the implementation at one facility.

TB CAP supported the preparation of national SOPs for TB-IC and an implementation plan for 2011-2015. The TB-IC implementation plan was also used for budgeting TB-IC related activities included in the Global Fund Round 10 application. TA was provided to contribute to the MoH general infection guidelines and suggestions for improving the chapter on TB-IC for the national MDR-TB guidelines. TB CAP organized two TOTs on TB-IC attended by 62 participants.

## **TB** in Prisons:

TB CAP conducted an assessment of the TB situation and control program in national prisons in 2008. Subsequently, TB CAP initiated activities to provide TB/HIV services in fours prisons, using a combination of active and passive case finding, and offering HIV testing to all those presenting with TB symptoms. In 2009, 156 TB patients, including 76 smear-positive patients (48%) were diagnosed among the 3,034 prison inmates. In 2010, 101 TB patients were diagnosed among 3,453 inmates. Compared to the NTP report for 2009, case notification rates in these prisons were 17 times higher. Treatment outcomes available for 148 of the patients registered for treatment in 2009 showed a treatment success rate of 95%. Interestingly, the HIV prevalence among these prisoners was 0.6%, almost the same as in the general population. The experience corroborates the observation in other countries that there is a much higher burden of TB in prisons than in the general population. TB CAP presented its experiences at both national and international forums and advocated for an urgent expansion to provide TB/HIV services in all 25 prisons in the country.

## Laboratory Strengthening:

Although the NTP introduced a new EQA system for sputum microscopy some years ago, a false negative rate of 15% was recorded in 2005. EQA was heavily centralized and had limited geographical coverage. Together with other partners, particularly a Japanese International Cooperation Agency (JICA) project and the Global Fund, EQA was gradually decentralized and expanded countrywide, with TB CAP focusing on nine provinces. TB CAP organized supervision skills training for new and existing TB laboratory supervisors, on culture and DST for staff of the three culture centers, and on biosafety issues for staff of the national TB reference laboratory. TB CAP also supported operational costs for performing culture and DST to strengthen capacity for smearnegative TB diagnosis. The number of labs participating in quarterly EQA for sputum microscopy was maintained at over 90% during the project period, with labs in TB CAP-supported areas achieving a higher percentage of correct microscopy results when compared to the national average.

## Childhood TB:

Even though national childhood TB guidelines were developed in 2008, implementation was limited, except for some active case finding activities by the CENAT/NTP team. In 2009, TB CAP initiated pilot activities for strengthening the management of childhood TB in six districts. Workshops to introduce the TB childhood guidelines were supported as was training for staff. TB CAP also developed referral systems and improved diagnosis using tuberculin testing. The project facilitated supervisory visits to monitor

the capacity of TB physicians to diagnose TB in children. NTP supervisors also provided on- the-job training to the physicians to improve their skill in childhood TB diagnosis. Figures from four of these districts show a significant increase in the proportion of childhood TB cases. In 2008, the proportion of children registered under the NTP stood at 9%, a figure which had increased to 14% by June 2010.

## **Drug Management:**

First-line anti-TB drugs are procured, stored and distributed along with other supplies using the existing MoH system. The NTP will soon embark on scaling up MDR-TB diagnosis and treatment and will start the management of second-line drugs. Given the complexity of this procurement and management, TB CAP assistance in drug management has focused on second-line drugs. TB CAP supported the NTP to develop an operations manual for second-line drug management. The manual was successfully piloted in three MDR-TB treatment sites.

## PMDT:

The NTP has achieved more than 90% treatment success rates for over 12 years, with very low failure, death and default rates for new as well as retreatment cases, pointing to a low MDR-TB problem. However, the second DRS showed 1.4% MDR-TB in new cases and 10.5% in previously treated cases, indicating an increase from the first survey result of 0/638 (0%) of MDR in new cases and 3/96 retreatment cases (3.1%). The NTP is embarking on PMDT from 2011 onwards and in preparation for this role, TB CAP provided TA to the NTP to prepare an application to the GLC for the enrolment of 280 MDR-TB patients, which was approved. TB CAP assisted in the preparation of an expansion plan for PMDT for the period 2011 to 2015, including transitional plans for moving from NGO-initiated pilot projects to programmatic implementation under the stewardship of the NTP. TB CAP also contributed to the national MDR-TB guidelines and training of 25 trainers for MDR-TB.

## Strengthening TB Program Leadership and Management:

TB CAP assisted CENAT in developing an HRD inventory on the manpower, skills and workload situation. In addition, a strategic plan for human resource development was drafted. TB CAP conducted courses to improve supervision skills of NTP staff and to strengthen data management skills. TB CAP conducted two training workshops on the Planning and Budgeting tool for CENAT and provincial level staff, which helps them to plan and budget TB control activities in their provinces. TB CAP led the development process for the national strategic plan for TB control, 2010-2015. The plan provides medium-term future directions for the NTP and helps them to better estimate both the financial needs and gaps, information which guides decisions on resource mobilization and planning.

## Support to the Global Fund:

TB CAP provided technical support to the NTP in grant negotiations for Global Fund Round 7. It also provided TA in the proposal writing process for applications to Round 8 and Round 10, and served on a technical review panel at the country level.

## Cambodia

## **Studies and Evaluation:**

TB CAP has also been involved in a number of studies, reviews, evaluations and other information gathering activities:

- Assessment and inventory of IEC materials for TB and TB/HIV
- Translation and distribution of ISTC and the "Handbook on Quality Assurance for Chest Radiography"
- Assessment of the TB situation and control program in national prisons in Cambodia, 2008
- Evaluation of PPM and Community DOTS in Cambodia, 2008
- National HIV sero-prevalence survey among TB patients, 2009
- Evaluation of options for HIV testing of TB patients. In 2010, a study on HIV testing of TB patients, including evaluating the role of Option 2 in increasing the HIV testing rates of TB patients, was conducted.
- In collaboration with JICA, provided TA in the development of the protocol and supported operational costs for the 2010-2011 national TB prevalence survey.
- Documentation of CB-DOTS in Cambodia, 2010 (ongoing).









## Djibouti

Population: 864,000 Estimated TB Incidence (all cases per 100,000 pop): 620 Estimated number of new TB cases: 3972

## Background

Djibouti is a lower-middle income country with a the high rate of poverty a significant number of migrants and approximately 14,000 refugees. According to WHO estimates published in the 2010 Global TB Report, Djibouti has one of the highest estimated TB prevalence rate in the world with 853 cases of TB (all forms) per 100,000 population. The estimated incidence of TB (all forms) is 620 per 100,000, constituting one of highest incidence rates in the world. The case detection rate was estimated at 71% in 2009.

Despite achievements in TB control, important challenges remain and are a real threat to the sustainability of gains. At its start in 2007, TB CAP focused on: developing the capacity of the NTP Central Unit, of clinical staff in DOTS implementation and of lab technicians, and introducing an EQA system. Lab technicians and staff were trained using modules developed with TB CAP technical and financial support. Supervision guidelines for DOTS activities and a supervision checklist for lab activities were developed, tested and subsequently used by DOTS and laboratory supervisors. A recording and reporting system in line with the Stop TB Strategy and the new policy of the national program, notably addressing TB/HIV co-infection, was developed.

The focus of TB CAP was on DOTS, IC, PMDT, PPM, and health systems strengthening, specifically human resource development. In this context a new TB guide was produced together with a PPM guide. All actions undertaken in the areas above resulted in: the NTP central unit having adequate capacity to fulfill its role in designing, implementing, supervising, monitoring and evaluating TB control interventions; an EQA system; a basic capacity in MDR-TB management; mainstreaming IC; strengthened capacity in TB control by providers from outside the NTP; and a strengthened health system. An important impact of TB CAP is the fact that it allowed the country, within the difficult context of the suspension of funding from the Global Fund, to avoid shortages of lab reagents, lab equipment and sputum containers and drug shortages.

## **Key Results**

## Improvement in Diagnostic Capacity:

The number of centers involved in TB care increased from 10 at the end of 2006 to 26 in 2010. The number of TB cases detected (all forms) increased from 3,095 in 2006 to 3,804 in 2009. The number of new smear-positive pulmonary TB cases detected increased to 1,377 in 2009, up from 1,153 in 2006, while the success rate in the 2008 cohort reached 84%, up from 77.5% in 2006.

## CB-DOTS:

Capacity in DOTS was strengthened by:

- 1. Enhancing the capacity of the NTP Central Unit through the procurement of office and IT equipment, and a vehicle for supervision.
- 2. Training 115 clinical and lab staff, including providers outside the NTP.

**TB CAP Country Highlight** HIV testing among TB patients increased from 13% in 2006 to 70% in 2009.

- 3. Developing a guide for supervision of DOTS activities and a supervision checklist for lab activities resulting in the reinforcement of supervision activities.
- 4. Establishing a QA system of sputum smear microscopy and procurement of equipment for the NRL to perform culture and drug sensitivity testing.
- 5. Procurement of three fluorescence microscopes for the NRL and seven for peripheral labs.
- 6. Procurement of sputum containers, reagents for TB microscopy, and starter kits (glassware and other materials).
- 7. Procurement of a Microbiological Safety Cabinet, Class II.
- 8. Improving TB drug management through continuous TB CAP TA, conducting regular inventories of existing stocks and determining needs as well as participation in the annual Global Drug Facility (GDF) monitoring visit and other relevant missions.

## MDR-TB:

TB CAP helped the NTP to develop and finalize a GLC proposal and an MDR-TB management strategy which will be implemented as soon as the NRL renovation is completed in late 2010. At this time the NRL will have the capacity to perform culture and DST. Six medical doctors and four paramedical staff from the National TB Reference Center were trained on MDR-TB case management and programmatic management of MDR-TB in line with the Stop TB strategy.

Strengthening capacity in MDR-TB took place in tandem with the process of upgrading the National Reference Laboratory to the biosafety level (BSL) 3 standard, and the introduction of new and rapid diagnostic technologies with the assistance of Foundation for Innovative New Diagnostics (FIND).

## TB-IC:

TB CAP recruited an IC consultant who established IC procedures and trained the National Reference TB Centre staff on IC measures and procedures.

## PPM:

An updated TB guide in line with the Stop TB strategy and a PPM guide were produced. PPM interventions were implemented by: conducting a mapping of health care providers and a situational analysis; developing a PPM guide; training clinical and lab staff from facilities outside the NTP; and conducting a survey among non-NTP health care providers, including health insurance, private clinics and hospitals, and corporate health services.

## **Global Fund:**

TB CAP was instrumental in the Global Fund Round 6 TB proposal development in 2006 and its finalization in 2007. TB CAP provided TA to the NTP in Global Fund Round 6 proposal development, grant negotiation, grant implementation and negotiation of the second phase.

## Djibouti

## HRD:

In terms of human resources, the training of lab technicians and clinical staff has improved the capacity of health workers not dedicated to TB and who deal with other public health problems, especially HIV and malaria. A situational analysis of the HRD component of the NTP and of HR for TB control was conducted. This will serve as a basis for the development of the National TB HRD plan.

### Infrastructure:

TB CAP facilitated the renovation of five peripheral centers where infrastructure problems had prevented the laboratories from functioning.

Eight district health centers were equipped with tables and medicine cabinets and their staff were trained so that they have become DOTS Centers.

### Laboratory Strengthening:

The investment in laboratory strengthening had an impact on the laboratory component as a whole within the health system. Laboratory coverage increased from one laboratory for every 83,500 people to one laboratory for every 52,064 people. A QA system of sputum smear microscopy has been put in place. This involved the development of a laboratory manual, training NRL staff on QA procedures, and the development of forms needed for double-blind rechecking of slides.





## **Dominican Republic**

Population: 10 million Estimated TB Incidence (all cases per 100,000 pop): 90 Estimated number of new TB cases: 3640

### **TB CAP Country Highlight**

The number of TB cases (all forms) detected increased from 3,095 in 2006 to 3,804 in 2009, a 23% increase in detection.

## Background

The Dominican Republic is one of 10 countries in the Latin America and Caribbean region declared a priority by PAHO/WHO because of its high TB prevalence rate, estimated at 90 per 100,000. According to the WHO's Global TB Report 2009, the Dominican Republic had an estimated 6,764 TB cases in 2007.

The country's ongoing government health reforms are affecting the functioning of the TB program and its activities at all levels.

## **Key Results**

**Improved Quality of Supervision and Data Management at the Decentralized Level:** TB CAP activities began in November 2009. The central NTP team and personnel from the Global Fund principal recipient, Profamilia, were trained in supportive supervision, strategic planning, quality DOTS, and quality management. Step-down trainings were done within the eight health areas of Santo Domingo and by July 2010, expanded to all 32 provinces. During this countrywide training, TB coordinators were also trained in epidemiological surveillance. Nearly all provinces and areas have started to manage their data electronically, improve the quality of paper-based data collection and compilation of indicators, and started to make use of indicators and supervision findings to design or adjust provincial, municipal and local interventions. All the findings of supervisory visits are fed back to the central level on a regularly basis.

### Increased Partnerships for Early Case Finding of TB with Civil Society Groups, Shopkeepers and Pharmacies in Pilot Areas:

Advocacy communication social mobilization (ACSM) and PPM activities were started in Santo Domingo on a pilot basis. The city has many slum areas where the bulk of TB and MDR-TB cases are found. Community groups, small shopkeepers (colmados) and pharmacies were involved in early case finding activities. In several provinces, Stop TB partnerships with various organized community groups were started at municipal and provincial levels, implementing activity plans for early care-seeking and support to TB patients. In order to respond to the increase in demand for TB diagnostic services, general health staff were trained in early case-finding in health establishments, and innovative IEC materials were used in outpatient clinics to remind medical personnel to request sputum tests for TB symptomatic patients.

### Improved Quality and Supportive Supervision:

It was recognized that there was a need to update existing supervision guidelines to include all the components of the new Stop TB strategy. Three training programs on supportive supervision were conducted at different levels and supportive supervision

is now implemented countrywide by provincial coordinators. The TB CAP team, together with the provincial or area TB coordinator, conducted 161 visits to health facilities in the 12 project provinces and six priority health areas. The updated supervision guidelines were used during these supervision visits.

### Strengthened Data Collection Process with Improved Epidemiological Criteria:

Weaknesses in provincial coordinators' epidemiological data management and the use of data for decision making and planning of TB interventions were observed during supervisory visits. A training of all TB coordinators was implemented on a variety of subjects including: motivation for change and leadership, public health management, supportive supervision, and epidemiology and data management, including the use of Excel.

### Increased Partnerships for Early TB Case-Finding:

Better results in early case-finding and adherence depend on the availability of diagnostic and treatment services. They also rely on proper individual health-seeking behavior and on a non-stigmatizing attitude towards the disease in communities. Solely increasing the level of TB knowledge has proven to be insufficient when it comes to changing people's behavior. To address these challenges nearly 1,400 volunteers were trained. They are implementing innovative TB activities designed to decrease stigma and increase early health seeking behavior when an individual has a productive cough for more than 2 weeks.

### PPM: Collaboration with Pharmacies and Colmados (small neighborhood shops):

Before visiting medical services, many patients first go to their local pharmacy or colmado to buy a quick remedy, such as cough syrup or analgesics. TB drugs are not available in pharmacies in the Dominican Republic and therefore referring TB suspects to health services could mean a loss of clients for pharmacies. Involving pharmacies in early referral is therefore not as easy as it appears. A study was designed and implemented to measure the intention of pharmacies to refer patients with respiratory symptoms of TB to health centers using 'mystery' clients. A referral system was set up giving each referred patient a referral slip. Health centers in the area kept track of the incoming patients with referral slips. Preliminary results gathered from the health centers as of September 2010 showed 71 referrals sent by pharmacies and 30 referrals by colmados, of which five were confirmed new TB cases.

## **Dominican Republic**



## **Democratic Republic of Congo**

Population: 68 million Estimated TB Incidence (all cases per 100,000 pop): 535 Estimated number of new TB cases: 110,032

> **TB CAP Country Highlight** TB CAP increased partnerships for the early case finding of TB.

## Background

The Democratic Republic of Congo (DRC) ranks 10th among the 22 TB high-burden countries that contribute 80% of the global TB burden. The WHO estimates that 430,000 new cases of TB (all forms) occurred in 2009 and that incidence is increasing . TB is one of the leading causes of death in the DRC. In 2009, there were 116,664 cases (all forms) detected, including 73,191 smear-positive cases. The case detection rate is around 68%, and the treatment success rate was 87% in 2009. TB is a major public health problem in the country.

TB CAP activities started in 2005 in two provinces, South Kivu and Maniema. In 2008, activities expanded to three additional provinces, East Kasaï Occidental, West Kasaï Occidental, and East Equateur. At the end of the project, TB CAP was active in five provinces comprising five TB areas, and including 108 health districts (21%) and 325 Centers for Diagnosis and Treatment of TB (23%). The geographical areas have a total population of 13,420,468 (19%).

TB CAP has had a significant impact in the country, and especially in the areas of MDR-TB, CB-DOTS, TB/HIV collaborative activities and case notification.

## **Key Results**

## MDR-TB:

TB CAP is the first project in the DRC providing MDR-TB patients with social support, such as food, fees for hospitalization, and blood and biochemical tests. This social support went beyond the five TB CAP-supported provinces. All MDR-TB patients throughout the country have benefited.

Other TB CAP activities which have had an impact on all MDR-TB patients are:

- Renovation of the culture and DST national laboratory
- Development and printing of MDR-TB guidelines
- Distribution of small boxes for the transport of suspect MDR-TB patient's sputum from the peripheral level to the culture and DST laboratory
- Provision of consumables to the national laboratory for culture and DST.
- Renovation of rooms in the two main hospitals in Kinshasa
- Renovation of the culture and DST national laboratory is ongoing

From 2007 to 2010, 629 chronic patients submitted sputum to the laboratory for culture and DST. 288 were diagnosed with MDR-TB (46%) a 336 MDR-TB patients on treatment throughout the country regularly benefited from food and social support from TB CAP

## CB-DOTS:

CB-DOTS activities were conducted by two NTP partners: the National League against Tuberculosis and Leprosy (LNAC), and the former TB patients' association called Club des Amis Damien (CAD). The LNAC addresses the training of volunteer CHW trainers in all provinces, advocacy with provincial political leaders, negotiations, and getting TB/HIV related messages broadcast on TV and published in newspapers. CAD has expanded its activities outside Kinshasa and into the five TB CAP provincial TB areas. It is responsible for training its own members and for psycho-social support and health education for TB patients and families. These partner organizations achieved the following results:

## LNAC:

- Advocacy activities on financing TB were conducted with 500 political leaders.
- 554 community based organizations are functioning in Kinshasa and provinces
- 780 volunteer CHWs were trained in the five TB CAP areas
- TB/HIV messages were broadcast on public and private TV
- TB/HIV news was published in three newspapers in Kinshasa
- Educational tools (leaflets, picture boxes) were developed and disseminated throughout the country
- The TB Patients' Charter was translated into four national languages and distributed to all the provinces in the country
- 16 bicycles were provided to volunteer CHWs to accomplish their daily home visits.

## CAD:

- 144 former TB patients were trained in all five TB CAP-supported provinces.
- 18 bikes were provided to trained members in two provinces to perform home visits
- 1,423 suspected TB patients were referred to TB facilities for microscopic sputum examination
- Of these, 428 were diagnosed as smear-positive TB patients in 2009.

## **Collaborative Activities:**

TB CAP supported the production and dissemination of national guidelines for TB/ HIV activities. It also supported renovations and integration of HIV services into 14 TB facilities (4% of the 325 TB facilities supported by TB CAP) through FHI 360 expertise in four provincial areas. This support consisted of training 84 staff at the intermediate and peripheral levels (67 nurses and 17 laboratory technicians), constructing seven incinerators, providing 14 computers to health facilities and three Dynabead CD4 fast counts to provincial hospitals, and funds for supervisory visits. 14 TB facilities have

## **Democratic Republic of Congo**

integrated collaborative activities with HIV by ensuring counseling of TB patients, testing them for HIV after counseling, and treating HIV positive TB patients with ART and cotrimoxazole. TB/HIV guidelines, a checklist for TB screening in people living with AIDS, and patient referral guidelines have been prepared, printed and distributed. 11,166 TB patients have been counseled and tested in the 14 TB facilities, out of a total of 31,354 tested in the country (36%).

## **Case Notification:**

DRC has 515 health districts in which there are a total of 1,421 TB facilities. TB CAPsupported provinces covered 108 health districts (21%) in which there are 325 TB facilities (23%). In the five TB CAP-supported provinces, case notification increased from 8% in 2005 to 19% in 2009.



## Ethiopia

Population: 83 million Estimated TB Incidence (all cases per 100,000 pop): 370 Estimated number of new TB cases: 314,267

## **TB CAP Country Highlight**

In two TB CAP-supported areas case detection rates increased dramatically: In North Shoa from 23% in 2006 to 29% in 2009 and in East Shoa from 36% in 2006 to 52% in 2009.

