Challenge TB, Bangladesh

Year 1, Annual Report

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Cover photo: *DOT Provider demonstrating mHealth application during field visit of Dr Netty Kamp and CTB team at patient's home in Narayanganj, subdistrict Dhaka Division*

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Table of Contents

List of Tables

List of Abbreviations and Acronyms

ACRONYMS

ACF	Active Case Finding
ADR	Adverse Drug Reactions
ACSM	Advocacy, Communication, and Social Mobilization
APA	Annual plan of activity
BADAS	Bangladesh Diabetes Association
BMA	Bangladesh Medical Association
BPA	Bangladesh Pediatric Association
BRAC	Bangladesh Rural Advancement Committee
BEPZA	Bangladesh Export Processing Zones Authority
BIRDEM	Bangladesh Institute of Research on Diabetes, Endocrine and Metabolic Disorders
BKMEA	Bangladesh Knitwear Manufacturers & Exporter's Association
BGMEA	Bangladesh Garments Manufacturers & Exporter's Association
cPMDT	Community based programmatic management of drug resistant tuberculosis
CCM	Country Coordinating Mechanism
CDC	Chest Disease Clinic
CDH	Chest Disease Hospital
CTB	Challenge TB
CWCH	Centre for Woman and Child Health
DF	Damien Foundation
DGHS	Directorate General, Health Services
DOT	Directly Observed Treatment
DQA	Data quality assurance
DR	Drug Resistant
DST	Drug Susceptibility Testing
DS-TB	Drug sensitive TB
EP	Extra pulmonary
EPTB	Extra pulmonary tuberculosis
EMMP	Environmental Mitigation & Monitoring plan
FAST	Finding TB cases actively, Separating safely and Treating effectively
EQA	External Quality Assessment
GFATM/GF	Global Fund for AIDS, TB and Malaria
HRD	Human resources development
IDU	Injection drug users
IC	Infection Control
IPT	Isoniazid Preventive Therapy
ISTC	International Standards of TB Care
JMM	Joint monitoring mission
JSS	Joint supportive supervision
KNCV	KNCV Tuberculosis Foundation
LAMB	Lutheran Aid for Medicine in Bangladesh
LTBI	Latent TB infection
LD	Line Director
LED	Light emitting diode
LNSP	Laboratory National Strategic plan
LNGO	Local NGO
LQMS	Laboratory Quality Management system
LPA	Line probe Assay
M&E	Monitoring and evaluation
MDR-TB	Multi-drug resistant tuberculosis
MOHFW	Ministry of Health and Family Welfare
MoU	Memorandum of Understanding
MSH	Management Sciences for Health
NFM	New Funding Model
NHSDP	NGO Health Service delivery program

NIDCH	National Institute of Diseases of the Chest & Hospital (NIDCH)
NTBLC	National TB Laboratory Committee
NTP	National Tuberculosis Program
NTRL	National Tuberculosis Reference Laboratory
OR	Operational Research
PM	Program Manager
PMDT	Programmatic management of drug resistant tuberculosis
PPM	Public-Private Mix
RFP	Request for proposal
RTRL	Regional Tuberculosis Reference Laboratory
SMC	Social marketing company
SOP	Standard Operating Procedure
STTA	Short-Term Technical assistance
TB	Tuberculosis
TLCA	TB Leprosy Control Assistant
USAID	United States Agency for International Development
UHC	Upazilla Health complex
UHFPO	Upazilla Health & Family Planning Officer
UPHCP	Urban Primary Care Health Program
URC	University Research Corporation
USG	United States Government
VCT	Voluntary Counseling and Testing
XDR-TB	Extensively drug resistant TB
ZN	Ziehl-Neelsen

1. Executive Summary

To support the National Tuberculosis Program (NTP) of Bangladesh in achieving the goals of its National Strategic Plan, Challenge TB (CTB) is part of a 5-year cooperative agreement funded by USAID. CTB is building on many of the successes of TB CARE II/Bangladesh's efforts and other successful innovative initiatives in the country. The coverage of CTB is nationwide, covering all 7 Divisions in Bangladesh, although some specific interventions focus on prioritized areas. The activities under CTB are implemented by Management Sciences for Health (MSH) with technical support of KNCV Tuberculosis Foundation (KNCV) and significant local partnerships to increase project's reach and impact.

In line with the strategic direction of the NTP, the following goals and objectives were identified for CTB APA1 with a budget of USD 3.9 million:

- Improve access to quality patient centered care for TB, TB/HIV and MDR-TB services through increased case finding, strengthening PPM and community engagement in TB, strategy/policy development and reinforcing supervisory capacity of NTP and partners.
- Strengthen the PMDT system through interventions addressing improved detection of DR TB cases, expansion of community based PMDT and support to the mHealth system.
- Strengthen the laboratory network including the development of a Laboratory Strategic Plan, improvement of External Quality Assessment (EQA) of smear microscopy, planning of accreditation of the NTRL, and maintenance of 14 safety cabinets of four reference laboratories.
- Support operational research including the support for operational research on the 9 months MDR-TB regimen and the development of a national research agenda.

Achievements APA1

CTB Bangladesh's APA1 year's work plan received approval in February 2015. Consequently, the CTB startup team (MSH/KNCV) started to recruit staff. In May 2015, a team of five staff members was ready to start the implementation of activities. The Country Direct was recruited at a later moment and joined the team full-time in August 2015. This first year of Challenge TB/Bangladesh was primarily focused on setting up and launching the project. Focus was on the continuation of key activities that were initiated under TB CARE II, strategic planning in different technical areas and on conducting of assessments/inventories of existing initiatives.

The most important achievements of CTB Bangladesh's APA 1 are summarized regarding the project's major 4 technical areas:

Increase case finding

In July 2015, CTB awarded grants to 6 NGOs, 1 professional body (Bangladesh Pediatric Association, BPA), and one trust organization (Center for Woman and Child, CWCH). In quarter 4, these NGOs detected a total of 7,356 TB cases and 1 MDR TB case. For all of these patients treatment was initiated.

In addition, the Bangladesh Diabetes Association (BADAS), through their network, screened a total of 236,837 diabetic patients and tested a total of 3,134 presumptive cases for TB, of which 380 (12%) were identified as TB patients. Among the non-diabetic patients seen in their clinics, 33 TB cases also have been found. Additionally, through the hospitals implementing FAST infection control strategy 69 TB cases were diagnosed out of 303 presumptive TB cases.

The sub-grantees have identified 25 child TB cases by screening of 1,031 pediatric contacts (2.4%). CWCH alone found 22 cases. 1,392 children under 5 years of age have started and received IPT in Quarter 4.

Public-Private Mix

One of the reasons of NTP's low notification rate is the high number of TB patients seen in the private sector without formal notification to the NTP. There is limited systematic involvement of private for profit providers in TB notification and treatment. Gaps exist in the number and categories of providers

engaged, the identification of priority areas for expansion and there is lack of enforcement of mandatory notification.

CTB organized a PPM workshop with all relevant stakeholders to analyze the main bottlenecks, explore opportunities to improve current PPM activities and to receive input for the formulation of a joint strategic PPM plan. This plan will include a standardized formal referral mechanism between and amongst the NTP network, development and use of a user-friendly (electronic) mandatory notification mechanism and training and promotion of the use of the ISTC for all formal private providers. NTP and key private stakeholders showed commitment to revive the PPM WG and support the implementation of this important agenda.

Ensure quality PMDT

Social support for more than 800 MDR TB patients and their community care providers seamlessly continued after finalizing the TB CARE II project. The social support package includes reimbursement of required transportation costs, a monthly stipend to the care provider, and funds for the patients to enable them to purchase food. Multidrug-resistant TB (MDR-TB) often inflicts the poorest and most marginalized members of a society. Social support has contributed and improved the quality of life of patients. In many cases it has made a difference to enable the patient and family to access health care. Provision of support has increased the cure rates from 64% to 73% (2011 versus 2012, NTP), halved the defaulter rate from 27% to 13% (2011 versus 2012, NTP) and reduced patient vulnerability. Although costs are involved with the social support package for MDR-TB care, these costs are low when compared with the societal costs of incomplete treatment and the possible development of incurable TB, whose costs are extremely high.