## Background

TB has been one of the major public health problems in Ethiopia for about five decades. According to the WHO 2009 TB Report, Ethiopia ranks seventh among the 22 high burden countries, and third among the top three in Africa. The incidence of all forms of TB was estimated at 370 per 100,000 while the incidence for sputum smear-positive pulmonary TB was 160 per 100,000. The Federal MoH's 2008 notification showed that: new and relapse cases were 148,924; new SS+ cases were 44,396; the case detection rate of SS+ was 34%; detection of all forms was 51%; and the treatment success rate was 84%.

According to the WHO, Ethiopia ranks fifteenth out of the 27 global MDR-TB priority countries with an estimated 5,825 MDR-TB cases in 2006. The first DRS conducted nationwide in 2003-2005 by the Ethiopian Health and Nutrition Research Institute (EHNRI), showed that among 804 newly diagnosed TB cases, 1.6% had MDR-TB. The rate of MDR-TB among specimens from 76 previously treated TB cases was 11.8%. EHNRI reported 273 DST confirmed MDR-TB patients as of December 2008. EHNRI has completed all the necessary preparations to conduct a national DRS towards the end of 2010.

TB CAP supported TB control activities at the national level and in seven zones of the three major regions of the country, covering a total population of 13 million. It aimed to strengthen the country's TB control program by implementing a comprehensive approach with seven programmatic components: strengthening TB diagnostic capacity, improving drug management, strengthening basic DOTS and TB/HIV collaborative activities, PMDT, TB-IC and community-based TB control (CBTC).

## **Key Results**

## Laboratory Strengthening:

TB CAP supported the NTP at all levels. Nationally, it supported the development of SOPs, guidelines and an AFB manual. At regional and facility levels, the project focused on improving the diagnostic capacity of laboratories through training, provision of equipment and supplies and supportive supervision. TOT and basic training on AFB microscopy and EQA were provided for 51 and 471 laboratory personnel, respectively; 102 microscopes/kits were procured and distributed to 94 TB Microscopic Units (TMU) and three regional laboratories; and four computers were procured and distributed for the regional laboratories. Regular on-site training and joint supportive supervision visits and EQA were conducted with the TMUs in TB CAP-supported zones. To improve TB case detection, TB CAP conducted training programs. A total of 481 health professionals were trained on DOTS. Heath facilities were supported through on-site training, mentoring activities and joint supportive supervision visits. A total of 51 TB program managers working at national, regional and local levels were trained on 'MOST for TB'.

As a member of the national technical working group (TWG), TB CAP contributed to the forecasting and quantification of TB drugs, the development of SOPs, training manuals, TOT and basic training on the anti-TB drug supply management system. The project also supported the implementation of the Integrated Pharmaceutical Logistics System (IPLS) in the country and in TB CAP-supported zones.

CBTC activities were supported with HEWs playing a key role in the implementation. At the national level, TB CAP provided financial and technical support to the Federal MoH for the development, translation into four local languages, printing and distribution of CBTC implementation guidelines. This enabled the country to be in a good position to implement standardized and uniform CBTC activities nationwide. Several capacity building activities, including training, printing of forms and registers, supportive supervision and review meetings were also conducted. HEWs were fully involved in community awareness activities and the identification of TB.

## Support for PMDT:

PMDT was receiving growing attention by the Federal MoH when TB CAP began to work in Ethiopia. TB CAP was committed to supporting the Federal MoH and made a significant contribution to strengthening PMDT implementation. The initial area which demanded support was strengthening the national TWG on PMDT. TB CAP's contributions to strengthening the TWG helped PMDT take root in the country. The project played an important role in bringing pending activities to the attention of the TWG and focusing support for their implementation.

TB CAP organized overseas training and an experience-sharing visit to the Cambodia MDR-TB program in 2008. Ten members of the TWG attended the training. TB CAP also supported overseas training on PMDT for 9 HCWs in the Philippines in 2009 and in Namibia in 2010.

TB CAP continued to provide its technical and financial assistance in a systematic manner in line with the national work plan of the MoH. This included the preparation of national guidelines on PMDT which TB CAP supported by organizing a series of consultative workshops, TA by international MDR experts, and covering the cost of printing 2,000 copies.

## Ethiopia

Additional support to the Federal MoH included the development and printing of MDR-TB registers and forms which were distributed for use at MDR-TB treatment sites. It supported the development of a pocket reference guide on PMDT for clinicians. It also supported the registration of second-line drugs (SLDs) in collaboration with the national drug administration and control authority.

In collaboration with the Federal MoH and its partners, TB CAP conducted several rounds of training on MDR-TB clinical management using the nationally-prepared training material. A total of 385 HCWs were trained, of which 276 HCWs were selected from St. Peter Hospital and its treatment follow-up sites.

TB CAP provided 16 computers to improve data management at MDR-TB treatment sites, 60,000 N-95 respirators, 60,000 surgical masks, 25 standing fans, and 55,000 handkerchiefs with TB messages to strengthen TB-IC for PMDT. It donated one car to St. Peter Hospital to strengthen supportive supervision and mentoring activities at health centers.

TB CAP supported the renovation of the MDR-TB treatment ward at the 24-bed ALERT Hospital. It also supported some of the renovation work at St. Peter Hospital, including a training centre and a recreational site for MDR-TB patients. Finally, TB CAP supported the renovation of TB units in three health centers in three regions.

## **Procurement of Drugs:**

With hundreds of DST confirmed MDR-TB patients on the waiting list, the Federal MoH requested its partners to assist in making second-line anti-TB drugs available to improve access to treatment. TB CAP responded by procuring SLDs for treating 45 patients, following GLC approval.

## **Strengthening Diagnostic Capacity:**

TB CAP focused on improving diagnostic capacity through training of laboratory professionals on AFB microscopy and EOA, implementing regular supportive supervision, and provision of laboratory equipment and supplies in response to identified gaps.

In response to the request of the EHNRI, TB CAP participated in the development of an AFB Smear Microscopy Manual and Guidelines for EQA. In addition to its continuous technical support, TB CAP covered the cost of printing 9,000 copies of these materials and related job aids. These two important national documents helped to standardize training activities across the country, and also strengthen the implementation of EQA.

TB CAP is a pioneer organization in providing both TOT and refresher training based on the new AFB manual and EQA guidelines. A national TOT was conducted for 51 regional and hospital laboratory staff. Refresher training was provided for 471 laboratory technicians/technologists at 170 TMUs which increased the provision of quality-assured microscopy diagnosis and results at TMUs.

TB CAP performed five regular supportive supervision visits between the 4th quarter of 2009 and the 3rd quarter of 2010. 69 TMUs from the three zones supported in Year 4 were supervised in 2009. The number of TMUs supervised increased to 172 during the 3rd quarter of 2010 after incorporating the Year 5 supported TMUs from four zones.

TB CAP supported the EHNRI in the preparation of 2,200 panel test slides to be rechecked at all regional laboratories. TB CAP also assisted in the collection for blinded rechecking of slides from the TMUs in TB CAP-supported zones and provided support to five regional labs for the analysis of results.

A needs assessment of TMUs in three zones (Oromia, SNNPR - Southern Nations, Nationalities, and People's Region, and Amhara) was conducted. In response to the gaps identified and the recommendations made slide boxes for storage of slides for EQA, and microscopes and other laboratory supplies and materials were procured. TB CAP also procured 129 microscopes, of which 34 went to four regional laboratories to facilitate blinded rechecking and timely feedback. 95 microscopes were distributed to 95 TMUs to improve diagnosis and the provision of correct results. Microscope starter kits and metallic tables for sputum specimen processing and lab registers were distributed to all TMUs.

## Improved TB Drug Management System:

TB CAP conducted a two-day workshop on anti-TB drug quantification for the Federal MoH. As a result of the skills acquired, the MoH was able to forecast first-line adult anti-TB drugs needs for 2010. TB CAP also participated in the first integrated national quantification exercise workshop of HIV/AIDS, TB and Malaria related health commodities, and led the forecasting and quantification of anti-TB drugs for the years 2011-2015, including supply planning for 2011 and 2012.

A TOT on the new TB manual and TB drug supply management was provided for 32 professionals. The training focused on anti-TB drug supply and management issues including anti-leprosy and second-line anti-TB drugs. Following this training, cascade training on anti-TB drug supply management was provided to 67 professionals working in two TB CAP supported zones.

## **Improved Treatment Outcomes:**

The involvement of HEWs in TB prevention and control efforts at the community level has improved most of the TB treatment outcome indicators. HEWs brought prescribed anti-TB drugs from health centers to health posts where DOT can be supervised. In addition to DOT, HEWs followed up TB patients for sputum smear examination at the end of two, five and seven months of treatment. This has increased both the treatment success rate and cure rate.

## **Improved Case Detection:**

TB CAP conducted several capacity building activities for HEWs to improve their involvement in TB prevention and control at the community level. This has resulted in significant improvement in TB case detection. HEWs were able to increase community awareness of TB and engage them in TB suspect identification and contact tracing activities. This has facilitated the process of referrals to diagnostic health facilities for sputum smear examinations. In two TB CAP-supported areas, case detection rates increased dramatically: in North Shoa from 23% in 2006 to 29% in 2009 and in East Shoa from 36% in 2006 to 52% in 2009.

## TB-IC:

TB CAP supported the Federal MoH in the implementation of TB-IC by developing guidelines, training manuals and IEC materials. It also supported the first TB-IC TOT for 35 individuals. It conducted cascade training on TB-IC for 811 HCWs, including administrative staff and follow-up visits have revealed that most of the TB-IC

## Ethiopia

principles have been accepted and applied in health facilities. TB clinics in three health centers were renovated and TB CAP worked with a radio company to improve public awareness of TB through a weekly radio program which ran for one year.

## **TB/HIV Collaborative Activities:**

A total of 353 health professionals were trained on TB/HIV. In response to a request from the regional Health Bureaus, TB CAP trained 50 TB/HIV coordinators/supervisors from 33 zones of the Amhara and Oromia regions on slide collection and selection for blind rechecking. This training is intended to support regional laboratory personnel.

### **Global Fund:**

TB CAP supported the Federal MoH in the preparation of the Global Fund Round 10. The proposal focused on health system strengthening, specifically improved capacity in diagnosis, treatment, procurement and supply chain management.





Data Management Training - Ethiopia

## Ghana

Population: 24 million Estimated TB Incidence (all cases per 100,000 pop): 203 Estimated number of new TB cases: 47,632

## Background

Ghana is not among the WHO's 22 high burden TB countries but nevertheless, the disease is a major health problem in the country. With an estimated 47,632 new TB cases in 2007, Ghana ranks 19th in Africa for the highest estimated number of new cases per year, according to WHO's Global TB Report 2009. The estimated TB incidence is 203 per 100,000, and the MDR-TB rate is 1.9%.

TB CAP began work in Ghana in April 2008. The country program was coordinated by MSH, with KNCV and WHO as collaborating partners responsible for operations research (OR) and PPM DOTS, respectively. TB CAP did not have a specific geographical area of operation and activities were implemented within the policy framework of the NTP Central Unit using existing structures. TB CAP activities therefore targeted the entire Ghanaian population. Although TB CAP personnel were essentially involved in day-to-day activities of the NTP Central Unit, the main thrust was to provide TA to strengthen the implementation of high quality TB DOTS and TB/ HIV services. TA was provided by the in-country TB Technical Advisor and external consultants. The major technical areas on which TB CAP focused were improving TB case detection and contributing to overall health systems strengthening (HSS).

In 2008 TB CAP commissioned a number of TA missions to Ghana in order to address TB laboratory, TB drug management and M&E for TB control. All the TA identified low TB case detection and high TB deaths as key challenges to the NTP's progress. During Years 4 and 5, twelve missions were conducted to Ghana which aimed to improve TB case detection and strengthen health systems.

## **Key Results:**

## Five-year Strategic Plan (2009-2013):

The NTP had carried out activities without a strategic plan for nearly two years after the first NTP strategic plan expired in 2006. TB CAP's first major activity was to develop and print the National Tuberculosis Health Sector Strategic Plan for Ghana (2009-2013). The Strategic Plan outlines key targets and outcomes for the NTP as well as the priority operations research agenda.

## **Global Fund Round 10 TB Proposal:**

Since the Global Fund remained the largest funding source for TB control and the current Global Fund Round 5 grant expires in April 2011, submitting a strong proposal with a high chance of success was a priority for the NTP. TB CAP provided technical and financial assistance to develop the proposal. It was submitted and approved in 2010, with funding of \$77 million over five years.

## Strengthening and Expanding the DOTS Programs:

TB CAP supported the development of SOPs for the improvement of TB case detection, supplied microscopes to increase a network of sputum smear microscopy

## **TB CAP Country Highlight**

TB CAP prepared and widely distributed SOPs for case detection resulting in an increase in the number of TB case notifications from 12,964 in 2007 to 15,286 in 2009, representing an increase of 18%.

and implemented 'MOST for TB'. With core funding, five new LED microscopes were provided to the NTP.

## PPM:

The situational analysis of PPM DOTS was supported and SOPs for the scaling up of DOTS were produced.

## **TB/HIV Collaborative Activities:**

A health facility assessment for TB infection prevention/control was conducted, and SOPs for TB and Airborne Infection Prevention/Control were produced and disseminated. PLHIV were oriented on TB issues and a dialogue for the commencement of the provision of IPT was initiated.

### Improved Human and Institutional Capacity:

Research studies to investigate the reasons for low TB case detection were conducted along with a TB mortality audit. Extensive local and international training of health service staff on OR protocols, leadership/management for TB/HIV, and QA of chest radiology was provided.

## Increased TB Case Detection:

In 2008 and 2009 TB CAP provided TA to identify innovative strategies for addressing low TB case detection. TB CAP conducted a situational analysis of TB case detection practices in health facilities. One major identified weakness was the lack of tools to enable health workers to capture and diagnose TB patients. Through a participatory approach, SOPs for TB case detection were developed and printed. The rationale for the SOPs is to ensure that TB case detection activities are optimized and standardized in both public and private health facilities as well as in communities. The SOPs also aim to ensure that TB case detection becomes a permanent, routine and consistent activity carried out among people with symptoms suggestive of TB who visit health facilities and in the community. The SOPs have also highlighted key policy decisions that the NTP has instituted, namely: a new definition of a smear-positive case, changing from a three sputum strategy to a two sputum strategy and serial sputum specimen examination (front loading microscopy). The SOPs have also clearly highlighted the four signs and symptoms for suspecting TB among PLHIV and how to instruct TB suspects to produce a good sputum sample.

During the final year of the project, TB CAP supervised the implementation of SOPs in the Upper West Region, which has one of the lowest TB case detection rates in Ghana. In the year prior to the implementation of SOPs, the Region detected an average of 58 TB cases per quarter. During the first quarter of implementation, the region detected 72 TB cases. The SOPs were also critical to the initiation of the intensified TB case finding project among high-risk and vulnerable populations in the Greater Accra Region, which is funded by the WHO/CIDA Project.

## Ghana

While TB CAP focused on supervising TB case detection interventions in the Upper West Region, the SOPs were disseminated countrywide through annual NTP review meetings. Most facilities began implementing the SOPs, which resulted in an increase in the number of TB case notifications from 12,964 in 2007 to 15,286 in 2009 (an increase of 18%).

## MOST for TB:

To enhance management capacity, TB CAP supported the NTP to implement 'MOST for TB' during the final year. Of the 30 management components, the NTP selected five priority areas to be addressed over the next 12 months: staff training, links with the HIV and AIDS Program, community participation, ACSM and M&E. Action plans for the selected management components have been developed for implementation.

## **External Training:**

Over the three-year period, the project supported NTP Central Unit staff and other MoH officials to attend various international trainings and conferences to strengthen the health system. A total of 14 MoH personnel were supported to attend external trainings.

## TB Laboratory Network and QA of Smear Microscopy:

TB CAP provided 10 new light microscopes. This equipment has contributed to an increase in the number of sputum smear microscopy centers from 211 in 2007 to 257 at the end of 2009. TB CAP also made five LED microscopes available, which were distributed to high volume microscopy centers.

## TB-IC:

In order to ensure quality TB-IC for both patients and HCWs, TB CAP provided TA by conducting health facility assessments to document current practices. Findings from this assessment resulted in the development, printing and dissemination of SOPs for TB and airborne infection control and prevention.







TB Planning - Ghana



Population: 232 million Estimated TB Incidence (all cases per 100,000 pop): 228 Estimated number of new TB cases: 528,063

## Background

Although TB remains a prominent disease, Indonesia has improved its ranking on the list of high burden TB countries, from third in the world to fifth, after India, China, South Africa and Nigeria (WHO TB Global Report 2009). USAID's support for TB control in Indonesia started in 2002 through TB CAP with KNCV Tuberculosis Foundation as the leading partner and FHI 360, MSH, ATS and WHO as collaborating partners. This project successfully supported the NTP in Indonesia and contributed substantially to achievement of the global targets of Case Detection and Treatment Success in 2006 when Indonesia was the first country in South East Asia region to achieve these targets.

TB CAP's assistance was not limited to geographical areas, but was in principle nationwide, though it focused on priority areas. From the outset TB CAP assistance concentrated on five major bottlenecks to DOTS expansion in Indonesia:

- 1. Weak or wavering local political commitment
- 2. Poor access to DOTS for patients due to geographical, socio-economic and cultural barriers
- 3. Slow progress in engagement of private practitioners, other public-private providers including NGOs and other institutions and the lack of interventions to prevent further spread of MDR
- 4. The absence of effectively coordinated TB-HIV/AIDS activities and ineffective program coordination
- A shortage of qualified staff and inadequate management skills at various levels. Limitations in technical and management capacity at provincial and district levels (in particular in the Eastern part of Indonesia) including diagnostic capacity, drug management, planning and M&E capacity

## **Key Results**

## PMDT:

Support from TB CAP for preparing an expansion plan for PMDT started with TA for the GLC application in 2006, which was approved in 2007. This was followed in 2008 by TB CAP support for establishing the National PMDT Working Group as an advisory body to NTP, and setting up a TOT program in which trainers received PMDT training in Indonesia and the Philippines. In 2009, two pilot sites were selected in the largest cities on the densely populated island of Java (Jakarta and Surabaya) to initially treat 100 MDR patients. TB CAP provided technical and financial support to two hospitals (Persahabatan Hospital in Jakarta, and Soetomo Hospital in Surabaya) and selected primary health centers. The enrollment of the first MDR-TB patients started in August 2009 and as of the end of September 2010, a total of 102 MDR-TB patients were undergoing treatment.

## **TB CAP Country Highlight**

TB CAP prepared and widely distributed SOPs for case detection. This resulted in an increase in the number of TB case notifications from 12,964 in 2007 to 15,286 in 2009, an increase of 18%.

In 2010, TB CAP assisted in selecting three more PMDT sites (Malang, Solo and Makassar) and by September 2010 these hospitals were ready to receive their first patients. TB CAP provided funding and TA for the renovation of TB wards in these hospitals as well as financial assistance for diagnostic and hospitalization costs, and the provision of food and transportation for the ambulatory treatment of patients.

TB CAP trained a total of 700 doctors and health staff in the five PMDT sites. TB CAP also assisted the NTP to finalize a Programmatic Manual and Clinical Manual for Management of DR-TB, as well as training modules for PMDT. It also provided TA to develop the PMDT Expansion Plan 2010-2014, and for the preparation of the application letter to GLC for PMDT expansion to cover 800 MDR-TB patients, which was subsequently approved.

### Laboratory Strengthening:

Adequate laboratory capacity for culture and DST is one of the requirements of an effective PMDT program. As part of its extensive, comprehensive and integrated package of TA, TB CAP strengthened the laboratory network to perform culture and DST, including regional laboratories. It supported the in-country training of 258 laboratory technicians and provided funding for 13 to follow-up international training. TB CAP contracted the IMVS Pathology Laboratory Institute in Adelaide, South Australia, to act temporarily as the supranational lab for Indonesia. TB CAP's assistance resulted in the successful accreditation of five regional laboratories for culture/DST. These laboratories passed the certification for first- and second-line DST. In upgrading these laboratories, TB CAP procured and supported the maintenance/ certification of biological safety cabinets, microscopes and other equipment and consumables.

TB CAP provided both technical and financial support to renovate two provincial laboratories in West Papua province and a regional laboratory at the Gadjah Mada University in Yogyakarta to a BSL 2-plus standard. TB CAP also provided technical assistance for the assessment of 27 provincial laboratories for culture/DST. Since 2009 TB CAP has also supported the development of: the National Strategic Plan for TB Laboratories 2011-2015, the preparation of guidelines for culture and DST, the National Technical Guideline for AFB panel test preparation and the development of SOP's for AFB panel test preparation. It has also provided assistance the preparation of a national guideline and training modules for the TB laboratory network, and QA for smear microscopy examination.

TB CAP supported the establishment of eight referral laboratories in seven new provinces, which included panel testing and the procurement of equipment. Procurement support for lab equipment and consumables for culture/DST was also provided to 12 provincial laboratories. Provincial laboratories in West Papua were

renovated and lab equipment procured with the direct funding support of TB CAP. 84 laboratory technicians in hospitals were trained.