The CTB-supported sputum transport mechanisms allow for samples to be sent for follow-up cultures to NTRL/RTRL from all across the country, thereby ensuring adequate monitoring of treatment. In addition, the seamless follow up of mHealth initiatives has sustained electronic monitoring of DOT, better identification and prompt management of ADRs through video conferencing with clinicians. It also continues to enhance the self-esteem of the DOT providers and strengthen the monitoring capacity of CTB field staff.

Laboratory network strengthening

The National Laboratory National Strategic plan (NLSP) is in the near-final stage. In collaboration with local partners and with technical support of KNCV, a final draft of the NLSP has been developed to support the NTP. This strategic plan will be used to guide concrete, time-delineated and target driven laboratory strengthening. It will also be used for division of tasks amongst partner-stakeholders, advocating resource allocation, mobilization for scaling up, strengthening and sustaining the laboratory services.

GeneXpert MTB/RIF (Xpert) testing increased through improvements in the maintenance of machines, much needed calibrations and the replacement of several modules. Currently, there are 39 GeneXpert machines in 38 centers around the country under NTP. Following the assessment conducted by CTB in July 2015, about 21% of the modules were nonfunctional and calibration was needed for 54% of machines. CTB calibrated two machines in APA1 and calibration for the rest of machines will be done phase by phase in APA2.

On-site mentoring for the staff of GeneXpert centers is being provided by CTB during supervision to improve the basic maintenance of GeneXpert machines. The project is collaborating with the NTP to improve the maintenance through shared responsibility.

Sylhet is a divisional headquarter city located in the northeastern part of the country that has a 250-bed CDH that serves as a DR-TB treatment initiation site. Establishment of the containerized lab as RTRL completes the nationwide of RTRLs in each division to 100 percent, speeding up patient diagnosis and decreasing systematic delays in patient treatment. The Sylhet containerized lab procurement taken over from TB CARE II is now awaiting shipment to Bangladesh. CTB/Bangladesh is now actively working with the NTP to ensure that the local approvals and local funding are received from the Government of Bangladesh prior to the actual shipment of the containers to Bangladesh from South Africa.

2. Introduction

Bangladesh is the 8th most populous country in the world (154.7 million) with 26% of the population living in urban areas. Poverty levels continue to be a challenge with approximately 32% of people living below the poverty line in 2010 and a low human development index (142). Poverty mapping shows that poverty rates vary considerably according to location, with pronounced inequalities at the different Division, District (zila) and Sub-district (upazila) levels.

During recent years significant progress has been made on tuberculosis control in Bangladesh. However, the Joint Monitoring Mission (JMM) of the National Tuberculosis Program (NTP) in 2014, the National Strategic Plan (NSP) for TB control and the TB CARE II implementation results identified the following major program performance challenges:

1. Low case detection of all forms of TB
2. Gaps in the quality of and access to laboratory services
3. Low detection of MDR and gaps in the quality of DR case management, including IC measures
4. TB/HIV policy not updated or implemented systematically
5. Weak TB surveillance system, including the lack of a research agenda
6. Poor quality and inadequate supervision of TB activities
7. Low political commitment of the Government of Bangladesh (GoB) as reflected in the TB budget allocation

To support the National Tuberculosis Program (NTP) of Bangladesh in achieving the goals of its National Strategic Plan, Challenge TB (CTB) is part of a 5-year cooperative agreement funded by USAID. CTB is building on many of the successes of TB CARE II/Bangladesh's efforts and other successful innovative initiatives in the country. CTB's activities have nationwide coverage under the leadership of the NTP. CTB's work planning process also highlighted the strong partnerships being established, with 40 persons from NTP, technical partners and stakeholders (including patients) spending almost a week working with CTB staff to ensure that our 4 years strategies and activities would complement those being funded in other ways. It has been emphasized that NTP concurrence of planned implementation activities, including its relevant and visible involvement in the various interventions, are key to NTP's ownership, integration into the NTP program itself, and sustainability of mechanisms introduced.

The activities under CTB are implemented by Management Sciences for Health (MSH) with technical support of KNCV Tuberculosis Foundation and significant local partnerships to increase project's reach and impact.

In line with the strategic direction of the NTP, the following goals and objectives were identified for CTB APA1 in Bangladesh:

- Improve access to quality patient centered care for TB, TB/HIV and MDR-TB services through increased case finding, strengthening PPM and community engagement in TB, strategy/policy development and reinforcing supervisory capacity of NTP and partners.
- Strengthen the PMDT system through interventions addressing improved detection of DR TB cases, expansion of community based PMDT and support to the mHealth system.
- Strengthen the laboratory network including the development of a Laboratory Strategic Plan, improvement of External Quality Assessment (EQA) of smear microscopy, planning of accreditation of the NTRL, and maintenance of 14 safety cabinets of four reference laboratories.
- Support operational research including the support for operational research on the 9 months MDR-TB regimen and the development of a national research agenda.

This report provides an overview of the activities, achievements and deliverables that have been met in year 1. It will follow the same framework as the Work plan APA 1.

3. Country Achievements by Objective/Sub-Objective

Objective 1

Improved Access to quality patient centered care for TB, TB/HIV and MDR-TB services

Sub-objective 1. Enabling environment

When implementing a TB control program, the foundation must be in place at all sites. This means that service delivery standards and guidelines in place, service delivery units available, accessible, equipped and functional, capacitated implementers, public and private sector partnerships and linkages formalized (service providers, NGOs, professional bodies, civic groups, donor agencies), informed community, policies and budgets supportive of the program.

1.1 Provision of services according to national guidelines for all care providers and risk group

Involving all healthcare providers using a Public Private Mix (PPM) approach is promising to strengthen TB care and control. However, as stated during the JMM 2014 there is limited systematic involvement of private providers (both in numbers and category) in TB control efforts and there is a lack of enforcement of the mandatory notification for TB.

1.1.1 Develop strategic plan for country-wide implementation for PPM

To draft the PPM strategy, a workshop was held in Quarter 4 to explore these issues with key stakeholders from the private sector, NGOs and the NTP. The workshop was facilitated by Dr. Netty Kamp from KNCV and elaborate discussions were led by the Secretary General of Bangladesh Medical Association (BMA), the national body for all qualified medical professionals.

The participants of the workshop identified the following key focus areas of which most are incorporated in the APA2 work plan.

- Operationalization of a mandatory notification system (including the design of a user-friendly application)
- Strengthening of referral mechanism/system for various types of providers
- Engagement of key players in the for-profit private sector (consultation centers, hospitals and pharmacies, diagnostic complexes)
- Engagement with professional bodies/societies
- Adaption of NTP guidelines/ISTC for private providers.

Due to problems finding a suitable timeslot for the majority of stakeholders (private providers), the development of the PPM strategic plan was delayed. Another important issue was that the PPM working group was not yet functional and there was no focal person for PPM at the NTP. The revival of PPM working group will be the first priority for PPM activities in the beginning of the second project year.

1.1.2 Draft plan for implementing mandatory notification for TB

In January 2014 the NTP has circulated a gazette on mandatory notification for tuberculosis. But there is still a huge gap in terms of awareness and a system for its implementation by providers. During the PPM workshop a productive discussion on mandatory notification was led by the Secretary General of Bangladesh Medical Association (BMA) with the various providers.

The recommendation was for a user-friendly system to be put in place. A task force as part of the PPM working group will initiate the development of the system, in collaboration with partners, until its realization. The plan for the second project year includes the strengthening and piloting of the mandatory notification system in Dhaka including the design of an electronic application, both in close collaboration with the private users and the NTP.

Prof. Iqbal Arsalan, Secretary General, Bangladesh Medical Association (BMA) leading discussions at the PPM workshop.

1.1.3 ISTC planning for roll out in APA2

During the PPM workshop it became evident that there is wide range of knowledge levels on the international standards of TB care among the different types of private providers, and the need to update this widely among the private for profit providers, from family doctors until chest physicians to get a common knowledge and awareness on TB and DR TB prevention and care. As an outcome of the workshop, a step wise plan will be developed in year 2 by the project in collaboration with the PPM WG which will need to include a need assessment, adapted version of the ISTC, training curriculum considering the different providers and tasks, and a roll out plan with roles and responsibilities and an M&E system. This will be one of the strategies and part of activities of the PPM strategic plan. Urban Dhaka will be prioritized due to the big volume of private practitioners (specialists and family doctors) seeing presumptive TB and DR TB cases.