## Public-Private Participation in Implementing the TB-DOTS Strategy:

From the beginning of the program in 2006, TB CAP has supported the implementation and strengthening of TB-DOTS in 283 public and private hospitals in 200 districts/municipalities in eight provinces through on-site TA provided by local TB CAP technical staff. It has also supported training courses for doctors, paramedics, other hospital staff, provincial and district TB health staff, and staff from primary health centers. More than 1,000 people were trained in DOTS in hospitals. As a result of TB-DOTS and hospital DOTS linkage support, TB CAP contributed to improvements in CDR ranging from 4-23% in the supported districts. Moreover, the treatment success rate in selected hospitals receiving TB CAP support increased from 58 to 72%.

TB CAP extended its support to the MoH in 2009 by developing the hospital DOTS managerial guidelines, which became effective in 2010.

With support from TB CAP, much progress has been made in the mobilization of professional societies through the establishment of provincial task forces for the implementation of ISTC. The Central Task Force within the Indonesian Medical Association (IMA) is now very pro-active and has established local ISTC task forces in all 33 provinces of the country. TB CAP assisted the IMA in the development of an ISTC booklet and training modules. With support from TB CAP, the IMA organized a TOT for 165 doctors and disseminated the ISTC booklet to 5,523 doctors in all 33 provinces.

## TB/HIV:

TB CAP supported the establishment of the national TB/HIV policy which has had an impact on a wide range of collaborative activities, including TB care for PLHIV and HIV/AIDS care for TB patients in pilot provinces. TB CAP also assisted in the capacity building of health staff, laboratory technicians, and TB and HIV program managers in Provincial Health Offices (PHO) and District Health Offices (DHO) to manage TB/HIV co-infection, and HIV NGOs to scale- up intensified case finding. TB/HIV training modules were developed for TB and HIV staff, IEC materials were produced for health providers and the general population, and a revised recording and reporting system was set up to allow TB sites to incorporate HIV information.

TB/HIV co-infection data from 10 selected sites, including hospitals, primary health centers and prisons in five provinces are now available at the NTP.

## **Increased Political Commitment for DOTS:**

TB CAP provided TA to develop comprehensive tools for TB planning and budgeting to be used by PHOs and DHOs. They have been piloted in central Java and are expected to be disseminated to other provinces. An ACSM training module was developed and is used by NTP.

## **DOTS in Remote Areas:**

TB CAP assisted Provincial and District Health Offices in 21 remote districts of the West Papua and Papua provinces to strengthen their capacity to monitor and supervise TB control activities. 20 new district TB supervisors and 194 district health staff from the provinces were trained. At the national level, TB CAP assisted the NTP to develop a National Guideline for Integrated TB Eradication at the Village Level.

## TB in Prisons:

TB CAP provided TA in drafting: the National Guideline and Training Modules for DOTS in Prisons, a Policy and Strategic Plan for TB in Prisons and several training modules. The project also supported training for more than 100 medical staff working in prisons.

## NGO Support:

TB CAP supported the largest TB NGO in Indonesia, the Indonesian Association against TB (PPTI), by seconding four technical staff to PPTI's head office to assist in organizational, technical and financial management. TB CAP provided technical and financial support for the preparation of PPTI's new five year strategic plan, new organizational guidelines, and the development of a new website. Finally, TB CAP assisted the West Java branch of PPTI in training TB staff and strengthening its internal organization.

## MDR Expansion:

Since 2007, TB CAP has supported the preparation of the NTP's MDR treatment plan, and also assisted in GLC application procedures, drafting the MDR Programmatic and Clinical Manual for Management of Drug Resistant TB, a training module for PMDT, and the MDR Expansion Plan.

As part of upgrading the facilities of the selected MDR hospitals, funding and TA were provided for renovating TB patient wards and TB-IC training for staff from 32 hospitals was supported.

As of end of September 2010, a total of 469 MDR-TB suspects were tested in the two MDR-TB pilot sites. 367 MDR-TB suspects received laboratory results of which 150 patients were confirmed MDR-TB cases. 102 MDR-TB patients were put on treatment in the two hospitals. TB CAP also provided an integrated package of financial support for diagnosis, medical treatment and personal support (such as food, transport and mobile phones) for all MDR-TB patients.

## **Drug Management Support:**

A sustainable supply of TB drugs is an essential prerequisite for treating TB patients. Although TB CAP provided an integrated package of support, TB drug management by the NTP and other government institutions has remained a subject of concern. The following technical and financial support for improving the quality of drug management was provided by TB CAP during its four years supporting the NTP:

- Development of the National Guideline and Training module for first-line drug management
- Development of the National Guideline and Training module for SLD management
- Development of a tailor-made e-TB Manager for second-line TB drugs and training of NTP, provincial health staff, and staff from MDR pilot hospitals in the use of this software
- Improved management of pharmaceutical and supply chain elements for first-line drugs, including assisting in forecasting medicine and budget requirements during substantial scale-up and introduction of new Fixed Dose Combination (FDC) formulations
- Facilitated the release from customs of 120,180 TB drug kits in 2009, and arranged and funded the distribution of first-line TB drugs (75,056 kits and 998 kits, respectively) to 33 provinces in 2009, and distributed second-line drugs to the two MDR sites Jakarta and Surabaya

## Hospital DOTS Linkage (HDL):

HDL was part of the core activities of TB CAP from the beginning of the Indonesia program. With around 30 technical staff in eight provinces, TB CAP supported the implementation and strengthening of TB-DOTS in 283 hospitals and also referral links/networks between hospitals and health centers in 35 district clusters in these hospitals, covering 63% of the population of the country. TB CAP staff provided training for doctors, paramedics and other hospital staff, developed internal linkages within the hospital and external linkages with the District Health Offices and/or primary health centers. In many cases, the quality of DOTS in hospitals increased. More than 1,000 people were trained and as a result, the supported hospitals contributed to CDRs ranging from 4-23%. TB CAP supported the strengthening of HDL management at the central level of the MOH by developing Managerial Guidelines for TB Care with DOTS Strategy in Hospitals, and HDL Assessment Tools for Hospitals. In 2010, 424 hospitals, including army hospitals, were assessed.

## Strengthened and Expanded TB and HIV/AIDS Coordinated Activities:

Significant progress was made over the past few years of TB CAP support in the development and implementation of TB/HIV collaborative activities. The most important achievements can be summarized as follows:

- TB/HIV collaborative mechanisms were established through technical working groups, TB/HIV teams, and TB/HIV supervision/mentoring teams in eight priority provinces.
- The development of policies, guidelines, curricula, modules, IEC materials, supervision tools and forms (screening, referral) for TB/HIV.

A series of TB/HIV training courses were conducted for 463 HIV staff, 275 TB staff, 61 field coordinators from NGOs implementing programs to prevent transmission of HIV, 98 counselors and case managers, and 35 outreach workers from NGOs from all over Indonesia. A TOT on TB/HIV training was attended by 39 participants, and HIV-related testing and opportunistic infection control, including microscopic TB training, was provided to 161 participants. TB CAP also supported EQA for HIV testing at 111 health centers. Clinical mentoring and program monitoring for improved TB/HIV collaboration was conducted in health centers in five priority provinces.

TB CAP developed an electronic database that incorporates HIV data from TB patients in a way that respects the confidentially of HIV information for each patient. The system is being piloted at 10 sites.

TB CAP initiated a TB and HIV/ART program in 15 health centers and one prison.

## Human Resource Strengthening:

TB CAP provided TA to improve the human resource capacity of the NTP as well as other stakeholders through numerous training activities, summarized above. The professional quality of all national TB CAP staff, who have been the first-line providers of TA for TB CAP, was also increased through regular in-house training, participation in national training sessions, and attendance at international training courses and international conferences. Five rounds of national TB training for TB provincial and district supervisors as well as two rounds of advanced DOTS training for supervisors were conducted. Practical Approach to Lung Health (PAL) guidelines, training materials and a supervision checklist for use as a tool for PAL-implementing facilities in three pilot provinces were developed.

## **TB Operations Research:**

Capacity building for OR by universities in 15 provinces was supported through funding and with TA on how to conduct 'standardized OR'. The development of a National TB Research Agenda and the drafting of a new protocol for a National Prevalence Survey to be conducted in 2013 were also supported by TB CAP. Several studies published in international journals were made possible through direct TB CAP assistance.

### Institutional Strengthening:

National and international TB CAP consultants assisted the NTP by providing regular TA to NTP management and staff as well as hands-on support in the implementation of day-to-day activities. TB CAP also strengthened its technical and funding support to the Directorate of Medical Services by developing the Guideline for DOTS in hospitals and laboratory strengthening. Another example is the coordination between the Directorate General (DG) of Pharmacy and Medical Devices and the Director General of the Center for Disease Control of the MoH to endorse the "One Gate Policy" for providing drug management, including warehousing and reporting systems at all administrative levels. Finally TB CAP supported the improvement of governance, by establishing Technical Working Groups, such as ACSM, Lab, PMDT, TB-HIV, Drug Management, PAL, and HDL. TB CAP directly strengthened institutional capacity by providing TA and funding support for the drafting the NTP strategic plan 2011-2015, and the Global Fund Round 8 and 11 proposals.









## Kenya

Population: 41 million Estimated TB Incidence (all cases per 100,000 pop): 353 Estimated number of new TB cases: 132,357

**TB CAP Country Highlight** TB CAP-supported private clinics notified 3,156 cases in 2009 accounting for 3% of the national case finding.

## Background

Kenya is one of the 22 high burden TB countries, ranked 14th according to the WHO Global Tuberculosis Report 2009. In 2010, 110,065 TB patients were notified, representing a 10-fold increase when compared to the 11,625 TB patients notified in 1990 (an average annual increase of 7%). This high burden of TB is mainly attributed to the concurrently high HIV prevalence, now estimated at 7.1% of the general population. According to 2009 data, 44% of TB patients had HIV co-infection.

Integrated within the general medical laboratory services, TB bacteriology services are provided through a network of laboratories comprised of a TB Central Reference Laboratory (CRL), laboratories at national referral, provincial and district hospitals, and peripheral health facilities consisting of health centers and dispensaries (both public and private facilities). All of these laboratories, 1,183 in total, provide AFB microscopy services. The number of people per microscopy center is approximately 33,000.

In addition to AFB microscopy, three public and two private hospitals provide culture services. Only the CRL is able to carry out DST for first-line anti-TB drugs.

In 2009 a total of 678,695 sputum specimens were examined. Of these 264,472 were suspects out of which 40,083 were smear-positive, giving a smear positivity rate of 15 %. In addition, 6,408 specimens were submitted to the CRL for culture and DST, of these, 150 MDR-TB cases were isolated.

During the two years of TB CAP support, efforts to improve the quality of TB laboratory services focused on: enhancing the technical capacity of laboratory health workers to implement QA, including EQA, at all levels of the laboratory network, strengthening the capacity of the CRL to handle specimens for culture and DST and supporting the specimen referral system from peripheral facilities to the CRL.

## **Key Results**

## Standards and Guidelines:

During the project period EOA guidelines, a package of AFB microscopy SOPs in a booklet form (15 SOPs using TB CAP tools) and a supervision checklist were developed.

## Laboratory Training:

Laboratory health workers benefited from various types of training. The EQA training package based on TB CAP tools was customized, with materials used for training as summarized in Table 16.

## Laboratory Supportive Supervision:

Laboratory supervisors at regional and district levels are expected to visit each AFB microscopy center at least once quarterly. During these visits the supervisors work with facility staff to identify and jointly solve service delivery problems. During the last quarter of the TB CAP project, 67 visits were carried out by regional and district coordinators, which represented 47% of expected visits. All peripheral laboratory health workers have benefited from the guidelines which were developed, as well as the training, supportive supervision, equipment and supplies provided by TB CAP. Such assistance has improved their competence in TB control. In addition to supportive supervision of TB laboratory personnel, the laboratory supervisors carry out all other aspects of medical laboratory supportive supervision during their visits. TB CAP-supported private clinics notified 3,156 cases in 2009 accounting for 3% of the national case finding.

### Table 16: Laboratory Training

Type of Training	Target	Total Number of Staff	Number of Staff Trained	% Trained
ΕΩΑ	CRL and National level managers	40	40	100
ΕΩΑ	District level managers	149	79	53
AFB refresher	Laboratory health workers at facility level	1500	600	40
#### EQA:

Since 2005 the NTP adopted an EQA of sputum smear microscopy through blinded rechecking. Through the EQA process, laboratories are able to identify errors and implement remedial measures. Over the two years of TB CAP work in the country, EQA coverage gradually improved from less than 30% to 58%.

In addition, the collection, analysis and presentation of EQA data has been greatly enhanced through use of a workbook template adapted from TB CAP tools. All 12 regional laboratory supervisors were provided with laptops to be able to use this tool. The use of the EQA workbook has improved the quality of data and reports at the regional level, which in turn has contributed to better service delivery for TB patients.

#### **MDR-TB Surveillance:**

With support from TB CAP, a new MGIT machine and related consumables were procured for the CRL. Financial support was provided to transport sputum sample specimens from the peripheral centers to the CRL using a courier system. This contributed to an increase in the number of sputum specimens received by the CRL. In 2009, the total number of specimens received was 5,930. This represented 59.3% of the expected 10,000 specimens. A total of 150 MDR-TB isolates were detected during the year.



### Malawi

Population: 14 million Estimated TB Incidence (all cases per 100,000 pop): 346 Estimated number of new TB cases: 48,144 **TB CAP Country Highlight** TB CAP-supported private clinics notified 3,156 cases in 2009 accounting for 3% of the national case finding.

#### Background

4

TB continues to be a public health problem in Malawi, according to the WHO's Global TB Report 2009, there were an estimated 48,144 new cases of TB, and an estimated TB incidence of 346 per 100,000. The WHO also estimated that 68% of new TB patients are HIV positive.

Since 2007 TB CAP's work in the Zomba and Mangochi districts has contributed to reduced morbidity and mortality by increasing case detection and treatment success rates of pulmonary TB patients. The project initially implemented TB/HIV activities in Zomba and Mangochi, covering 21 health facilities. A package of TB diagnostic and integrated TB/HIV care services was offered at the health facility level (district and health centers) and in the community. Over the course of the 18-month project implementation, activities scaled up to full coverage of Zomba and Mangochi and also expanded to include the Central Western Zone. At the national level, TB CAP focused on the following outputs:

- 1. Implementing the model for the continuum of integrated care for TB/HIV
- 2. Improved diagnostic capacity at all levels
- Strengthened management and supervision systems for TB control services; scaling up the TB-IC program
- 4. Improved PPM, especially regarding the private sector implementing TB/HIV
- 5. Improved human resource development to provide quality integrated services for TB/HIV.

#### **Key Results**

#### **TB/HIV Collaborative Activities:**

The project strengthened collaboration of TB and HIV units by supporting the TB/ HIV sub-group at the national level, a forum comprised of stakeholders working in TB and HIV. TB CAP also supported the development and printing of national TB/HIV integration guidelines. In community and clinical settings in Zomba and Mangochi, three models for TB/HIV integration were identified and scaled up, specifically:

- 1. A fully integrated TB/HIV service delivery model where TB and HIV/AIDS services are provided in the same room by the same staff (i.e. a "one-stop shop")
- A partially integrated model where TB and HIV/AIDS services have separate rooms in the same facility but some services are integrated and synchronized
- 3. A separate program in which TB and HIV/AIDS services are offered separately and linked via referrals.

14 TB/HIV clinics adopted the second integration model at ART sites, which also provided TB treatment for patients during the 'Continuation Phase'. At such clinics

TB and HIV services are provided to the co-infected in an integrated manner, e.g. synchronizing appointments for check-up and collection of TB and ART drugs. This has led to an increased uptake of TB/HIV services, including an average of 94% HIV testing among TB patients and 72% ART uptake in Zomba and Mangochi districts.

The project also increased access to information and TB/HIV services for rural communities in Zomba, Mangochi, and the Central Western Zone. TB CAP introduced innovative activities to involve communities in an effort to increase TB case detection. A total of 268 community sputum collection points were established and are functioning in selected areas that are hard to reach and have limited access to TB microscopy centers. The sputum collection points were run by community volunteers. The volunteers referred a total of 5,008 suspects of which 400 were confirmed as sputum smear-positive. The project provided support by training volunteers in basic TB control, and supplying materials. A referral system connecting the health centers and community sputum collection points was established. Community volunteers and trained drama groups disseminated TB/HIV messages about services available in the community and addressed misconceptions about the disease. Over 75,000 people were reached with these messages.

#### Strengthening Diagnostic Capacity:

TB CAP worked with the NTP to strengthen TB diagnostic services from the central to the peripheral laboratory level.

#### Central Level:

The project supported the three-phased MDR-TB prevalence survey, an XDR-TB prevalence survey, and renovation of the CRL. The national CRL, which was originally a biosafety level (BSL)-2 facility and contained recirculation microbiological safety cabinets (MBSC), was refurbished. The lab was doing culture and drug sensitivity testing in an environment unsafe for workers. It was upgraded to BSL3.

Human resource capacity was strengthened by employing more qualified individuals and funding a long-term resident Technical Assistant.

MDR and XDR-TB prevalence surveys were planned and undertaken, which involved the development of a protocol, setting up the studies and coordinating their implementation. For the XDR-TB survey, a total of 100 samples were examined and no XDR-TB was detected. MDR-TB survey specimen collection began in June 2010, with 2,379 specimens being received and processed by the end of the project, representing a total of 1,189 patients enrolled in the survey. 10 MDR-TB cases were identified, of which all had a known HIV sero-status. Four were HIV positive and six were HIV negative, all HIV positive patients were put on ARVs.

#### **District Level:**

The project implemented interventions to improve access to quality TB diagnostic services at the peripheral level. TB CAP supported the decentralization of TB microscopy services through the establishment of TB microscopy centers at the subdistrict level. This involved infrastructure improvements to health centers, provision of GDF kits, training health workers to conduct TB microscopy, and devising and implementing a OA system. Laboratory SOPs and EOA guidelines were produced and health workers were oriented on how to use them. Supervision and routine on-site mentoring programs were instituted which improved access to TB microscopy centers. In Zomba and Mangochi districts, the laboratory to population ratio declined from 1/193,000 and 1/200,500, respectively in 2007 and to 1/51,467 and 1/66,833, respectively, in 2010. The turn-around time was also significantly reduced, from two to three weeks to only 48 to 72 hours. The quality of microscopy services registered an improvement with proficiency testing averaging around 97%.

#### **Health Systems Strengthening:**

TB CAP collaborated closely with the core team of the NTP to provide direction and guidance to the national program, and as a result, the NTP demonstrated an improvement in key higher level indicators. For example, from 2007 to 2009, the treatment success rate rose from 84.6% to 87%, the cure rate increased from 83% to 88%, while the death rate dropped from 10% to 9%. At the district level, the average in-patient death rate for Zomba and Mangochi was at 17% at the start of the project and had dropped to 5% by April 2010.

The project worked with the central level to develop, print and disseminate guidelines to all levels of the health system. This included MDR-TB management guidelines,

TB/HIV guidelines, TB-IC guidelines, laboratory SOPs and EQA guidelines, an HRD strategy for the NTP, DOTS training and IEC materials and registers.

Strengthening the M&E of the program was a priority. The project supported quarterly program review meetings and rounds of supervision which covered areas outside the geographical coverage of the project. Funds for quarterly supervision were allocated and disbursed to the zones. To strengthen supervision, the project supported a review of the TB/HIV integrated supervision checklist and trained NTP managers at central, zonal and district levels (including District Health Management teams in Zomba, Mangochi and the Central West zone) in supportive supervision. This allowed health workers to acquire the necessary skills to conduct effective supervision. The new skills were applied across the board in all aspects of health service delivery.

TB CAP also supported the NTP in the development and submission of GLC applications. The project supported the process of drug procurement and distribution to the districts, and also assisted the NTP with the development of the Global Fund Round 9 proposal. It contributed to strengthening coordination and collaboration between the NTP and various stakeholders by supporting quarterly TB/HIV subgroup meetings.



### Mexico

Population: 112 million Estimated TB Incidence (all cases per 100,000 pop): 20 Estimated number of new TB cases: 21,283

TB CAP Country Highlight Strengthening National Capacity in Management of MDR-TB

#### Background

Mexico is a nation where affluence and poverty go hand-in-hand. Although it is the second largest economy in Latin America, prosperity is still a dream for many Mexicans, and the socio-economic gap remains wide. Rural areas are often neglected and huge shanty towns ring the cities. According to WHO's TB Report 2009, Mexico had an estimated 21,283 TB cases in 2007, with an estimated incidence rate of 20 cases per 100,000. MDR-TB is also a major concern, with 2.4% of new cases being drug resistant. Mexico was chosen as a country able to consolidate the proposed strategies for TB control identified by the WHO and the TB CAP project began in 2007 in cooperation with health authorities. The aim was to develop sustainable, effective institutional capacity to prevent, diagnose, and conduct surveillance of tuberculosis as well as to treat the disease effectively.