PPM Workshop: Group work on Mandatory Notification led by Prof. Ruhul Amin

1.2 Demand side: Community empowered, especially among risk groups

1.2.1 Inventory of national ACSM activities in TB and other programs

The NTP developed a draft National Advocacy, Communication, Social Mobilization for TB Control Strategy (ACSM) for 2008-2012. A new ACSM plan was drafted in 2013 but has been neither endorsed nor operationalized. There has been little engagement so far to an integrated approach to programming. One of the main reasons has been that the Global Fund contracting priorities focus on reporting on ACSM outputs rather than on program outcomes.

It is important to strengthen the coordinating mechanisms established by the NTP such as the National ACSM Steering Committee and the ACSM Working Group. An operational annual plan and monitoring and evaluation ACSM framework needs to be in place to implement, coordinate and monitor these activities. IEC materials have been developed and grants were provided to NGOs by a previous USAID project to perform ACSM activities in their communities and health facilities. However, the impact of these activities has not been measured properly and good practices are not shared nor published.

Meanwhile, few studies have been conducted by NGOs to measure changes in knowledge, perceptions, and attitudes of individuals as a result of ACSM activities. Very little published documentation is available on ACSM initiatives related to TB control in Bangladesh. CTB conducted an inventory of ACSM interventions/activities in-country, including the NTP's good practices and a gap analysis. This inventory will feed in to the various ACSM-related cross-cutting activities planned for APA2, most especially in the development of the new updated National ACSM Strategic Plan for 2015-2020, including an M&E frame work and operational annual plan. The project will also assist in the reconstitution of the ACSM and Patient-Centered Care Working Group in the beginning of the second year.

Most ACSM activities were performed by BRAC, as the second PR of GF, and their NGO sub grantees. The majority of activities are:

- Community awareness raising sessions with basic TB messages targeting youth (scouts, girls guides), community leaders, patient clubs and women organizations
- Awareness raising of NGO staff, non-graduate staff and some targeted small private hospitals on TB/HIV among high risk groups
- Advocacy sessions with managers and staff from the garment sector

During and around World TB day 2015, many activities were held on different media (TV, press) and rallies. Round table meetings were organized at central and local level to influence policy makers and professional groups as well as civil society. Folk songs and popular theatre has been used at small scale. Most activities were accompanied by distribution of leaflets with general messaging on TB. Advocacy of managers and policy makers and orientation of staff on TB was done without standardized material.. Produced radio spots and a tele-drama clip were little used due to the lack of funds for airing. Posters, leaflets and stickers on symptoms of TB and EP TB, and "TB can be cured" were produced but in insufficient numbers to cover the country. There is no information if the use of these materials produced by BRAC under GF was evaluated with the target audiences during supervision visits or (small) surveys.

We can conclude that many ACSM activities have been organized but in a scattered way, without a clear policy or plan, or clear picture of geographic coverage and without assessment of which information is needed in the messaging. In health facilities very few or no posters and leaflets are visible. What is available is often only there in written language without visuals.

A better needs assessment of knowledge and barriers based on KAP and health seeking behavior studies done is needed, that should focus on the specific needs of different (vulnerable) populations and explore the best channels and formats to reach out to them. A functional ACSM working group, composed of all relevant players, including (ex) patient groups, should take the lead to improve this landscape. CTB will support this process in APA2 by bringing in ACSM planning, patient centered tools and methodologies developed under TB CARE and other international agencies.

1.2.2 Sub-grants to Local NGOs (LNGOs) to improve case finding among vulnerable groups (see also 3.1)

In the beginning of Q4, the CTB project awarded 8 sub-grants to six local NGOs, a trust deed organization (CWCH, a hospital) and a professional body (Bangladesh Pediatric Association) that will supplement the NTP's program at the community level.

- Bangladesh Pediatric Association (BPA)
- Bangladesh Diabetes Association (BADAS)
- Centre for Woman and Child Health (CWCH)
- Damien Foundation Bangladesh
- Health Education, Environment and Development (HEED) Bangladesh
- World Mission Prayer League (LAMB)
- Nari Maitree
- Rangpur Dinajpur Rural Service (RDRS)

The NGOs implement their community based active case finding activities particularly in underperforming areas and among targeted high risk populations for example in urban slums and other hard to reach areas.

An overview of the selected NGO's and their received subgrants can be found in Appendix 1.

1.3 Demand side: Health seeking-behavior improved for types of services

1.3.1 Inventory of health seeking behavior interventions and research

In APA 1, CTB carried out a literature inventory to explore factors influencing health seeking behavior in Bangladesh. Seven articles on health care seeking and patient and system delays were reviewed. In addition, three of these seven found important gender differences in health seeking behavior. It can be concluded that health and TB services need to be better shaped to the needs of the patients taking into account gender differences and socio-cultural barriers, urban-rural differences and addressing the different age groups. which needs to be done at health facility and community outreach level as well

as at policy level. ACSM interventions, like broadcasting through media and material development as well as social mobilization activities need to consider all these factors and should be better guided by future operational research to measure its effect on patient satisfaction and behavior change.

The complete literature inventory can be found in the Appendix 2.

1.4 Provider side: Patient-centered approach integrated into routine TB services for all care providers for a supportive environment

1.4.1 Inventory on costing and other patient-centered studies and materials

The Patient Centered Approach (PCA) package developed under TB CARE I states that a patient centered approach is an important underlying principle of quality health care systems and interventions. Conclusions from patient costs studies are that TB patients should be included under social protection schemes and NTPs should improve equitable access to care as well as to assure efficient patient centered TB services to reduce long waiting times for the patient. The provision of food packages and transport costs is needed for most patients with low incomes to reduce the economic burden of the treatment.

The complete literature inventory can be found in the Appendix 3.

1.4.2 Review of urban TB landscape

As urbanization has grown steadily and uncontrollably, there have been increasing concerns regarding the transmission of infectious disease in urban cities, especially tuberculosis. Marginalized urban population, poor people in the urban slums in particular, are more exposed to respiratory disease like tuberculosis.

With steeply increasing urbanization, Bangladesh faces further challenges in TB control due to migration, loss to follow up, very low referral confirmation, challenges in integration with other urban programs and coordination among the professional bodies. To find out the existing gaps in the urban health system and to explore suitable mechanisms for collaboration among NGOs, different stakeholders and other sector programs of government, a situation analysis has been done.

On the basis of the situation analysis, an Urban TB workshop was conducted mainly focusing on the urban poor and vulnerable populations. The objective of the workshop was to develop an urban TB strategy to improve early case detection and adherence to treatment among the urban poor and vulnerable populations, high risk groups, including the homeless and migrants' population, in collaboration with all key stakeholders. Cross-cutting strategies involve the proper way of active case finding and treatment adherence.

Dr. Netty Kamp (KNCV) provided STTA for this workshop held in the latter part of Q4 There were 60 participants coming from the many different NGOs active in urban settings, NTP central and divisional staff, Garment Industry (BKMEA), the pharmacy sector, and other stakeholders from the prior PPM workshop. Again, the importance of a well-defined mechanism for referral among and between providers of various categories and the importance of mandatory notification were emphasized in the context of an urban TB model setting.

A preliminary urban TB strategy was drafted and will be finalized in APA2. Existing collaboration systems with pharmacies, especially the Blue Star network on SMC, will be looked into in Q1 of APA2 for potential scale-up.

Dr. Ehteshamul Haque Chowdhury, Director, Administration, DGHS delivering his keynote speech during the inaugural ceremony of the Workshop on Urban TB.

Sub-objective 2. Comprehensive, high quality diagnostics

Care of tuberculosis patients begins with a quality assured diagnosis. There is a growing need to expand and strengthen TB laboratory services, including increase access to high quality microscopy, culture, DST, and new diagnostics. Successful DOTS expansion, as well as programmatic management of drug-resistant and HIV-associated TB therefore require – at its core – a robust network of TB laboratories with adequate biosafety, modern methods for diagnosis, standard operating procedures and appropriate quality assurance.