TB CAP's primary activities in Mexico included:

- The review and adaptation of the ISTC for the Mexican setting
- Strengthening national capacity for specialized TB control (DR-TB)
- Expanding a PPM initiative
- Monitoring and evaluating the USAID/Mexico TB bilateral program

Of these, the two priority focus areas were strengthening national capacity in the management of MDR-TB, and expanding the PPM initiative.

#### **Key Results**

#### Strengthening National Capacity in Management of MDR-TB:

TB CAP undertook the following activities:

- Three training workshops between 2007 and 2010
- Preparation of the Guide for the Care of People with Drug Resistance
- Development of a training kit on DR-TB
- Guidance on the procurement of second-line drugs for MDR-TB activities
- Assisting the NTP to conduct 16 MDR-TB training courses for 624 people from 20 states
- Development of a supervision form for MDR-TB activities.

Since July 2007, a course for specialists, including physicians from different states and the national level, has been offered. Two TOT courses were also conducted with a total of 119 people being trained. Based upon and adapted from the first edition of ISTC, a revised ISTC was published in September 2009. It serves as a key reference document at national and local workshops and has been distributed to hospitals and schools of medicine and nursing.

#### **Health Systems Strengthening:**

- Strengthening the technical level of experts and clinical leaders in MDR-TB care in 32 states
- Training in drug management of second-line treatment for the Central Unit
- Provided technical tools to control MDR-TB (guide, training kit, supervision form)
- Publication of Standards for TB Care in Mexico, a tool for partners in public health agencies and the private sector
- Developed tools to facilitate workshops
- Established a methodology which is documented in a guide to build publicpublic and public-private partnerships in TB control.



### Mexico



### Mozambique

Population: 23 million Estimated TB Incidence (all cases per 100,000 pop): 409 Estimated number of new TB cases: 20,097

#### **TB CAP Country Highlight**

In 25 TB CAP-supported districts, community volunteers referred 43,463 TB suspects to health facilities. 8,441 were diagnosed with TB over a three year period.

#### Background

Mozambique is ranked 18th on the list of the 22 high burden TB countries (WHO Global Tuberculosis Report 2009). TB is one of the leading causes of morbidity and mortality, and one of the ten biggest causes of hospital admission in the country.

TB and HIV co-infection introduces serious difficulties in the diagnosis, treatment and follow-up of patients due to the dramatic increase in the number of cases. One of the reasons for the high incidence of TB is the high prevalence of HIV (60% of patients with TB are HIV positive). TB culture was only being performed at the NRL in Maputo, hence the diagnosis of MDR-TB and case management of TB cases were inefficient. TB case detection rate was low, at approximately 53% due to limited smear sputum microscopy and the lack of adequate DOTS population coverage.

In 2005 the NTP planned to increase the TB case detection rate by introducing community-based DOTS and expanding sputum smear microscopy and TB culture capacity into the central and northern regions. However, a number of challenges existed in the lab infrastructure, such as an inadequate number of sites, poor layout, lack of qualified personnel, specimen flow, a lack of equipment as well as inadequate practices and procedures required to conduct work safely in a laboratory environment. TB CAP addressed these issues by: strengthening the QA of the TB laboratory services network through the development and introduction of SOPs, QA (internal quality control and EQA), supervision, biosafety, data management (recording and reporting), training of laboratory staff at all levels in sputum smear microscopy, implementing a performance assessment program, decentralizing culture to Beira and Nampula regional laboratories and training of laboratory staff at all levels.

Another priority area identified was the introduction and implementation of CB-DOTS activities. This required the development of guidelines, training materials and monitoring tools, as well as capacity building of the NGOs responsible for the implementation of CB-DOTS.

TB CAP scaled-up CB-DOTS, strengthened the laboratory network, and improved access to quality TB diagnosis. TB CAP also provided direct TA to the NTP in planning, supervision, proposal development, training, and conducting national and provincial coordination meetings. In 25 districts of five provinces, TB CAP was able to improve the management capacity of district TB supervisors and strengthen cooperation with HIV partners in implementing TB/HIV collaborative activities. Based on the success of the TB DOTS program, the MoH would like to scale-up the program to a national level.

#### **Key Results**

#### **Strengthening Laboratory Capacity:**

Laboratory network: The laboratory network consists of 253 units located within health facilities, namely: three central hospitals, seven provincial hospitals, 33 rural hospitals, seven general hospitals and 202 health centers. The population per laboratory is 83,000. To address the challenge of the lack of laboratories and limited access to lab services, the MoH trained 20 nurses per province in AFB microscopy, raising the number of smear microscopy units from 253 to 433. Under TB CAP, the CB-DOTS approach included training nurses (where no lab facility existed) in sputum slide smear preparation and fixation to avoid contamination during transport of sputum to the laboratory.

#### Decentralization of TB culture to the central and northern regions of the country:

The MoH considered renovation and refurbishment of Beira and Nampula regional labs a key intervention of TB CAP in order to decentralize TB culture and DST to central and northern regions of the country. Due to the high incidence of TB cases in the central region, renovation and opening the laboratory in Beira was a priority. The project successfully supported the Beira lab's renovation, specifically in the design, equipment specification, tendering of public bids, and installation of lab equipment. This contributed to the upgrade of the lab to BSL2, which includes a containment area for cultures. With funding from PEPFAR, the Nampula lab was renovated, however, further modifications will be necessary to install the equipment and furniture procured by TB CAP.

Upgrading and strengthening the management capacity of the Maputo National Reference Laboratory: Funded by PEPFAR through TB CAP, the TB NRL was completely renovated, refurbished and equipped to be upgraded to BSL3. TB CAP provided TA for the design and supervised the renovation, including laboratory equipment specifications. The NRL will be used for MDR-TB research and will serve as a TB reference center for external quality assessment of sputum smear microscopy for regional and provincial labs. The laboratory staff were trained on the use and maintenance of laboratory equipment as well as the biosafety system and QA.

**Development and Implementation of Standard Guidelines:** Standard guidelines are important as they provide step-by-step guidance to laboratory staff and assist in standardizing procedures in the TB smear microscopy network. In order to strengthen TB laboratory management, TB CAP provided a lab expert to support the MoH in the development of the following guidelines: SOPs, QA (internal quality control and EQA), supervision and biosafety.

### Mozambique

**Capacity Building:** Due to the lack of laboratories performing smear microscopy in remote areas, TB CAP trained 115 nurses in sputum slide smear preparation and fixation. Despite the short period of implementation, this intervention seems to be an excellent alternative and is also complementary to community-based TB care. At the same time, the MoH trained nurses in AFB microscopy and established micro-laboratories in selected health facilities, thereby expanding the microscopy network.

**Laboratory Supportive Supervision:** After the training was conducted, quarterly integrated supervision visits were done. During each supervision visit the team, comprising of the TB CAP Lab Officer, the provincial head of the TB Program, the head of the regional TB reference lab and the provincial lab supervisor, checked the procedures and quality of the smears. They also supervised the nurses trained on AFB microscopy for on-site slide rechecking for eventual errors and if found, they were corrected.

#### TB Laboratory Management Training for NRL and Provincial Laboratory

**Supervisors:** TB CAP and the NRL conducted a training course for 17 participants to build capacity in leadership and management of NRL managers and provincial laboratory supervisors in order to improve laboratory performance.

#### CB-DOTS:

In 2006, TB CAP introduced the CB-DOTS initiative in Mozambique. The approach was primarily implemented through sub-agreements to local and international NGOs. TB CAP started the implementation of CB-DOTS in 2006 in one pilot district and expanded to a second district in the following year. Following this phase and in response to the NTP's request, the project progressively expanded over four years to include 25 districts in five provinces via sub-agreements with 11 NGOs (four international and seven national). With TB CAP support a total of 3,148 community volunteers, 35 activists and 505 health workers were trained on CB-DOTS.

Over a three-year period, and based on TB and HIV symptoms and signs, community volunteers referred 43,463 TB suspects to health facilities. 8,441 were diagnosed with TB all forms (5,662 TB SS+, 2,394 TB SS-, and 385 EP TB). The volunteers were also able to refer 5,564 contacts of TB SS + cases to health facilities for screening and follow up. 28% of all notified TB cases were also HIV positive. Through this community-supported intervention, 1,788 TB cases were treated and 192 deaths were reported due co-infection with HIV/AIDS.

To improve CB-DOTS data record keeping and reporting, a database system was developed by TB CAP and successfully piloted. TB CAP also provided technical and financial support for the development of the CB-DOTS national strategy, including three training guidelines, a database, and four TB/HIV leaflets.

#### **Health Systems Strengthening:**

The project devoted particular efforts to improving the quality of TB and TB/HIV health care and services provided by health workers in 25 districts of five provinces through the training of 1,205 HCWs and the renovation of three MDR-TB wards, six micro-laboratories and one regional laboratory.

At the central level TB, CAP devoted specific efforts to providing TA to the NTP in planning, supervision, monitoring and evaluation using both local and international experts. It also successfully supported the NTP in the Global Fund Round 7 proposal development.

Finally, the project supported the update, translation and distribution of the following strategic national documents: eight national tuberculosis control modules, the ISTC, an MDR-TB Diagnosis and Treatment Manual, a national SOPs for TB laboratories, TB-IC Guidelines, a TB/HIV Clinical Manual and an X-Ray Manual.



### Namibia

Population: 2 million Estimated TB Incidence (all cases per 100,000 pop): 767 Estimated number of new TB cases: 15,905

#### **TB CAP Country Highlight**

TB CAP contributed greatly to the percentage of HIV patients being tested for TB, which rose from 16% in 2004 to 74% in 2009. The percentage of HIV positive TB patients put on cotrimoxazole rose from 0% to 78% during the same period.

#### Background

TB is a major public health problem in Namibia and is one of the most frequent causes for hospitalization and reasons for attendance at outpatient clinics. In 1998 Namibia reported 12,286 cases of TB (all forms). This number has continued to increase, reaching a peak of 16,156 cases in 2004.

Although TB case notification rates (CNR) have decreased from 743/100,000 in 2004 to 552/100,000 in 2009, Namibia still has one of the highest CNRs in the world (2010 WHO Global TB report). There is also significant regional variation in the distribution of the TB disease burden in the country. Geographical access to public health facilities is low, with only 25% of the population within a 10 km distance (same in urban and rural areas), and 70% within 20 km. Laboratory coverage is also low, with only 30 laboratories managed by the Namibia Institute of Pathology.

Namibia has the fourth highest HIV prevalence rate (15.3%) and the HIV prevalence rate among TB patients ranged from 58-59% between 2007 and 2009. DR-TB is a serious problem, the first DRS in 2008 indicated an MDR-TB rate of 3.8% among new patients, and 16.5% among previously treated patients.

The impact of TB CAP in Namibia can be seen in the phenomenal growth in the number of Government of Namibia (GON) TB staff and improved competencies at the national level, from a one person office to a six-member National TB and Leprosy Program (NTLP) staff, improved treatment success rates, an increasing number of TB patients with known HIV status and the steady rise in the number of HIV positive TB patients started on ART over the years.

TB CAP has worked closely with the NTLP since 2004. Collaboration with NTLP was facilitated by the co-location of the TB CAP country office in the offices of the Ministry of Health and Social Security (MoHSS) Directorate of Special Programs (DSP). This colocation was instrumental in TB CAP successfully achieving the targets which were set in the cooperative agreement. TB CAP was also involved in funding and providing TA for supportive supervision, clinical mentoring, and review meetings at district and regional levels.

#### **Key Results**

#### PMDT:

One of the major achievements is the countrywide implementation of PMDT. With support from TB CAP, a medical doctor responsible for the coordination of clinical

services and PMDT was recruited and seconded to the NTLP. TB CAP also supported the deployment of a regional TB coordinator and a DR-TB nurse in one of the pilot regions. The establishment of the Central Clinical Review Council (CCRC) has helped to ensure a standard approach to the diagnosis and treatment of MDR-TB. Namibia has also made great strides in implementing TB-IC measures thanks to TB CAP technical support. Two Namibian architects were trained as IC consultants. Oshakati State Hospital's government-funded TB ward was renovated to international IC standards with guidance from these consultants. Walvis Bay TB and medical wards, the ART clinic and X-ray departments as well as Katutura TB Unit have had ultraviolet germicidal irradiation (UVGI) installed. TB CAP supported countrywide TB-IC training and the preparation of IC plans.

#### **CB-DOTS**:

Over the years TB CAP substantially expanded its support for CB-DOTS activities. TB CAP provided direct support to three regions (Erongo, Karas and Katima Mulilo) and indirect support to three other regions (Oshana, Oshikoto and Kavango) via financial and technical support to Project Hope. TB CAP recruited and trained 46 field promoters in Erongo and Karas regions. TB CAP also provided 12 containers to target regions for use as DOTS points.

By supporting six of 13 regions of the country, TB CAP significantly contributed to increased case detection, treatment success rates and better follow-up of TB suspects, defaulters and contacts of TB patients. TB CAP also supported initiatives such as the TB Communication for Behavioral Impact (TB COMBI). TB COMBI contributed significantly to making the program more visible through advocacy, material production/distribution, branding of vehicles, DOTS points containers, and putting notices at health facilities informing the public about the availability of free TB investigations and treatment services. To date, Namibia has initiated CB-DOTS in all 13 regions. However, there are still regions where future support is required in order to achieve full geographic coverage and thereby ensuring effective CB-DOTS services in Namibia.

#### Increased TB Case Detection:

There has been a gradual decline in the absolute numbers of cases of TB notified over the years from 2004 to date. TB CAP attributes this to both increased case finding and the effective treatment of identified cases, which in turn leads to a reduction in transmission.

The NTLP managed to reduce defaulter and death rates to below 5% in 2008, from



13% and 8%, respectively, in 2004. A CDR of 87% was achieved in 2009, from a low of less than 50% in 2004. A treatment success rate of 82% was achieved in 2008 with TB CAP support, a remarkable improvement compared to the 70% treatment success rate in 2004. It is highly likely that the newly revised international target of an 87% treatment success rate among new smear-positive cases will be achieved in the near future as a result of improved case finding and case holding in all regions of the country, in line with the STOP TB expanded DOTS strategy.

#### **Guideline Development:**

TB CAP has played a key role in the development of national TB guidelines, technical manuals on specific topics (e.g. DR TB and TB-IC), and development of Global Fund proposals for Rounds 2, 5 and 10. TB CAP was also pivotal in the development of the National TB Medium Term Plans 1 and 2.

#### **TB/HIV Collaborative Activities:**

TB CAP worked closely with partners to strengthen and systematically roll-out TB/ HIV collaborative activities. All TB in-service trainings funded and coordinated by TB CAP included TB/HIV modules. Namibia is now a world leader in TB/HIV collaborative activities as evidenced by the percentage of TB patients being tested for HIV, which rose from 16% in 2004 to 74% in 2009. The percentage of HIV positive TB patients put on cotrimoxazole rose from 0% to 78% during the same period. The establishment of the TB/HIV Working Group, which meets monthly and has a rotating chairmanship between the National AIDS Coordination Program and NTLP, saw 17,773 HIV positive clients put on IPT in 2009.

#### Human Resources:

TB CAP supported the recruitment, training and the re-training of national level staff. At the regional level, TB CAP supported the regions through quarterly zonal and district review meetings, as well as through supportive supervision.

#### Infrastructure:

TB CAP supported Project Hope with the procurement of three vehicles. These vehicles proved essential to the overall performance of the NTLP and indeed to the DSP and the entire MoHSS. It assisted them to conduct defaulter tracing and to provide other support to field staff. These vehicles also contributed significantly to general health system strengthening at district and regional levels. (Oshana, Oshikoto and Kavango regions benefited from these vehicles as well as the staff from Project Hope.)

DOT Points Containers: The use of containers reduced congestion at certain health facilities which in turn averted nosocomial infection. In other parts of the country the containers brought DOT services closer to the homes of TB patients.

#### Improved Monitoring and Evaluation:

The improvement in data quality achieved by the NTLP over the years has resulted in other programs wanting to learn from best practices, such as quarterly review meetings and use of the Electronic TB Register (ETR.net). TB CAP took the lead in financing and promoting the use of review meetings as platforms for data analysis and usage. Through regular training session in the use of computers at review meetings, many district TB and leprosy coordinators (DTLCs) can now properly utilize computers.











# Nigeria



Population: 148 million Estimated TB Incidence (all cases per 100,000 pop): 311 Estimated number of new TB cases: 460,149

#### **TB CAP Country Highlight**

The percentage of TB patients tested and counseled for HIV increased from 10% in 2007 to 73% in 2009. 30% of TB patients were found to be co-infected, out of 20,429 TB patients counseled and tested.

#### Background

Nigeria is a federation of 36 states and the Federal Capital Territory, Abuja. It operates a 3-tier system of governance - federal, state and local. Nigeria established the National TB and Leprosy Control Program (NTBLCP) in 1989. The program operates within the three levels of government. There are well-established and functional program offices at each level headed by program managers and their technical support teams. Health facilities are the operational units of DOTS and TB/HIV services. There are currently 3,459 health facilities providing free DOTS services, including TB/HIV services. Although Nigeria adopted the DOTS strategy in 1994, countrywide expansion of DOTS only occurred in 2002 when USAID and CIDA funds became available to the program. At the end of 2004, DOTS services were available in all 36 states, including the Federal Capital Territory, however despite this coverage, case detection has increased very slowly. At the end of 2009 only 30% of the WHOestimated smear-positive TB cases had been detected (NTBLCP annual report, 2009). Nigeria ranks fourth among the 22 high burden TB countries in the world and the TB burden is compounded by high prevalence of HIV, which stands at 4.6% of the general adult population (National HIV Sero-prevalence Report, 2008). The emergence of MDR-TB also poses a threat which if not effectively addressed, may wipe out the achievements of previous efforts in controlling TB.

#### **Key Results**

#### **Collaboration with Other Partners**

TB CAP was implemented by a consortium of four partners: KNCV Tuberculosis Foundation, which was the coordinating partner, the WHO, FHI 360 and MSH. In addition to these major partners, TB CAP collaborated with the International Federation of Anti-leprosy Association (ILEP), including the German Leprosy and TB Relief Association (GLRA), Netherlands Leprosy Relief (NLR), and the Leprosy Mission of Nigeria (TLMN). Through the various activities of these partners, TB coverage and control was expanded in the country.

Most health service delivery, including DOTS and TB/HIV services, occurs at the primary health care level. Regrettably the health system is very weak at this level because of inadequate government funding for health services. TB CAP contributed to strengthening this level of the health system through expansion of quality DOTS and TB/HIV services. Building on the gains of USAID's TB support to the WHO since 2003, TB CAP increased and improved access to DOTS services through the renovation of health facilities, improvements in IC standards, training health facility staff, strengthening the health information system and the provision of drugs and other

health commodities. With funding leveraged from the Global Fund Round 5 TB Grant, TB CAP's contribution, made funds available for sustained and improved DOTS and TB/HIV service provision in the country.

#### Strengthened MDR-TB Control in Nigeria

In response to the emerging challenges of MDR-TB, in 2007 the Federal MoH inaugurated the National MDR-TB committee to review the progress of control and prevention of MDR-TB. TB CAP provided TA to the committee since its inception. Among the key achievements of this committee are the development and review of strategic policy and operational documents, including the MDR-TB operational plan for 2007-2010, national guidelines on clinical and programmatic management of MDR-TB, a draft training curriculum for medical doctors and general health workers (GHWs), a national protocol for MDR-TB survey and a survey training manual for laboratory and field workers. TB CAP supported the training of GHWs involved in conducting the national DRS implemented under the auspices of CDC. 144 field officers, including State program officers, TB and Leprosy supervisors, and DOTS site officers were trained on the survey methods. TB CAP also supported the implementation of the survey, which commenced in October 2009. TB CAP also funded equipment for the 25-bed ward at University College Hospital (UCH) in Ibadan where treatment of MDR-TB patients commenced in July 2010. There are currently 20 patients in the UCH MDR-TB treatment facility. TB CAP also provided technical support to the NTP in the application to the GLC for second-line drugs through the fast-track mechanism which approved second-line drugs for 80 patients.

TB CAP provided TA to the NTBLCP for an initial assessment of the laboratory network for culture and DST services for MDR-TB control. Subsequently, supervisory and monitoring visits to the laboratories by the NTBLCP Central Unit and partners were also supported. TB CAP provided support for the development of the national guidelines for QA for sputum microscopy as well as culture and DST.

#### Strengthened NTBLCP Drug and Commodity Management System:

TB CAP supported the NTP to develop, print and distribute Logistics and Management Information System (LMIS) forms. TB CAP also supported the NTBLCP to organize a national training on LMIS tools which was cascaded to the six geopolitical zones of the country. A total of 147 participants were trained and a follow-on, cascade training conducted at the State level, trained an additional 1,023 persons. TB CAP provided TA to the NTBLCP on the quantification of TB drugs. The project organized a national training of program officers for phased implementation of TB patients' kits in the country. TB CAP supported the NTBLCP in designing a simplified system for adverse drug reaction reporting. TB CAP also liaised with the NTBLCP, and the national HIV/AIDS, malaria, vaccine and immunization programs to develop a broad-based and comprehensive national pharmaco-vigilance training curriculum, including a trainer manual and curriculum implementation guide.

#### **Increased Political Commitment for DOTS:**

TB CAP supported the 36 States and Federal Capital Territory in the development of strategic plans, which were in line with the National TB Strategic Plan and used the Planning and Budgeting Tool. The strategic plans now serve as advocacy tools for the mobilization of funds from both the government and partners for sustained DOTS program implementation in States. TB CAP also supported the development of the 2010-2015 National TB Strategic Plan using the same tool. TB CAP supported the NTBLCP TB Task team in advocating the Federal Government to provide funding for the customs clearance of anti-TB drugs for the program. This resulted in the approval and release of twelve million Naira (~\$76,000) by the Federal MoH for the clearance of TB drugs and materials from ports in 2009.

#### Increased Capacity at NTBLCP to Implement Community TB Care (CB-DOTS):

Under TB CAP, CB-DOTS activities were expanded to a total of 23 communities in four local government authorities (LGAs). For the effective roll out of CTBC activities, the capacity of 110 community health workers and 132 community volunteers was built. A key achievement of the CB-DOTS program has been the referral of 1,584 TB suspects, of which about 32% received treatment via a community volunteer.

#### **Increased Public and Private Sector Partnerships:**

Engaging all care providers in TB control using PPM approaches is an essential component of the WHO's new Stop TB Strategy. The NTBLCP embraced PPM as part of its strategy to ensure the effective delivery of DOTS services to the general population, improved TB case finding and increased access to quality TB care in the country.

#### Establishment of PPM Steering Committees at National and State Levels:

TB CAP facilitated the institution of the National PPM Steering Committee in 2008. TB CAP also supported the establishment of six State-level PPM steering committees.

#### Strengthened TB/HIV Collaborative Activities:

The need for collaboration between the TB and HIV control programs is well recognized by the NTBLCP. TB CAP supported the national TB/HIV Working Group at the national level and in 12 States, in partnership with the ILEP organizations.

During the project period, out of 20,429 TB patients counseled and tested 30% were found to be co-infected. At the end of 2009, the percentage of TB patients tested and counseled for HIV in the NTBLCP increased to 73% from a rate of 10% in 2007.

In collaboration with the National TB and Leprosy Training Centre in Zaria, TB CAP organized a "Three I's" (intensified case finding, isoniazid preventive therapy and infection control) training course for 30 participants in 2010. A major outcome of the training was the development of facility-based IC plans and field visits by the internal

facilitators to provide hands-on support to the trainees as well as support for onthe-job training of the hospital staff. TB CAP also renovated and upgraded 96 health facilities and 52 laboratories.

#### Improved Human and Institutional Capacity:

TB CAP provided TA to the NTBLCP for the development of an HRD plan, which was finalized with funds from the Global Fund. The project also supported the development of other plans, including the M&E, laboratory, and the Procurement and Supply Management (PSM) plans.

#### Support to the Global Fund TB Grants:

TB CAP leveraged its support to the NTBLCP from other sources including the Global Fund. Gaps in funding of NTBLCP activities were jointly identified during the development of TB CAP plans as well as Global Fund proposals. However, due to the delay in commencing phase 2 of the Global Fund Round 5, TB CAP provided support for implementation of Global Fund NTBLCP activities in the country. TB CAP reviewed and repackaged Global Fund Round 5 phase 2, and developed the proposals for Rounds 8 and 9.

TB CAP played a vital role in providing support to the new Principle Recipient, the Association of Reproductive and Family Health, on procurement and supply management of TB medicines and commodities.

Towards the end of TB CAP, the National Reference Laboratory in Lagos (NIMR) became functional and began performing culture and DST, but it lacked the 'negative pressure' required for TB-IC. To remedy this, TB CAP provided support for the renovation and upgrading of the NIMR laboratory to BSL3. TB CAP also developed the M&E curriculum and supported training of M&E focus persons and program managers in 36 states.

#### Strengthened TB Program Leadership and Management:

TB CAP supported the NTBLCP in various capacity building workshops on the provision of DOTS and TB/HIV services for national and state program managers, including USG implementing partners and the private sector, specifically:

- A national TOT for implementation of TB/HIV and Integrated Management of Adolescent and Adult Illness (IMAI) activities
- Management of TB at the district level
- A national TOT on the WHO STOP TB strategy including TB/HIV collaborative activities
- Step-down training on the stop TB strategy including TB/HIV collaborative activities

#### Strengthened Integration of DOTS into General Health Services:

TB CAP supported the NTBLCP in the training of 4,490 GHWs, including medical doctors, nurses and community health personnel for DOTS service provision in 17 States. Each year TB CAP procured laboratory equipment, reagents and consumables for the 17 USAID-supported States, including 89 GDF microscopes, 565 GDF consumable kits, 2 LED fluorescence microscopes and 29,000 sputum containers for health facilities.

### Nigeria



### Pakistan

Population: 170 million Estimated TB Incidence (all cases per 100,000 pop): 181 Estimated number of new TB cases: 297,108

TB CAP Country Highlight

A prevalence survey pilot was successfully conducted with support of international technical assistance missions.

#### Background

Pakistan has a large and mostly rural population, with a high rate of growth. It ranks sixth among the 22 high burden countries with a TB prevalence estimated at 373 per 100,000, and an incidence of 231 per 100,000 (WHO Report 2010). The case detection rate for all cases was 63% as of 2009. In 2009, 267,451 cases (all forms) were notified and 101,887 new SS+ cases were notified. The treatment success rate for new smearpositive cases is 90% (2008). Not surprisingly, the ongoing security situation in the country poses a number of challenges.

#### **Key Results**

#### **Development Work Support:**

TB CAP supported the NTP to develop a National TB Strategic plan (2010-2015) in line with the new WHO STOP TB Strategy. The plan provides strategic direction focusing on the six areas of the global STOP TB strategy.

Project support for the development of national IC guidelines compliments the NTP DOTS plus initiative which is funded by the Global Fund Rounds 6 and 9.

Development of a National HRD Strategic Plan has contributed to health system strengthening by focusing on the health workforce. Involving national staff in the process has put HRD on the priority agenda of the NTP and, at the same time, built NTP capacity in the important area of human resource development.

Support has been provided for the development of important technical products, including guidelines for the drug management of first-line drugs and a dispensing manual. These products support the Global Fund Round 8 grant for strengthening the NTP drug management component. In addition, the development of guidelines for drug management of second-line drugs compliments the NTP's DOTS plus initiative under Global Fund Rounds 6 and 9.

#### **Capacity Building of Managers:**

'MOST for TB' is an important tool in building the management capacity of managers. The tool was used effectively to build the capacity of NTP staff through a 'MOST for TB' workshop held in 2010. Action plans developed by the participants have started producing results and a successful follow-up was also carried out. The provinces are now planning to train district staff, although their resources are limited.

#### **Prevalence Survey:**

Pakistan is on the list of high burden TB countries which the WHO has recommended conduct a prevalence survey. The NTP has put the survey on its priority agenda. A competent national staff is now hired and trained to conduct the survey in 95 clusters throughout the country. The survey pilot was successfully conducted with support of international TA missions.

#### **Monitoring and Evaluation:**

National Program Officers' support for monitoring and supervision at provincial and district levels is one of the technical strengths of the program. This support has strengthened the TB program at the implementation level (i.e. district) and has also produced validated TB data on a quarterly basis.



## South Africa

Population: 49 million Estimated TB Incidence (all cases per 100,000 pop): 948 Estimated number of new TB cases: 460,600 **TB CAP Country Highlight** The development by Desmond Tutu Tuberculosis Centre with grant administered by the TB CAP of a manual on childhood TB.

#### Background

South Africa notified 367,178 TB cases in 2009 posting the second highest TB notification rate (970 in 2009) in the world after Swaziland. Thirty six percent of these cases were new smear-positive pulmonary TB (PTB) cases, 38% new smear-negative PTB, 16% extra-pulmonary TB cases, and 10% retreatment cases. The CDR for all forms of TB was 76% in 2009. 7,343 confirmed MDR-TB cases were also reported in the same year. TB/HIV co-infection is estimated at 58%. The treatment success rate among new smear-positive PTB patients was 76% in the 2008 cohort, increasing from 71% in 2005.

#### **Key Results**

#### **TB Control Strategy:**

In 2001, TB CAP assisted South Africa in the development the National Medium-Term Development Plan (NMDP) 2002-2005. The plan was subsequently translated into provincial plans with the assistance of TB CAP. The development of a TB control strategy by the Department of Health (DoH), with support from TB CAP, marked the beginning of streamlined TB control in South Africa. The current efforts towards attainment of the global targets for case detection and treatment success rates, which both stand at 76%, can be attributed to initiatives of TB CAP and the DoH. TB control improved in all provinces after the adoption of the DoH strategic plans.

#### **MDR-TB Management:**

The containment and control of the DR TB outbreak in Tugela Ferry, Durban was as a result of TB CAP, which mounted strategies which contained the epidemic. The WHO provided TA on PMDT through support of TB CAP.

#### **HRD Strategy:**

The HRD project has produced a strategy to be used by partners in building the capacity of TB control in the country. This has the potential to increase the expertise and number of TB workers in the health facilities through countrywide trainings. South Africa will soon start holding The Union "Arusha" course in the country.

#### Manual for Management of Childhood TB:

A manual on the management of childhood TB was developed by the Desmond Tutu Tuberculosis Centre with a grant administered by TB CAP. The aim of this book is to promote and improve the care of all children with TB, especially in under-resourced communities in southern Africa. The learning material is presented in a way which enables groups of healthcare workers to take responsibility for their own continuing training. It is available online free of charge from the TB CARE I website at: http:// www.tbcare1.org/publications/tools/access/Childhood\_TB.pdf. This book offers a very practical approach in the diagnosis and treatment of childhood TB.

# **Childhood TB**

### A learning programme for professionals



Developed by the Desmond Tutu Tuberculosis Centre

### South Sudan

Population: 7.5-9.7 million Estimated TB Incidence (all cases per 100,000 pop): unavailable Estimated number of new TB cases: unavailable

#### **TB CAP Country Highlight**

TB CAP trained clinicians on TB suspect identification, diagnosis, management and prevention. This contributed to an increase in case notification. The number of TB cases (all forms) notified increased from 2,701 in 2005 to 5,688 in 2009.

#### Background

South Sudan is emerging from more than two decades of civil war during which the health infrastructure (including TB services) was shattered. Following the signing of the Comprehensive Peace Agreement in 2005, the Government of South Sudan established the NTP in 2006 to coordinate all TB services in the country. TB services are currently provided in 42 health facilities covering about 48% of the population. The WHO estimates that South Sudan is detecting only 34% of all TB cases. The estimated number of new TB cases is 79 per 100,000 and 140 per 100,000 for smearpositive and all forms of TB, respectively. The NTP notified a total of 5,313 new cases in 2009 and of which 2,281 were smear-positive cases.

The TB CAP partnership in South Sudan was led by MSH and also included KNCV and the WHO. The three partners collaborated and provided technical and financial support to strengthen NTP management and strategic planning capacity, expand the laboratory network through rehabilitation of TB laboratories and provision of laboratory equipment and kits, developing SOPs and training manuals and scaling up DOTS coverage by providing training to health workers and monitoring and supervision of TB DOTS centers.

TB CAP has contributed significantly to TB control efforts in South Sudan. When TB CAP started operating in South Sudan in 2005, TB was mainly managed by NGOs without central coordination. The NTP also lacked important policy guidelines and other strategic documents necessary for effective coordination and optimal implementation of TB activities. The peripheral laboratory network was weak and there were neither standard training materials nor implementation manuals. Many laboratories were dilapidated and had no basic equipment nor supplies.

Among the two major focus areas of TB CAP in South Sudan were strengthening NTP capacity and establishing peripheral TB laboratory networks.

#### **Key Results**

#### **Strengthening NTP Capacity:**

TB CAP, in collaboration with other partners, has been key in strengthening the NTP's capacity. The project trained NTP staff in leadership and management and in MDR-TB management. TB CAP has also supported the NTP in the development of key documents, such as the TB Strategic Plan 2009-2013, NTP annual plans for 2009 and 2010, a human resource development plan, and laboratory documents. In addition, TB CAP supported the development of the second edition of the NTP policy guidelines.

#### **TB Laboratory Network:**

TB CAP supported the NTP in the strengthening of its peripheral laboratory network. The project recruited a laboratory strengthening advisor who supported the NTP in training, supervision and staff mentoring. A total of 48 laboratory technicians were trained on TB microscopy and EQA between 2009 and 2010. TB CAP also supported the development of SOPs for TB microscopy which are used by all the TB microscopy networks in the country. In addition, the project supported the development of EQA guidelines, which were piloted by three laboratories in Juba County.

In order to improve TB laboratory infrastructure, TB CAP renovated five TB laboratories. The laboratories have also been provided with the basic equipment and adequate supplies needed to provide quality laboratory services. Staff from the laboratories were trained and mentored to provide quality services. TB CAP also provided technical assistance to the MoH to develop a laboratory strategic plan and policy framework.

The impact of TB CAP support to South Sudan is significant. In collaboration with other partners, TB CAP has enabled the NTP to register noticeable progress in key TB indicators. The number of TB cases notified (all forms) has increased from 2,701 in 2005 to 5,688 in 2009. Likewise, TB case detection rates have risen from 19% in 2007 to 34% in 2009 among smear-positive TB cases, while treatment success rates have remained high at about 80% in 2009.

#### Strategic Plan for TB Control and TB Policy Guidelines:

The Strategic Plan for TB Control 2009-2013 was developed with significant technical guidance and support from TB CAP in collaboration with other TB stakeholders. This was the first strategic plan for TB in South Sudan. From the document's initial development to its final printing and dissemination, TB CAP's contributions have been important. The plan has had a monumental impact in laying out the strategies required for TB control. Informed by the Strategic Plan, the project has also assisted the NTP in the development of annual operational plans for 2009 and 2010 by engaging key stakeholders. The Strategic Plan was used to develop the Global Fund Round 10 proposal, in which TB CAP was also involved. The financial gap analysis for the NTP, which was prepared with TB CAP TA, is also a notable achievement.

## South Sudan

#### Training of Key NTP Staff:

As a part of the capacity building initiative, TB CAP supported the participation of five key NTP officials in international training for TB and TB/HIV management and leadership as well as MDR-TB management. The project ensured that the trained team was composed of staff with different areas of expertise and from different levels of the organization. The NTP manager, two training officers, and one laboratory expert were trained in the aforementioned topics and as a result, there is now a pool of experts who have a basis on which to continue the expansion of quality TB services. Strengthened NTP capacity has resulted in better NTP coordination and collaboration with the public and private sectors. As such, the NTP is in a better position today than it was at the start of the project. The NTP currently has 12 full-time staff at the national level and seven state coordinators, and as it continues to grow, the knowledge and skills gained during the training will assist the staff to better manage TB control efforts throughout the country.

#### Human Resources Development Plan:

TB CAP supported the situational analysis of human resources available for TB control, which was used during the stakeholders' workshop to develop a TB human resource strategic plan. The plan addresses key challenges within the system and the existing opportunities which need to be seized. Strategies to tackle the challenges are proposed in the strategic plan. The plan has been printed and is being disseminated for wider use and implementation. A focal person for HRD in the MoH has been trained on HRD which shows to a stronger commitment from the government to focus on HRD needs.

#### **TB Laboratory Services:**

Strengthening and expanding TB laboratory services has been a top priority for TB CAP in South Sudan. Firstly the project assisted the NTP in the development of TB laboratory SOPs and training materials for laboratory personnel. These documents became the basis for training laboratory workers at all levels. Secondly, the project hired an external TB laboratory systems strengthening specialist capable of technically supporting the laboratory team within the NTP. As a result, quality assurance of TB microscopy using blinded rechecking was introduced after developing a guideline on quality assurance. Supervision has also been standardized, and a tool for carrying out more effective and efficient supportive supervision and mentoring was developed. TB CAP has also contributed to the development of a national policy and strategic plan for the national laboratory services.

To create a sustainable pool of master trainers on TB microscopy and quality assurance, TB CAP supported a TOT for 10 key state laboratory experts. The state laboratory supervisors will function as "Quality Officers" in the future scale-up of the quality assurance system across the country. They will also be used in future cascade training on TB microscopy and quality assurance, as well as serving as links between the NTP Central Unit and the county health departments. Finally, TB CAP renovated the laboratories of five primary health care centers and provided them with basic equipment and supplies.

#### Training of Clinicians:

To address the urgent need for trained and skilled manpower in primary health care clinics, TB CAP trained clinicians on TB suspect identification, diagnosis, management and prevention. This has contributed to the increase in case notification and case

detection. TB notification has increased among smear-positive cases by 24%, from 1,842 in 2008 to 2,281 in 2009.

#### Short-term Technical Assistance:

TB CAP offered TA to the NTP according to its specific needs and challenges. Between 2009 and 2010, TB CAP provided TA on strategic and annual plan development, laboratory system strengthening, TB case detection and how to integrate TB into primary health care, human resources development, and TB in prisons and other congregate settings. The recommendations from these TA visits have been important to the development of a wide range of NTP documents and guidelines.

#### Training of General Health Workers:

TB CAP conducted a series of trainings for health care providers, improving the delivery of services to patients. Training and follow-up mentoring contributed to the strengthening of the health system. As such, the project has been developing the most important part of a functional health system, the human resource capacity.

#### **Development of Strategic Guidelines and Other Documents:**

The development of the Strategic Plan for Human Resources, through the assistance of TB CAP, has helped the MoH with long-term planning and coordination between the different Ministries (e.g. Ministry of Education and MoH) to promote training of more mid-level HCWs to combat TB and other major diseases in primary health care clinics.

### South Sudan



### Uganda

Population: 31 million Estimated TB Incidence (all cases per 100,000 pop): 330 Estimated number of new TB cases: 101,785

#### Background

TB is a major cause of morbidity and mortality and a significant public health problem in Uganda. 60% of TB patients are co-infected with HIV. The Union is the partner that implemented the TB CAP program in Uganda since 2007. TB CAP has supported the MoH and 12 districts with a population over 6,3 million to deliver integrated services for TB and HIV, and to strengthen CB-DOTS. The goal of the program was to decrease the burden of TB among PLHIV and the burden of HIV among notified TB patients. The program aimed at increasing HCT uptake among TB clients as an entry point into HIV care, intensifying TB case finding in the HIV care settings, and consolidating CB-DOTS.

#### **Key Results**

#### Improvement in TB Patient Follow-Up and Delivery of TB/HIV Services:

Prior to the implementation of TB CAP there was poor performance in TB patient follow-up and collaborative TB/HIV service delivery in the 12 TB CAP-supported districts, and the country as a whole. A situational analysis conducted at the beginning of the program identified the factors associated with poor performance. Key factors included: weak or non-existent district-level TB/HIV coordination mechanisms; inadequate support for TB and TB/HIV activities due to insufficient funding for health services by the government; and a lack of guidance on how to establish district TB/HIV coordination mechanisms. Moreover, implementing partners at the district level were not regularly involved in planning, coordinating, and monitoring meetings convened by District Health Teams (DHTs) and as such, districts were unaware of available opportunities for supporting TB and TB/HIV activities.

As a key strategy to address the gaps in coordination and planning, TB CAP supported joint planning workshops between the TB and HIV programs in all 12 districts. District political leaders, administrative heads, DHTs, and health sub-district (HSD) teams participated in the review of existing TB/HIV collaboration mechanisms in their districts and the existing CB-DOTS strategy. They also identified challenges to implementation and proposed solutions and strategies to address them. The main output of the workshops was district TB/HIV work plans with priority TB/HIV activities together with budgets.

TB CAP provided funding and TA to the districts to implement their TB/HIV work plans. TB CAP also supported health worker training in management and leadership for TB, TB/HIV co-management, and refresher courses on CB-DOTS, TB-IC, sputum smear microscopy, and rapid HIV testing for non-laboratory district staff. Other supported activities were: the revision, printing and dissemination of recording and reporting tools; provision of supplementary HIV test kits and cotrimoxazole to close gaps in the supply cycle; and support for patient health education at health facilities and in the communities.

#### TB CAP Country Highlight

TB CAP's support to improve patient follow-up and recording led to an increase in the TSR from 17% in 2007 to 67% in 2009. Also, HIV testing for TB patients increased from 43% in 2007 to 87% in 2010, and use of cotrimoxazole preventive therapy (CPT) increased from 49% in 2007 to 95% in 2010.

As a result of this support, the uptake and use of TB/HIV services and follow-up of TB patients on TB treatment improved greatly. However, provision of ART to TB patients remained a challenge due to a number of system problems, including: the availability of anti-retroviral drugs; reluctance of health workers to initiate ART and TB treatment at the same time; and inadequate information sharing between the TB and HIV programs.

#### Improved Patient Follow-up in Kampala City:

In 2007, the Kampala district notified more than the expected number of TB patients, but the cure rate and, consequently, the TSR remained low at 17%. This was attributed to poor acceptance of community-based TB care in the urban setting despite it being national policy, inadequate follow-up mechanisms for tracking patients, incomplete records and weak coordination mechanisms between the various administrative units (divisions) in the city. In addition, information on collaborative TB/ HIV services, such as HIV testing for all TB patients, and CPT and ART for HIV-positive TB patients was not routinely collected or recorded in the health unit TB register. TB CAP supported interventions to improve patient follow-up and recording, leading to an increase in the TSR from 17% in 2007 to 67% in 2009. The specific interventions are described below:

#### Enhanced patient follow-up through telephone calls:

Telephone lines were set up at each of the five division headquarters in Kampala where the divisional TB focus person had an office. Since 2008 the divisional TB focus person has made telephone calls to the treatment interrupters to find out why they had failed to return to the health facility and to agree on next steps.

#### Conducting meetings to harmonize records of TB patients:

Inter-division meetings for divisional TB focus persons in Kampala were organized. These meetings took place quarterly and aimed primarily at exchanging information about patients who crossed from one facility or division to another. Inter-district meetings between divisional TB focus persons in Kampala and district TB and leprosy supervisors of neighboring districts were also convened. The objective of these meetings was to discuss data of patients who had formally transferred or self-transferred out of or into Kampala's health care system, and whose records were found to be incomplete.

#### Supporting CBOs to Follow-up Patients in Communities and Provide DOTS:

TB CAP identified two CBOs who were providing HIV services and had an established community network of volunteers. They were Kawempe Home Care in Kawempe Division, and Mengo Hospital Home Care in Rubaga division. The two CBOs enrolled 476 TB patients between June 2008 and December 2009 and supported them to complete treatment. The programs registered a treatment success rate of 88% (Kawempe) and 89% (Mengo).

#### Human Resource Capacity Building:

The key human resource challenge was that health workers had inadequate knowledge and skills to implement TB and TB/HIV collaborative activities. Training was conducted at various levels to address the needs of a wide range of health workers and managers. Each facility was given adequate copies of policies and guidelines for reference. To encourage the application of new knowledge and skills, trainees received follow-up support. These activities contributed to improved implementation of TB and TB/HIV collaborative activities in TB CAP-supported sites.

Training provided at the national level:

- · Management and leadership training of national MoH officers and partners
- Training of trainers: TB/HIV managers, TB/HIV co-management and refresher CB-DOTS for national level officers (48)
- Nurse tutors (47) from 24 nursing and midwifery training schools were oriented in TB/HIV collaborative activities so that they could incorporate TB/HIV in their lessons
- TB/HIV co-management for partners and partner-supported sites (51)
- TB-IC for implementing partners (54)

Following the training for partners, the partners trained more than 600 additional health workers on TB/HIV co-management and TB-IC using MoH training materials.

Training provided at the district level:

- Training of district trainers on TB/HIV collaboration
- TB/HIV collaboration for district health workers (1,827)
- CB-DOTS refresher training for district health workers (418)
- TB-IC for district health workers (308)
- Sputum smear microscopy for microscopists (83)
- Rapid HIV testing for non-laboratory district staff (77)

Selected members of the DHTs and the HSDs were trained as trainers for the TB/ HIV co-management course. HSD teams of trainers were subsequently formed and supported to carry out training at the facility level.

#### Improving Access to HIV Diagnosis for TB Patients as an Entry Point into HIV Care:

In addition to training health workers in the delivery of TB/HIV collaborative services, TB CAP supported the training of nurses and microscopists in rapid HIV testing. To ensure the regular availability of HIV test kits and cotrimoxazole at district health facilities, TB CAP improved district capacity to requisition these commodities. When supplies from the National Medical Stories were not available, the project also provided supplies to bridge the gap.

TB CAP promoted HIV testing and dispensing of cotrimoxazole within TB clinics/ wards. Together with the regular supportive supervision given to health facilities, this assistance contributed to a rapid increase in HIV testing for TB patients and cotrimoxazole use among TB patients co-infected with HIV. HIV testing for TB patients increased from 43% in 2007 to 87% in 2010. Use of CPT increased from 49% in 2007 to 95% in 2010. Although efforts like capacity building, strengthening referral mechanisms, provision of job aides etc. were made to improve initiation of ART in TB patients, ART use among TB patients remained low, there was however, some improvement from 12% in 2007 to 24% in 2010.

#### Supporting Implementation of the "Three I's" (ICF, IPT and IC):

While Uganda's national policy guidelines on TB/HIV collaboration recommend intensified TB case finding among PLHIV and the implementation of TB-IC activities, the guidelines limit the use of IPT due to the inadequate capacity at many health facilities to rule out active TB. Consequently, TB CAP focused on the other two "I"s. During the three-year project period, TB CAP promoted and supported initiation of TB-IC activities and intensified TB case finding among PLHIV.

#### TB-IC:

Four national level officers were trained to support the initiation of TB-IC activities in the country. TB CAP supported the MoH in the drafting of TB-IC guidelines and in building the capacity of 12 districts to implement TB-IC activities, and health workers at the district level being trained on TB-IC activities. Districts were supported to carry out risk assessments at the facility level, the results of which were used to draft TB-IC plans for health facilities. Following the risk assessment, a number of health facilities reorganized the flow of patients, the seating arrangements for patients and provided safer waiting areas. In addition, some health facilities were supported to construct shaded waiting areas while others opted to have tents to decongest outpatient clinics. TB CAP also supported facilities to widen windows to allow for the better flow of air within health facilities. To further reinforce the knowledge and practice of TB-IC, TB CAP developed IEC materials targeting both health workers and community members, which were printed and distributed to the 12 districts.

#### Intensified TB Case Finding in HIV Care Settings:

Intensified TB case finding is one of the recommended TB/HIV collaborative activities to enable early diagnosis of TB among PLHIV. TB/HIV training supported by TB CAP emphasized the need to actively screen all patients attending HIV care settings for TB, and to ensure that those diagnosed with TB are supported to complete their TB treatment through CB-DOTS.

As TB CAP supported health facilities in 12 districts to do active TB case finding in HIV care settings, it worked concurrently with other partners and supported the MoH to revise the HIV recording and reporting tools to adequately address inclusion of TB indicators.

TB CAP printed and provided the revised HIV registers and reporting tools to 12 districts and supported training and follow-up of health workers in these districts. A total of 144 health workers, including medical, clinical, and nursing officers, as well as records assistants from 52 health facilities and district offices were trained on HIV patient monitoring and the revised HIV monitoring tools. Post-training supportive supervision and mentoring were provided for all trainees to support correct recording and reporting at the health facilities.

Districts began reporting to the national level on TB screening and treatment among PLHIV in April 2010 for the period October 2009 to March 2010. In the 12 districts, 79% of PLHIV were screened for TB and 3% were started on TB treatment. Although 3% appears to be small, the actual number of 977 started on TB treatment in the 12 districts within a period of six months is actually quite significant.

# Uganda

#### CB-DOTS:

TB CAP supported the implementation of CB-DOTS in 12 districts. Assistance included the provision of 36 binocular microscopes to health facilities. In addition, districts having a critical shortage of qualified laboratory staff were supported to train nursing assistants as microscopists as an interim measure designed to improve access to TB diagnosis. The microscopists worked under the guidance of laboratory technicians or assistants.

TB CAP revised the district level TB supervision tools, incorporating sections on TB/ HIV and TB-IC, and updating sections on diagnosis, case management and recording and reporting. Joint TB/HIV supervision visits took place from the districts to all HSDs on a quarterly basis, from the HSD to 235 health facilities on a monthly basis and from the facilities to the communities monthly.

TB CAP also supported regular performance review meetings with districts by bringing together a few districts at a time to discuss achievements, challenges and solutions to problems. This was done in the regions and enabled focused discussion on challenges and the sharing of experiences among districts. Districts agreed on key actions to improve performance.

#### **Renovation of Facilities:**

To improve safety in the workplace and provide adequate space for TB and HIV services, TB CAP supported renovation of four facilities in Manafwa, Kampala, Hoima, and Buliisa districts. Waiting areas were expanded and airflow within them improved. The space for laboratory work was expanded and a safer environment for laboratory staff provided by widening windows and providing adequate work-tops and washing facilities. The renovated facilities were also equipped with furniture and storage facilities for medicines, reagents, and supplies.

#### TA to USAID TB Implementing and PEPFAR TB/HIV Partners:

In 2007 USAID noted minimal improvement in TB indicators in districts that had received substantial support for TB/HIV activities. This was attributed to the minimal support that had been given to partners to implement TB services as compared to that they had received for HIV program activities. USAID therefore engaged TB CAP to provide TA to USAID TB implementing and PEPFAR TB/HIV partners to scale-up TB/HIV collaborative activities and strengthen/consolidate CB-DOTS to persons living with HIV.

TA to partners was initiated in 2008 following the roll-out of activities in the 12 TB CAP-supported districts. TA provided included partner coordination meetings, supporting partners in the development of TB/HIV work plans, training of trainers in TB/HIV co-management and TB-IC and supporting bi-annual regional TB/HIV joint supportive supervision. Joint TB/HIV technical supervision by the MoH and partners took place every six months in all nine of the country's TB zones, covering 29 districts and 87 health facilities in both partner and non-partner supported sites.

#### Support for MDR-TB Activities:

Although the national prevalence of MDR-TB is not known, various studies carried out by partners in selected districts and sites show that MDR-TB is a problem in Uganda. While over 70 patients had been identified as having MDR-TB and were notified to the NTLP by 2009, the majority were not able to obtain second-line treatment because the NTLP had not accessed second-line drugs through the WHO and the GLC. There was an urgent need for the NTLP to establish PMDT.

In 2009 TB CAP provided support for the NTLP to initiate activities to establish PMDT. A full-time Medical Officer was seconded to the NTLP to coordinate PMDT activities. TB CAP supported the NTLP to draft guidelines for PMDT and to rewrite the application for second-line drugs, which was subsequently accepted by the GLC. A training curriculum and M&E tools were completed. Six national trainers were trained on PMDT and TB CAP supported the training of additional health workers from the regional hospitals.

### Supporting Microscopy Work through Training of Microscopists and the Distribution of Microscopes:

In order to improve accessibility to microscopy services, TB CAP supported the training of selected health workers as microscopists, procured and distributed microscopes to health facilities and supported maintenance of microscopes in all 12 districts. As a result, the district health systems have had improved capacity for microscopy work beyond sputum smears, including blood slides for malaria, stool and urine analysis. This is made possible because of the availability of more trained laboratory personnel, as well as new or repaired microscopes at the health facilities.

#### Training of Health Workers in Rapid HIV Testing:

In order to promote HIV testing within TB clinics, 77 general health workers from 12 TB CAP- supported districts were trained in rapid HIV testing. This led to there being more health workers equipped to conduct HIV testing in the clinical setting to improve uptake of HIV testing by patients.

#### Supporting Repair of Vehicles and Motorcycles:

TB CAP provided support for the repair and servicing of district vehicles and motorcycles to ensure continued field visits. Due to improved availability of transport, officers were better equipped to supervise all district health activities.

# Uganda



### Vietnam

Population: 90 million Estimated TB Incidence (all cases per 100,000 pop): 201 Estimated number of new TB cases: 175,000

#### **TB CAP Country Highlight**

The project developed SOPs and training curricula for laboratory practice (smear, culture, identification, DST, preparation of reagents, lab safety) and guidelines for laboratory maintenance which are being used in laboratory development throughout the country, making the work safer and more accurate..

#### Background

In 2005 the NTP adopted a plan to establish PMDT in the country. Developments were hampered by the lack of rapid diagnostic methods and of biosafety in laboratories and treatment facilities involved in the diagnosis and treatment of MDR-TB patients. An additional concern was the risk of transmission of TB and MDR-TB in HIV prevalent settings. The country's plans for PMDT received GLC approval for a pilot project in Ho Chi Minh City (HCMC) in 2007.

Because of the prevalence of MDR-TB, the emergence of XDR-TB, and the increased use of culture in diagnosis and follow-up of treatment, laboratories are increasingly handling dangerous strains of TB. Therefore the handling of these strains should be concentrated in as few laboratories as possible, where the biosafety conditions are optimal to prevent occupationally-acquired TB by laboratory staff and the crosscontamination of samples.

The TB CAP project aimed to assist the NTP to upgrade existing laboratories to BSL2 level, and the national and regional reference laboratories in Hanoi and HCMC to enhanced BSL2 and moving to BSL3. The plan complemented activities budgeted by the Vietnamese government and the Global Fund.

#### **Key Results**

#### Laboratory Network Strengthening for PMDT:

Based on the bio-risk assessment results from six laboratories, guidelines on User and Functional Requirement Specifications for TB BSL2/3 Facilities and Design Considerations for TB BSL2/3 Facilities were developed. A facility layout plan and a workflow for all laboratories were developed. Physical adjustments based on the BSL2/BSL2+ proposal and designs was conducted and completed in four laboratories. The renovation of three laboratories was funded by TB CAP. The project developed SOP's and training curricula for laboratory practice (smear, culture, identification, DST, preparation of reagents, lab safety), and guidelines for laboratory maintenance which are being used for laboratory development throughout the country, making the work safer and more accurate. Step-wise training on the lab SOPs manual was conducted for laboratory staff in five planned MDR-TB treatment centers. National quidelines on in-country QA\EQA for identification, culture and DST were developed and a training course on QA\EQA was conducted for laboratory staff in 12 planned MDR-TB treatment centers. A refresher training course on solid and liquid culture techniques and lab biosafety was conducted for laboratory staff in the Danang MDR-TB treatment center. The national strategic plan on laboratory network development was prepared. This plan was included in the national TB control program strategic plan for the period nar د. 2011-15. 92

#### Adequate Equipment Specification and Maintenance:

Laboratory biosafety equipment was purchased and training for users at each site was provided. National guidelines on laboratory maintenance were developed. Training courses on laboratory maintenance were organized for laboratory staff in eight planned MDR-TB treatment centers. Periodic laboratory maintenance was conducted by experienced engineers from the National Institute of Hygiene and Epidemiology (NIHE), which has been appointed as the national regulatory and inspection authority for biosafety and bio-security in Vietnam.

#### Improved Prevention and Management of MDR-TB:

The project enabled the Vietnamese NTP to push TB control to the next level of service provision by supporting the initiation of diagnosis and treatment of MDR-TB in a pilot program in Pham Ngoc Thach Hospital in HCMC in 2009, and the expansion of treatment for MDR-TB in 2010 to five more treatment sites. Since September 2009, molecular tests for the diagnosis of MDR-TB are now being routinely used in two laboratories in Hanoi and HCMC. This capacity is important, especially in HIV prevalence settings, for the early identification, isolation and treatment of MDR-TB cases.

Routine MDR-TB surveillance of high HIV/MDR-TB risk group populations (i.e., reeducation centers and prisons) has been implemented in 20 re-education centers and prisons in HCMC since May 2010.

TB CAP also developed an MDR-TB research agenda. Training on PMDT implementation for TB staff at provincial and district levels was organized. Training on the adverse effects of the second-line TB drugs was also organized in HCMC.

#### Scaled-up TB-IC Measures:

A National TB-IC control advisory team and national TB-IC team were established. This team is involved in the development, implementation, monitoring and evaluation of the National TB-IC plan, which will be integrated into MoH policies on IC. The national guidelines on TB-IC in health facilities, congregate settings, and households were developed incorporating the 2009 WHO policy on TB-IC recommendations. A five-day TB-IC TOT was organized. A total of 44 participants from planned MDR-TB facilities, rehabilitation centers, and prisons attended the course. As a result of the TB-IC training, facility TB-IC plans were developed and implemented in four MDR-TB treatment facilities, 20 re-education centers and prisons.

### Vietnam

A country TB-IC action plan for the period of 2010-2015 was developed. This plan was included in the national TB control program strategic plan for the period 2011-15.

Two TB-IC training courses for key staff from the HIV control program were conducted with a total of 60 participants from PEPFAR HIV partners and provincial AIDS centers. By conducting training on IC for USAID partner organizations working in HIV services as well as representatives of the HIV program, TB CAP made an additional contribution to the reduction of TB and other respiratory disease transmission in HIV prevalent settings, specifically HIV treatment and care facilities.

National guidelines on the use and maintenance of TB-IC equipment were developed. Training on the use and maintenance of TB-IC equipment was organized for staff in the eight planned MDR-TB centers.







### Zambia

Population: 13 million Estimated TB Incidence (all cases per 100,000 pop): 506 Estimated number of new TB cases: 60,337 **TB CAP Country Highlight** 

The case notification rate in new smear-positive TB cases in TB CAP-supported areas increased from 43% in 2007 to 58% in 2009.

#### Background

Zambia is a landlocked country in sub-Saharan Africa surrounded by nine other countries. It has nine administrative provinces and 73 administrative districts. HIV prevalence is 14.3% among 15-49 year olds, and life expectancy is only 38.63 years. The infant mortality rate is 70/1,000.

TB is one of the ten major causes of morbidity and mortality in Zambia, accounting for 375 cases notified per population of 100,000 for all forms of TB, and 100 cases per population of 100,000 for sputum smear-positive TB. Zambia is a priority country for USAID support even though it is not one of the 22 high burden TB countries. The MoH, through the NTP, has achieved a 70% case detection rate for all forms of TB and 85% treatment success rate.

HIV/AIDS is the nation's greatest challenge. It has been fuelled by the presence of co-infection with TB in 68% of the total TB notifications. The country is sparsely populated, with many hard-to-reach areas in the northern part where, due to the poor road network, limited transportation services are provided by the private sector. As a consequence, coordination and monitoring of project activities requires long hours of travel, especially in Luapula, Northern and North Western provinces.

The TB CAP project was implemented with key targets provided by USAID. TB CAP monitored the key indicators described in Table 17 throughout the duration of the project implementation.

In line with its five IRs, TB CAP provided support in five of the six components of the Stop TB Strategy. USAID Mission and NTP leadership and guidance of project activities enabled the timely and successful implementation of annual work plans. In 2006 and 2007, TB CAP worked in three provinces (Copperbelt, North Western and Luapula). Funding increased substantially in the third year of project implementation

allowing support to expand to the Northern and Central provinces, and to cover more areas in the five provinces during the period 2008 to 2010.

#### **Key Results**

#### **Case Detection Through Quality Assured Bacteriology:**

Case detection was enhanced with the scale-up of laboratory EQA in 42 districtlevel diagnostic centers assessed in all provinces. EQA components included on-site evaluation, blinded cross-rechecking, and panel testing to review the quality of laboratory performance. EQA was expanded to 25 health center-level laboratories in Central and Luapula provinces from May 2010.

#### Standardized Treatment with Supervision and Patient Support:

During year four of project implementation, TB CAP provided support to revise the drug regimen for the continuation phase of TB treatment for new patients (category one) from an Ethambutol-based regimen to a Rifampicin-based regimen. TB CAP participated in the planning and administration of the orientation process in all nine provinces of the country. TB CAP also provided support to print samples of the new treatment card, the patient identity card, and the guideline posters for provision of the drugs during the orientation.

#### Prevention and Control of MDR-TB:

TB CAP strengthened laboratory services in Zambia by procuring laboratory equipment for the NRL (Chest Diseases Laboratory), the Tropical Disease Research Centre (TDRC) a regional laboratory in the Copperbelt province, and 20 district-level diagnostic centers, with -86°C freezers, fluorescence microscopy and water distillers. A DRS was conducted in 2008, however results have yet to be shared. An earlier survey in 2001 indicated a prevalence of 1.8% of drug resistance in new patients,

Table 17. USAID key indicators and targets achieved by TB CAP

	Oct 2007 -	Sept 2008	Oct 2008 -	Sept 2009	Oct 2009 -	Sept 2010
Indicators	Target	Actual	Target	Actual	Target	Actual
Number of people trained in DOTS with USG funding	90	115	150	400	695	458
Number of health facilities renovated	6	1	8	5	8	7
Percentage of USG supported laboratories performing TB microscopy with over 95% correct microscopy results	60%	94%	70%	74%	74%	80%
Case notification rate in new ss+ pulmonary TB cases in USG supported areas	43%	52%	52%	58%	-	-

### Zambia

and 2.3% in previously treated patients. In year three, TB CAP participated in the development of MDR-TB guidelines, and facilitated meetings for the in-country MDR-TB sub-committee to draft the guidelines. The NTP also received approval from the GLC to access second-line drugs for MDR-TB in 2009.

#### **Engaging All Health Care Providers:**

The NTP began discussions in 2007 on collaborating with private practices in the provision of nationally recommended services for TB care. A PPM sub-committee was established. TB CAP staff participated in this committee. In 2008 the NTP convened a national consensus building workshop where agreement was reached on the implementation process for scale-up of PPM. TB CAP provided funding for this meeting and a scale-up of activities was planned for Southern, Lusaka and Copperbelt provinces. TB CAP also provided funding for the training of 59 health care workers from private practices in the Copperbelt province in 2009.

#### **Empowering People with TB and Communities:**

Community volunteers have played a key part in the implementation of the Stop TB Strategy from facility to community levels in the country. TB CAP enhanced community participation in TB care by identifying needs for among the volunteers (called TB treatment supporters) and supporting training costs in each of the five target provinces.

#### **Strengthened and Expanded DOTS:**

TB CAP support has strengthened and enhanced DOTS through capacity building of 1,047 HCWs and community volunteers in the five target provinces. TB CAP supported the training in AFB smear microscopy, EQA, microscopy, DOTS training for HCWs and community volunteers, PMDT, TB-IC and diagnostic counseling and testing.

#### **Strengthened Laboratory Services and Systems:**

The project strengthened the health system in the target provinces by financing quality assured microscopy through quarterly EQA visits in 46 district-level TB diagnostic facilities, and 25 health center-level facilities in Luapula (11 visits) and Central provinces (14 visits). TB CAP also provided supplementary laboratory supplies and equipment. The equipment included 20 biological microscopes, two -86°C freezers, 22 water distillers and 21 fluorescence microscopes.

#### Increased and Strengthened TB and TB/HIV Coordinated Activities:

The NTP began scale-up of TB/HIV activities after the revision of reporting and recording tools in 2006. Following the development of a training curriculum for provider-initiated HIV counseling and opt-out HIV testing, called Diagnostic Counseling and Testing (DCT), the project provided funding to train 25 provincial level trainers. Five trainers in each province scaled up training in their respective provinces.

TB CAP participated in the development of TB/HIV collaborative activities from 2006, when national TB/HIV guidelines were developed and HIV indicators were integrated into TB reporting and recording tools. TB CAP participated in the development of the ToR for the establishment of TB/HIV coordinating bodies at national, provincial, district, health facility and community levels. The project provided support for the establishment of 28 district-level TB/HIV coordinating body meetings in all five target provinces. Provincial TB/HIV meetings were likewise supported in Northern and Luapula Provinces. TB CAP also provided funding and technical support for provincial quarterly TB/HIV/Leprosy review meetings and bi-annual national review meetings.

TB CAP provided leadership in the development of national guidelines and provincial plans for scale-up of TB-IC activities in the country. With support from partners and TB CAP consultants, the NTP conducted a national training and orientation workshop for 77 participants, including architects, quantity surveyors, engineers, laboratory health specialists, nurses, clinical officers, doctors and environmental health specialists. A risk assessment of five facilities in three provinces was also done in 2009. Three hospitals were evaluated for possible management of MDR-TB and two TB reference laboratories and one hospital laboratory were evaluated for health worker safety.

TB CAP provided funding for the training of 362 HCWs in provider-initiated HIV DCT from November 2006 to January 2010. DCT is the entry point for TB patients into HIV care and support. Trained HCWs were able to provide HIV testing at point of contact, and not refer patients to laboratories for testing as was done previously.

#### **Strengthened Laboratory Systems:**

TB CAP supported the scale-up of EQA to 42 district-level diagnostic centers in the five target provinces, and 25 health center-level TB diagnostic laboratories in Central and Luapula provinces. During this scale-up, the percentage of USG supported laboratories performing TB microscopy with over 95% correct microscopy results increased from 60% to 94% during the third year of implementation.

TB CAP also provided technical support and funding for the development of the following strategic national documents: National SOPs for TB culture and sputum microscopy diagnostic facilities; TB/HIV laboratory training manuals; national EQA manual; national internal quality control manual; TB-IC guidelines; and guidelines for the PMDT.

#### **Renovation Support:**

TB CAP provided renovation support in all five target provinces, lab sites for sputum microscopy established through the renovation. The laboratories have also provided an opportunity for health facilities to offer other basic laboratory tests. In addition, the project renovated TB treatment rooms. The health facilities renovated are described below:

#### **Central Province:**

The Central Province has a population of 1,386,628, with 24 diagnostic centers catering to the entire population. Facilities renovated were: Liteta District Hospital laboratory, Mumbwa District Hospital laboratory, and Kapiri Mposhi District Hospital TB clinic, serving a population of 820,597 (59% of the total provincial population).

#### Northern Province:

The Northern Province has a population of 1,662,240 with 25 diagnostic centers. Luwingu District Hospital laboratory, and Kasama Urban Clinic laboratory and TB treatment room were the sites renovated with TB CAP support, catering for a population of 326,174. Luwingu District Hospital is a district-level diagnostic center and serves a population of 102,874.

#### **Copperbelt Province:**

TB CAP provided support for renovating a dilapidated, unused building and establishing a TB clinic at the Ndola Central Hospital. The TB clinic will provide TB screening and HIV counseling/testing services for Ndola district which has a

### Zambia

population of 483,057. Ndola Central Hospital is also a referral hospital for the province. The Copperbelt Province has a population of 2,088,146 and 48 diagnostic centers.

#### Luapula Province:

Luapula Province has 23 diagnostic centers serving the whole provincial population of 1,064,422. Sites renovated with TB CAP support are catering for a population of 439,056 (41% of the total provincial population). TB CAP provided renovation support to four laboratories which provide both TB and HIV services.

#### North Western Province:

TB CAP renovated four facilities in the province. The North Western Province has a population of 808,046 and has 19 TB diagnostic centers. The sites which were renovated with TB CAP support are catering for a population of 416,132 (51% of the

provincial population).

#### Microscopist Staff Hired from 2008-2010:

In 2007, a shortage of laboratory staff was identified as a challenge in North Western and Luapula provinces where TB CAP was working. TB CAP employed 15 microscopists and trained them for five weeks. Seven were from Luapula province and eight from North Western province. This intervention addressed human resource needs in the two provinces as the candidates were drawn from the local community. The microscopists received regular supervision from facility administrators and through quarterly EOA visits by trained laboratory personnel.







### Zimbabwe

Population: 13.5 million Estimated TB Incidence (all cases per 100,000 pop): 539 Estimated number of new TB cases: 71,961

#### **TB CAP Country Highlight**

In Midlands province there was a significant and sustained increase in the number of TB case notifications from 83 per 100,000 in 2008 to 195 per 100,000 in 2010.

#### Background

TB is a major public health problem in Zimbabwe which is ranked 17th on the list of 22 high burden TB countries in the world. The WHO Global TB Control Report 2009 estimated 71,961 new TB cases in 2007, with an estimated incidence rate of 539 cases per 100,000 population. TB CAP began work in Zimbabwe in October 2008 at a time of severe economic hardship in the country. The health sector as a whole was in a very poor state, with TB control among the areas worst affected. There was virtually no financing for TB control in the budget of the MoH and Child Welfare, and Global Fund activities had been suspended. The period was characterized by a near complete lack of TB control activity and TB control was overshadowed by an emphasis on HIV and AIDS activities.

#### **Key Results**

TB CAP provided the weakened NTP both financial and technical support to revive DOTS by focusing on key strategic areas. Based on identified weaknesses in the Zimbabwe NTP, TB CAP focused on three output areas:

- Strengthening leadership and management capacity for TB control at national, provincial, and city levels
- · Strengthening human resource capacity at the service delivery level
- Strengthening capacity for TB/HIV scale-up

In the first year (2008/2009) TB CAP provided support to the national level and Midlands province, which has a population of 1,570,000. In the second year, Masvingo province, with a population of 1,415,000, was added. Selected nationwide activities were also undertaken.

#### **National Level Activities:**

TB CAP strengthened leadership and management capacity by supporting the development of management tools and TB control guidelines, which included:

- Development of the first national strategic plan, 2010-2014
- Revision and updating of recording and reporting tools
- Development of TB/HIV co-management guidelines
- Development of TB/HIV clinical training materials
- Revision of national TB guidelines
- Revision of the supervision check list
- Support for national-level supervisory visits to Midlands and Masvingo
- Support for national TB performance review meetings.

A TB/HIV collaborative committee was established, and eight meetings between the National AIDS Program (NAP) and the NTP were conducted.

#### **Provincial and District Activities:**

The support strategy in both Midlands and Masvingo provinces included training, follow-up supportive supervision and performance review sessions.

**Training:** There was an enormous backlog of TB training, going back a number of years. TB CAP supported intensive training in both Midlands and Masvingo. A total of 1,210 heath workers were trained. Trained health workers included doctors, nurses (in-service), nurses (pre-service finalists), pharmacy staff, laboratory staff, environmental health staff (traditionally involved in TB control), and health promotion officers. The participants came from all levels of provincial health care, i.e. rural health centers, district hospitals, mission hospitals, urban local authorities, provincial level management as well as nurse training schools and other health care providers. Geographically the program covered all seven districts in Midlands province (Years 1 and 2), and all eight districts in Masvingo province (Year 2).

**Supportive Supervision:** A supportive supervision checklist was revised, and a seminar was conducted for key heath workers (district medical officers and TB coordinators) in Midlands and Masvingo provinces. All districts in Midlands conducted at least one supportive supervision visit to peripheral facilities with TB CAP support. The visits were conducted in teams consisting of a medical officer (where possible), a nursing officer, a TB coordinator, a laboratory health worker, a pharmacy health worker, and an environmental health officer. The quality of supervision improved as it is now systematic and includes analysis of data relevant to the institution visited.

**Monitoring and Evaluation:** Use of revised tools and the supervision of health workers responsible for TB work helped provide meaningful data and to facilitate monitoring of program performance. Although the actual analysis and local use of data remains a challenge, there is currently heightened awareness in the demonstration provinces of the importance of data and its use for effective management and planning.

#### Activities in Cities:

In response to the severe transportation challenges when moving sputum from peripheral health centers to diagnosing centers, in collaboration with an international NGO with expertise in transport management, TB CAP introduced a specimen transport system in the urban areas of Bulawayo, Chitungwiza, and the capital city of Harare, reaching a combined population of 3.4 million. Using hired motor cycles and Council drivers supervised by the NGO, the system transports all types of specimens to the laboratory, in addition to the sputum samples. This has greatly reduced sputum turn-around time from up to two weeks, to no more than four days. In the case of

### Zimbabwe

smear-positive sputum specimens, the turn-around time has been reduced to no longer than two days through a telephone-based reporting arrangement for positive results.

TB CAP is also providing support to Bulawayo city to renovate two hospital wards to accommodate MDR-TB patients.

#### **Case Finding in Midlands Province:**

There was a significant and sustained increase in the number of TB suspects, from 83 per 100,000 in the fourth quarter of 2008 to a high of 217 in the second quarter of 2009, and 195 in the first quarter of 2010. This may be attributed to increased health worker awareness of TB due to extensive training in the province at the beginning of the program. Both the number of smear-positive TB cases notified and the total number TB cases notified increased from the first quarter of 2009.

Although the rate of increase in new ss+ cases notified is modest, it is significant given that notification rates had been decreasing over the previous few years.

There was a steady decrease in the proportion of cases of pulmonary TB diagnosed without sputum microscopy from 33% in the fourth quarter of 2008 to 13% in the first quarter of 2010. This is due to the sustained emphasis on the importance of sputum microscopy in case finding during training and performance review meetings.

#### **TB/HIV Service Delivery:**

TB/HIV collaboration is now well appreciated and established. HIV testing is routinely offered to TB patients, with cotrimoxazole routinely offered to those who are HIV positive, and to a lesser extent ART.

#### **TB Treatment Outcome, Midlands Province:**

Overall, there was a sharp reduction in the defaulter rate in the province, from 27% in the second quarter of 2008 to 8% in the second quarter of 2009. Treatment success and cure rates raised slowly, a significant development considering previously falling rates.

#### Human Resource Capacity Development:

**Disease control and management:** A strong feature of the Zimbabwe TB control program is that it is integrated into the primary health care system. Therefore, the majority of HCWs are involved in TB control work. Extensive TB training of HCWs with TB CAP support has helped them to acquire the knowledge and skills necessary to strengthen health care delivery beyond TB control. Examples are patient education and patient participation in their treatment, treatment adherence and the prevention of drug resistance, patient support in prolonged treatment regimens, recording and reporting and the importance of data in evidence-based planning.

**Management Skills:** Through collaboration with The Union's International Management Development Program (IMDP), TB CAP trained 21 health workers from national, provincial, and district levels on the principles of management that may be used in all fields of health services.

**Supportive Supervision**: Supportive supervision has been strengthened in both the demonstration province of Midlands and nationally. This has been achieved

by updating supervision checklists for all levels of health care, and conducting supervision training for health workers in Midlands and Masvingo. TB CAP also supported supportive supervision visits by national level managers to provinces, and provincial department officials (pharmacy, laboratory, nursing services and health information) to health centers.

**Strengthening TB health worker teams:** TB CAP supported the program by seconding an M&E Officer and a Training Officer to strengthen the critical program areas of monitoring and evaluation and training, respectively, at the national level. A TB CAP coordinator was also seconded to Midlands province in the first year to support planning and implementation at the start of the assistance program.

#### **Health Information:**

TB CAP supported the revision of recording and reporting tools to be in line with current recommended WHO tools. Together with follow-up training in recording and reporting, and analysis and local use of data, this has helped strengthen TB data management in the TB program. The skills can be extended to other programs as well.

#### TB-IC:

IC practice was a strong component of training throughout the two-year period of the Zimbabwe TB CAP program. The program also supported the development of IC plans in the majority of hospitals in the province of Midlands. These activities have raised awareness of IC among health workers and strengthened the practice of IC in health institutions.

#### Specimen Transport System:

TB CAP worked in the three largest cities (Harare, Bulawayo, and Chitungwiza) to strengthen sputum microscopy, by introducing the specimen transport system described earlier.

### Zimbabwe



Training Objectives - Zimbabwe

Support Supervision - Zimbabwe

## Conclusion

TB CAP has touched the lives of roughly 1 billion people and was active in some of the world's most difficult environments, offering access to knowledge, technical assistance, and drugs and treatment where they were most needed. Against the backdrop of difficult political situations, poverty and unrest, the results documented in this report are something to be truly proud of.

TB CAP delivered significant results at global, regional and country levels using funds made available by USAID. At the community level, focusing on the patient resulted in an increase in the numbers of TB cases diagnosed and high treatment success rates. A range of interventions across various levels of the health system - increased access to diagnostic services, improved quality of patient care, health systems strengthening, improved political commitment, leadership and management, involvement of the private sector, strengthening human resource capacity, collaborating with the HIV/ AIDS program and improving infection control - further contributed to the successes of the patient-centered approach.

TB CAP's strategy focused on building national capacity at all levels to ensure the sustainability of interventions. At the country level TB CAP never developed parallel service delivery systems; all work plans were developed to support the National TB Program's strategic and annual implementation plans.

Partnership was at the heart of the program's work and central to achieving the goals. TB CAP strove to increase the impact of its work by collaborating with others and by building their capacity to step up the fight against TB. During the lifetime of the program, work was undertaken with hundreds of partners in the spirit of the Stop TB partnership, from small community organizations to major institutions and governments. The coalition believes the results speak for themselves.

With this report, TB CAP tried to answer two fundamental questions:

#### Question 1: Have we done what we said we would do?

#### Answer:

Yes:

- TB CAP has addressed all expected outcomes and output areas
- TB CAP has developed and implemented tools and approaches in all areas of TB control
- TB CAP has made measurable improvements in all areas and in all project countries

#### Question 2: Did we make any difference?

#### Answer:

Yes, but it takes time to demonstrate that TB CAP reached all of the expected outcomes because of the:

- Complexity of projects
- Time lag (delayed response to the intervention)
- Other interventions and actors in the field
- Limited resources

#### What contributed most to the success of TB CAP?

- TB CAP was built and expanded upon its successful predecessor, the TBCTA project.
- TB CAP's success capitalized on the coalition's extensive network of partnerships, relationships and collaborations with the entire range of TB stakeholders.
- TB CAP developed realistic objectives that could be measured and reached within the program duration.
- TB CAP developed an excellent M&E system, which produced reliable, accurate and detailed information at all levels.
- TB CAP mobilized local resources and communities to accomplish these results.



#### The Future

The millennium goals for 2015 have yet to be achieved in many countries and also require extra inputs in order to be reached. At the same time, there are new challenges such as low and delayed case notification, the emergence of MDR-TB and the sustainable or strategic introduction of novel technologies. These are all taking place in a world beset by financial crisis.

In 2010 the TBCTA coalition started implementing USAID's follow-up, five-year global Tuberculosis CARE I (TB CARE I) program. The coalition strives to build on the successes of TB CAP and apply the lessons learned to help address the current challenges and continue to improve TB diagnosis, treatment and care from the patient level up to the global stage.

TB CARE focuses on the following eight Technical Areas:

- 1. Universal and early access
- 2. Laboratories
- 3. Infection Control
- 4. PMDT
- 5. TB/HIV
- 6. Health Systems Strengthening
- 7. M&E, Operations Research and Surveillance
- 8. Drug Supply/Management.

For further details on TB CARE I please visit: http://www.tbcare1.org/

### Finance

The original ceiling of the TB CAP project was increased from \$150 million to \$158.9 million in September 2009. Not only was the ceiling increased, but the program was extended by 18 months. The cumulative obligated amounts according to the Modification of Assistance (MOA) and the cumulative expenditures from the beginning of the project until the first quarter of the extension period (quarter 24 of the project) are shown in Figure 14 below.



Figure 14: Expenditures vs. Obligations per March 31st 2012

Table 17 shows a breakdown of the obligated funding and the expenditures per fiscal year.

Table	17·	Obligated	funding	and	expenditures	nerv	/ear
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	Year	Obligated Funding	Expenditures
APA 1 & 2	2006	\$19,281,000	\$3,219,378
APA 2 & 3	2007	\$23,896,812	\$11,431,207
APA 3 & 4	2008	\$52,766,546	\$19, 909,323
APA 4 & 5	2009	\$41,435,182	\$39, 276,487
APA 5	2010	\$20,974, 663	\$58,785,065
Extension Period to March 2012			\$25,494,411
Total		\$158,354,203	\$158,115,871

Table 18 shows the obligated funding against the expenditures per year and per funding source. It shows that the under-expenditures in the first years are partly made up for in the fifth year. The figures up to December 2010 are used in this table.

### Finance

#### Table 18: Obligated funding vs. Expenditures per year and per funding source

MOA and Expenses					
(x '000)		Core	Regional	Countries	Total
APA 1	MOA	2,900	850	4,315	8,065
	Expenditures	2,183	293	1,742	4218
	% Spent	75%	34%	40%	52%
APA 2	MOA	3,640	1,356	11,914	16,910
	Expenditures	3,338	498	8,829	12,665
	% Spent	92%	37%	74%	75%
APA 3	MOA	4,500	702	13,651	18,853
	Expenditures	3,468	279	12,420	16,167
	% Spent	77%	40%	91%	86%
APA 4	MOA	5,358	2,457	46,823	54,639
	Expenditures	3,877	1,303	34,328	39,508
	% Spent	72%	53%	73%	72%
APA 5	MOA	4,500	2,226	53,162	59,888
	Expenditures	11,154	2,621	71,783	85,558
	% Spent	248%	118%	135%	143%
Total	MOA	20,898	7,591	129,865	158,354
	Expenditures	24,019	4,994	129,102	158,116
	% Spent	115%	66%	99%	100%

As seen from the table above TB CAP spent 81.7% of the total obligated funds for country projects while 15.2% and 3.1% of the total obligated funds were spent for core and regional projects respectively.

#### Costshare

In the Cooperative Agreement a cost share percentage of 17.8% was agreed upon. As the ceiling was increased to \$158.9 million the required cost share is \$28,284,200. As per March 2012, without the APA5 cost share included, the percentage of cost share reached, was 27.8%.

Table 19: Costshare Year 3 Year 5 Partner Year 1 Year 2 Year 4 Total 6,518 ATS 16,064 25,000 47,582 FHI 360 0 JATA 2,381,514 2,,471,529 2.797.766 3,194,534 10,845,343 KNCV 4,767,300 14,994,800 2,881,900 4,320,300 3,025,300 MSH 0 12,783,768 The Union 5,247,092 7,536,676 WHO 2,253,034 1,746,000 1,492,180 5,491,214 0 Total 14,655,458 12,906,169 8,864,066 7,737,014 44,162,707

Total Approved Budget 158,900,000

### Annex 1: Tools Developed Under TB CAP

Cover	Title	Technical Area	Туре
Tuberculosis Care	International Standards for Tuberculosis Care (ISTC) (English, Spanish, French, Vietnamese) The purpose of the International Standards for Tuberculosis Care (ISTC) is to describe a widely accepted level of care that all practitioners, public and private, should seek to achieve in managing patients who have, or are suspected of having, tuberculosis. The Standards are intended to facilitate the effective engagement of all care providers in delivering high-quality care.	Access	Guideline
HANDBOOK FOR USING THE International Standards for Tuberculosis Care	<b>ISTC Handbook</b> The purpose of the 'Handbook for Using the International Standards for Tuberculosis Care' (the Handbook) is to present suggestions and guidance, based mainly on country-level experiences, for using the ISTC as a tool to foster and guide the delivery of high-quality care by all practitioners providing tuberculosis services.	Access	Handbook
Tuberculosis Care	ISTC Training Modules and Facilitator modules The ISTC Training Modules are educational resource tools, developed to assist in the incorporation of the ISTC into training courses and curricula on tuberculosis.	Access	Guideline
Tuberculosis Care	<b>Patients' Charter</b> The Patients' Charter for Tuberculosis Care (The Charter) outlines the rights and responsibilities of people with tuberculosis. It sets out the ways in which patients, the community, health providers (both private and public), and governments can work as partners in a positive and open relationship with a view to improving tuberculosis care.	Access	Guideline
	<b>Improving the diagnosis and treatment of smear-negative TB</b> This document is intended for those dealing with tuberculosis and HIV at all levels in HIV-prevalent and resource-constrained settings. It is intended to assist the development of national policies to improve the diagnosis and management of smear-negative pulmonary and extra pulmonary tuberculosis.	Access	Guideline

	<b>Guidelines for Control of Tuberculosis in Prisons</b> TB CAP in collaboration with the International Committee of the Red Cross, published the third edition of guidelines for the control of tuberculosis in prisons. This edition dedicates an entire chapter on TB-IC measures recognizing the opportunity to scale-up TB Infection Control in congregate settings.	Access	Guideline
	<b>Practical Guide to Improve Quality TB Patient Care</b> The Evidence-based Participatory Quality Improvement (EPQI) methodology has been adapted to TB and is an innovative way to obtain better results, with the commitment of those who are directly responsible for patient care. This methodology for health care solutions features four integral components: a) customer- oriented quality evidence, b) process improvement, c) health system approach and d) participatory improvement. The crucial steps toward achieving and sustaining improvement in TB diagnostics and care are described in this document.	Access	Guideline
	<b>Quality Assurance of Chest Radiography</b> The main scope of this handbook is to provide a simple way to assess the quality of chest radiographs as radiography even in resource constrained settings.	Access	Handbook
HOSDOC To PER July Honoreau of Concert for Station	<b>Quality Improvement of Chest Radiography Reading</b> This manual gives guidance for the X-Ray reading in TB Suspects and provides a useful tool for the better diagnosis of smear-negative TB in adult TB suspects.	Access	Handbook
IMPLEMENTING THE WHO STOP THE STRATEGY	<b>Implementing the WHO STOP TB Strategy for NTPs</b> This new version of the Handbook for national TB control program provides an overview of the broad range of approaches needed to implement all six components of the Strategy, and to achieve its goals. It is the result of efforts by many experts, building on the new knowledge and evidence that are behind the complexities of modern TB control; its purpose is to facilitate the work of all those who are engaged in the aim of ultimately eliminating TB.	Access	Handbook
status a series batchers, Spranten Marine and Spranten Generation and Spranten Generation and Spranten Spranten de Status	<b>Guide to Engage Social Security Organizations</b> The role of Social Security Organizations in improving coverage, quality and sustainability of TB care - lessons from the Philippines, Mexico and Peru.	Access	Report

Horking together with businesses Common Section And And And And And And And And And An	<b>Guidance on TB and TB/HIV Care and Control in Workplaces</b> This WHO guidance document is meant to provide broad guidance to TB and HIV program managers, employers, employees organizations, occupational health staff and other partners on the need and ways to work in partnership with a whole range of diverse care providers to design and implement workplace TB prevention, treatment and care programs integrated with occupational health and HIV workplace programs where relevant.	Access	Report
A spaceward in norm in the rank of gradient is the rank of gradient Based on the rank of gradient the rank of gradient the rank of grad of gradient the rank	An Update About the role of Women in Tuberculosis This comprehensive literature update shows the need to identify, implement and evaluate innovative strategies to improve TB detection and shorten the pathway to TB diagnosis and treatment for men and women at both local and national levels. Action- oriented research is required to optimize these strategies	Access	Report
	A Tool for National Situation Assessment The aim of the NSA is to collect and collate information on all aspects of Public and Private Mix (PPM) for TB care and control in the country, and to facilitate the use of this information to assist the systematic implementation of PPM. After the NSA is completed, the program should be able to answer the questions when and where PPM should be implemented and what inputs are needed in order to do so.	Access	Tool
QUOTE-TB Massuing the quality of TB services: the patient's perspective	<b>QUOTE TB: Measuring the quality of TB service</b> Effective and simple tools are needed to assess the technical and interpersonal aspects of the quality of services at the interface between health staff and patient. QUOTE-TB is just such a standardized tool for patient interviews, which capture patient perspectives and which can be used by National TB Program staff to improve the quality of TB services and stay accountable to TB patients.	Access	Tool
QUOTE TB LIGHT	<b>QUOTE TB LIGHT</b> QUOTE TB Light is a simplified application of the original QUOTE TB tool. It includes the same components as the original tool but is revised as a "ready to use" package including standardized instruments for application, which make it more practical to use in all TB programs.	Access	Tool
PATIENT CAMPROACH	<b>Patient Centered Approach Package</b> A new patient centered package containing eight tools, such as Quote TB Light, The Patients' Charter, The TB Literacy Toolkit and more.	Access	Tool

Facility of source in the source of the source of the source of the source of the Market and Source of the Sourc	Manual on Measuring Provider Contributions Practical guidance on how to ensure effective data collection and management, and how to monitor and evaluate PPM.	Access	Tool
Radio Private Vite So E State 2 State	PPM Toolbox Contains 14 generic tools: Rational and Generic Approach, NSA , Operational Guidelines, Advocacy and Communication, M&E, ISTC, Resources and Budgeting Engagement of: Private Practitioners, Hospitals, NGOs, Workplaces, Social Security Organizations, TB/HIV Collaboration, PMDT	Access	Tool
Scaling up PPM. (Huson from design and implementation of the Clubar Jone 19 gran	Scaling up PPM: Lessons from Global Fund TB grants A detailed analysis of and the lessons from Global Fund PPM projects, focusing particularly on scaled-up program. This analysis will benefit not only the countries scaling-up or planning to scale-up PPM for TB care and control but also the technical and financial partners who advise and support countries in PPM scale-up.	Access	Tool
	Guidelines to Develop TB Nursing Curriculum for LAC region (Spanish) The TB CAP Nurses TB Competency Guide is a guide on how to develop a curriculum.	HSS	Guideline
Frening the development of truther resources to have been been been been been been been be	<b>Planning the Development of Human Resources for Health</b> The purpose of this document is to outline a strategy for management of human resources for tuberculosis control specifying the role of national TB programs as well as the support by international organizations and agencies.	HSS	Handbook
	The Uses of Mapping Software in Tuberculosis Control Programs This TB CAP report that was published in April 2008 is intended to help NTPs understand the benefits of mapping and the options that exist for creating maps. The focus of the TB CAP report is on computer-based applications available to create maps. The report attempts to gather relevant information from a variety of sources to give decision makers information so they can make informed choices about the use of mapping. One of the software packages mentioned in the report is "HealthMapper" which is developed by WHO.	HSS	Report
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<section-header></section-header>	<b>Proceedings of HRD Platform meeting The Hague 2008</b> This publication captures the experiences, initiatives and innovative solutions of countries attending the platform meeting in June 2008. It can be used a resource for future reference and for triggering innovative solutions for those unable to attend the platform meetings.	HSS	Report
	<b>Proceedings of HRD Platform meeting The Hague 2009</b> This publication captures the experiences, initiatives and innovative solutions of countries attending the platform meeting in June 2009. It can be used a resource for future reference and for triggering innovative solutions for those unable to attend the platform meetings.	HSS	Report
The Platform Normality of the Platform	<b>The Platform - 7 HRD Lessons Learnt</b> This publication brings into focus seven main lessons learned from the four years of the TB HRD platform meetings in The Hague, Netherlands.	HSS	Report
<section-header></section-header>	<b>TB Literacy Toolkit</b> (English, Portuguese and Swahili) The TB Literacy Toolkit comprises multimedia resources and materials for use by community health educators, outreach workers, counselors and healthcare providers for educating their communities about how to control TB. The Tools are designed to educate TB and HIV patients, their caregivers and their communities about TB and what it takes to complete a full course of TB treatment. Included in the kit are patient story video on a flash drive; The Story of Thomas" flipchart; TB and TB/HIV informational brochures and a CD containing electronic versions of all or the above.	HSS	Tool
GLODIC PRIORIS AND PACTICA STRA FOR ENGAGING HOSPITALS IN TE CARE AND CONTROL	Practical Steps for Engaging Hospitals in TB Care and Control This document describes the strategies, steps and tools that facilitate involvement and linking of hospitals into the national DOTS program.	HSS	Tool

HOST PARA LA TB The second se	<b>The Management and Organizational Sustainability Tool (MOST)</b> (Dari, Pashto, Spanish and English) The Management and Organizational Sustainability Tool for National TB Control programs (MOST for TB) is a process for improving the management of an NTP. MOST can be used at any level of a national TB Control Program that would like to strengthen program management in order to improve implementation and expansion of the Stop TB strategy.	HSS	Tool
TB MOVOCACY TOOLKIT	Advocacy Toolkit This is a one-stop online location for building your own advocacy toolkit using publications and tools relating to tuberculosis (TB) control and advocacy. The TB Advocacy Toolkit allows users to: 1. Search publications and tools using key words to find results relevant to your needs. 2. Build a customized advocacy toolkit containing the individual resources that you've selected. 3. Download your customized toolkit or individual tools, templates, publications or chapters http://www.tbtoolkit.org/	HSS	Tool
The tool to Estimate Patients' Costs 	<b>Tool to Estimate Patients Costs</b> By addressing the barriers and reasons for delay to timely diagnosis and treatment by the NTP, costs to TB patients (particularly among the poor) can be effectively reduced. The Poverty Sub-Working Group of the Stop TB Partnership developed a tool which can assist TB programs to estimate the costs of TB patients before and during diagnosis and during treatment by the NTP.	HSS	Tool
Planning & Budgeting Tool	<b>Planning and Budgeting Tool</b> This tool is designed to help countries develop plans and budgets for TB control at national and sub- national level within the framework provided by the Global Plan and the Stop TB Strategy. These plans can be used as the basis for resource mobilization from national governments and donor agencies. The tool is an Excel-based spreadsheet in which plans and budgets for all major components of the Stop TB Strategy can be developed.	HSS	Tool
Annanne i e fuller society society A herosociety Marian Society Society Marian Mari	<b>Updated Facility Level Training Modules</b> These modules aim to teach the skills and knowledge that health workers specifically need: detecting cases of pulmonary TB, determining the appropriate drug therapies for TB patients, providing directly-observed treatment, informing patients about TB, and monitoring the success of TB case detection and treatment at the health facility level.	HSS	Curriculum

Hodule & Toshit TB Advocacy at Decentralized Level December 2009	<b>Module &amp; Toolkit TB Advocacy at Decentralized Level</b> This module is intended as a tool to build skills for strategizing (and implementing) TB advocacy at de- centralized level. The module aims to, give insight into the various steps to be taken to develop an effective advocacy action plan to enhance TB control at decentralized level; Equip local health administrators with an easy-to-follow step-by-step process to engage strategically in TB control advocacy at decentralized level; Share experience and practices in TB control advocacy at decentralized level; Result in the development by participants of a concrete influencing strategy and action plan.	HSS	Guideline
TB-IC M&E OR Research Templates	<b>TB-IC M&amp;E Operations Research Templates</b> TB-IC Operations Research Protocols/Assessments and Questionnaires.	IC	Guideline
Simplified Checklist for TB Infection Control	<b>Simplified Checklist for TB Infection Control</b> This three-part Simplified Checklist for TB Infection Control (TB-IC)is designed to provide community health workers, supervisors, and program managers (from national TB programs, NGOs, and community based organizations, etc.) with very practical ways to properly implement TB-IC, thereby minimizing risk of transmission within community residential settings, including families and households.	IC	Guideline
<section-header><section-header><section-header><text><text><text><text><text><text></text></text></text></text></text></text></section-header></section-header></section-header>	Essential Actions for Effective TB-IC Safety without stigma Essential Actions for Effective TB Infection Control.	IC	Guideline
IMPLEMENTING the WHO Policy on TB infection Foundations, the Analysis of Section Section 1998 and Posterior Section 2009 and Posterior 2009 and Posterio	Implementing the WHO Policy on TB Infection Control The TB Infection Control Implementation Framework is compiled to complement the 2009 WHO Policy on TB Infection Control in Health-Care Facilities, Congregate Settings and Households. This framework has been developed so that National Tuberculosis Control Programs, partners and interested parties have access to key sources of guidance to promote awareness on infection prevention and control within their individual service. The framework provides practical examples, tools, fact sheets and case studies drawn from countries for easy adaptation and use. The 'TB-IC Implementation Framework Tools' accompany this document and can be downloaded separately.	IC	Guideline

Laboratory Tools	Guidelines for Purchasing Lab Products The purpose of this document is to provide guidance to governments, NTPs, donors and others responsible for the procurement, logistics and management of laboratory equipment and other commodities used in TB laboratory services. Such services include reliable TB microscopy and culture, and drug susceptibility testing. The document will be useful in developing systems for the efficient and timely procurement of quality laboratory equipment and supplies, and the ongoing management of all TB-related laboratory commodities.	Laboratories	Guideline
Laboratory Tools	Standard Operating Procedures (SOPs) Generic instructions on laboratory procedures, including: test methods, operation of equipment, laboratory organization, quality control, safety practices and record keeping.	Laboratories	Tool
Laboratory Toolbox	<b>Management Information System (MIS)</b> Tools for reporting and monitoring of AFB-smears and supplies. These tools promote the correct analysis, rechecking EQA and culture internal quality control.	Laboratories	Tool
Laboratory Tools	<b>Logistics/Supply Management Tool</b> Practical information on equipment specifications, recommendations on BSC installation, guidelines on laboratory commodity management, inventory control and algorithms, and spreadsheets for calculating quantities and costs of consumables.	Laboratories	Tool
Laboratory Tools	<b>External Quality Assurance Package (EQA)</b> Covering the main areas of AFB-microscopy EQA: rechecking, panels and supervision; fluorescence; review of different AFB-microscopy techniques; AFB-microscopy training package.	Laboratories	Tool
Laboratory Tools	<b>Culture &amp; DST Package</b> 12 modules on topics such as: bio-safety, C/DST, use and maintenance of equipment, R&R and QM.	Laboratories	Tool
Laboratory Tools	A Roadmap for Laboratory Strengthening A generic roadmap encompassing the managerial technical and operational processes identified for developing and implementing a national TB laboratory strategy.	Laboratories	Tool

TUBERCULOSIS LABORATORY BIOSAFETYMANUAL	A Training Package and a Manual on Bio-safety for Laboratories The third edition of the WHO Laboratory biosafety manual is a helpful reference and guide to nations that accept the challenge to develop and establish national codes of practice for securing microbiological assets, and ensure their availability for clinical, research and epidemiological purposes.	Laboratories	Curriculum
	<b>Manual for TB specific DQA Tool</b> The purpose of this document is to guide TB program supervisors and others interested in Routine Data Quality Assessment (RDQA) for TB monitoring. Such people may come from district hospitals/centres, health centres and health posts; the intermediate level (regional/provincial); or the monitoring and evaluation unit at central level (the national TB programme, or NTP).	M&E	Guideline
Integration of NV Assing in routine. To Grup resistance surveillance in Kazakhstan and Kenya Mina and Kazakhstan and Mina and Kazakhstan and Mina and Kazakhstan and Mina and Mina and Mina and Mina and	A Guide for Integrating HIV Testing in MDR surveillance This report provides a description of the set-up and development of the two country specific projects (Kenya and Kazakhstan). It provides the local recommendations that were given during the year to strengthen the national systems and enhance data capture and quality of data. The report also provides extensive analysis and results of the collected data and the conclusions and final recommendations to the National TB Programs for each of the projects.	PMDT	Guideline
The second secon	<b>Engaging CBOs in TB/HIV Collaborative Activities</b> This TB CAP study addresses how communities can be engaged in meaningful and effective ways in TB/ HIV collaborative activities. After describing the characteristics, areas of practice and core competencies of 12 selected community- based organizations (CBOs) engaged in HIV/AIDS prevention, care and treatment in Nigeria, the study team examined whether and how they are engaged in TB/HIV collaborative activities and how this engagement can be expanded.	TB/HIV	Guideline
Oxidence for national bancherina and HTP programmas of the bancherina in HTV infered others: Regional and the second other public heath approach	Guidance for Management of TB in HIV-infected children Guidance for national tuberculosis and HIV programmes on the management of tuberculosis in HIV-infected children: Recommendations for a public health approach	TB/HIV	Guideline

Desk guide for dispnais and management of TB in children	<b>Pediatric Guideline</b> This guide is aimed at health workers, who manage sick children in first level health facilities or outpatient settings at any level of care and NTP workers who manage children as part of NTP work. It aims to improve early and accurate case detection of children with TB, the management and outcome of children with TB and child contact screening and management. It focuses on diagnosis of common forms of TB in children, how to treat, when to refer and the management of children who are close contacts of TB cases.	TB/HIV	Guideline
Exited of the second se	<b>SOPs for Implementation of TB Activities at HIV/AIDS Service Delivery Sites</b> These SOPs describe and provide instructions to optimize TB and HIV service delivery in accordance with national guidelines. They guide clinicians in providing TB and HIV clinical care and treatment to people living with both diseases and in evaluating clinical performance, thereby serving as a quality assurance tool for management.	TB/HIV	Guideline
Centered In Scaling Up TB/HIV Cellaborative Activities	<b>Lessons Learned in Scaling Up TB/HIV Collaborative Activities</b> Lessons Learned in Scaling Up TB/HIV Collaborative Activities in Cambodia, Kenya, and Malawi.	TB/HIV	Report
Promoting the Implementation of Collaborative TB-HIV Activities mough Public mough Public and the Activities Partnerships PVB TB-HV activities Divisions from two pilet projects india and Namina Media	<b>Implementation of Collaborative TB/HIV Activities Through PPM</b> Report documenting the second WHO informal expert consultation to promote PPM involvement in implementing collaborative TB/HIV activities through a review of existing evidence and experiences and define core aspects and actions needed for the implementation of such activities by a wider spectrum of providers from the public and private sectors.	TB/HIV	Report
Ervice of Maximum and Evaluation of column to Try (FW activities Dependent of the analysis of the Analysis Activities Dependent of the Analysis of the Analysis Dependent of the Analysis of the Analysis of the Analysis Dependent of the Analysis of the Analysis of the Analysis Dependent of the Analysis of the Ana	A Review of Country Level TB/HIV M&E Systems Country specific reviews were conducted to systematically identify the gaps, opportunities and share experiences of a range of countries on their TB/HIV collaborative activities and the M&E systems. The reviews were conducted in six countries using a standardized data collection instruments and the reports were synthesized to generate relevant recommendations to improve implementation and scale-up of TB/HIV M&E system.	TB/HIV	Report

Bet Practices in the Integration of IB and HOVADD Services Centrus Institut Counter	<b>Best Practices Manual for TB/HIV Services Integration</b> Different models of integrating TB and HIV/AIDS services exist between countries as well as between settings within the same country. For the purpose of this review, the models were categorized into three groups: stand alone, partially integrated or fully integrated models. This manual describes the opportunities and challenges of each model and highlights best practices and lessons learned from the five countries.	TB/HIV	Report
Experience of the second secon	<b>Revised Recording and Reporting System for TB/HIV</b> The Stop TB Department (STB) of the World Health Organization (WHO), in collaboration with technical partners, embarked upon a revision of the TB recording and reporting (R&R) system to align the forms and registers to the new Stop TB Strategy. The revision facilitates the monitoring of the 6 components and 18 sub-components of the Stop TB Strategy, which itself was developed to help achieve the Millennium Development Goals.	TB/HIV	Tool
A state of the sta	Improving the diagnosis and treatment of smear-negative pulmonary and extra-pulmonary tuberculosis among adults and adolescents This document is intended for those dealing with tuberculosis and HIV at all levels in HIV-prevalent and resource-constrained settings. It is intended to assist development of national policies to improve the diagnosis and management of smear-negative pulmonary and extra-pulmonary tuberculosis.	TB/HIV	Tool
Integration of HIV-testing in review 13 drug residuation and the test sector of test sector o	<b>Integration of HIV-testing in routine TB drug resistance surveillance in Kazakhstan and Kenya</b> For tuberculosis (TB), routine surveillance of both drug resistance against anti-TB drugs and HIV status among TB patients will enable programs to monitor whether drug resistance is more prevalent among HIV+ patients, or TB patients with drug resistant TB are more likely to be HIV+ than negative. It will allow programs to monitor trends of HIV- associated drug resistance TB, as a proxy of successful TB-IC.	TB/HIV	Tool

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