Strengthening TB laboratory services offer one of the best avenues for overall laboratory improvement as an essential health systems activity. An unprecedented effort to improve and expand TB laboratory capacity is currently underway with the support of CTB.

2.1 Access to quality TB diagnosis ensured

2.1.1 Develop Laboratory National Strategic Plan

A National TB laboratory strategic plan is needed for concrete, time-delineated, and target driven laboratory strengthening. It will also be used for advocating resource allocation, mobilization for scaling up, strengthening and sustaining the laboratory services. To support the development of the plan, Dr. Valentina Anisimova provided STTA in Q3, conducting two workshops with the country level laboratory and TB program experts.

In these two workshop the National TB Laboratory Strategic Plan (LNSP) was drafted. The draft was disseminated among the key laboratory experts of the NTP and relevant stakeholders for comments and feedback. Hereafter all the relevant inputs were incorporated.

A budget will be planned for the implementation of the LNSP, including its finalization, printing, and dissemination in Q1 of APA2.

Dr Valentina Anisimova with CTB and NTP lab staff visiting the GeneXpert and microscopy laboratory, Sadar Hospital, Gazipur

2.1.2 Laboratory accreditation planning for NTRL

There is a growing need to expand and strengthen TB laboratory services, including increased access to high quality microscopy, culture, drug susceptibility testing (DST) and new diagnostics. The process takes time and a major barrier is capacity development and quality assurance in weak laboratory systems with little or no laboratory standards.

Initial discussions with the NTP and NTRL for this planning were done in APA1. However, it took some time to sensitize both on the importance of laboratory accreditation. The planning of laboratory accreditation will therefore continue in APA2 where an assessment will be done with STTA for a stepwise accreditation of the TB microscopy laboratory network, including activities and costs.

2.1.3 LED microscopy training

The training for LED microscopy through CTB was not done as the same training was already taken on by the NTP with the WHO and BRAC partners. The project, however, in line with the recommendation of the JMM and Dr.Mariike Becx-Bleumink, external consultant of KNCV, advocated for reducing basic LED FM microscopy training in APA2 from 2 weeks to a 1-week training curriculum which has been demonstrated to be as effective as the longer training.

There was no need to procure LED reagents in APA1 because present stock of the NTP exceeded requirements.

2.2 EQA network for laboratory diagnostics and services functioning

2.2.1 Improve EQA system and implement the new EQA guideline (including FM microscopy)

Although the NTP has a well-structured EQA network in coordination with partners with all 1,104 microscopy laboratories participating, the manner of implementation raises many questions from experts in-country and abroad.

As it is, the follow-up sputum positivity rate is low at 4.21% per NTP Annual Report, 2014 (versus a standard of 10%) and the number of High False Negative slides is very low thereby casting some doubts about the quality of the slides and the quality of re-checking of the slides.

To further strengthen the EQA network, CTB invited Dr Marijke Becx-Bleumink in Q4 to conduct a sensitization workshop with key management of the NTP and partners and a 5-day EQA training for EQA coordinators, EQA first controllers and EQA second controllers.

Following the APA1 work plan, 60 participants (EQA controllers and coordinators/ supervisors) were planned to be trained in 3 batches of EQA training. However, only 34 participants were trained in 2 batches of training. At the end of the training, participants stated that, the training was very useful for them. One training is still pending due to issues related to the per diem policy for GF-supported staff which CTB aims to resolve soonest.

EQA training of controllers and coordinators/supervisors with CTB TB Laboratory Advisor facilitating

2.3 Access to quality culture/DST ensured

2.3.1 Ensure supplies for culture/DST for 1 NTRL and 2 RTRLs

A well-coordinated forecasting system is yet to be set in place by the NTP to avoid stock outs of lab consumables and reagents. In APA1, CTB initiated collaboration with the NTP and NTRL to streamline the forecasting system. The development of a standard format is under process and will be finalized in APA2.

Due to an overstock of supplies, CTB was not requested to procure supplies for NTRL and RTRLs in APA1. Instead, CTB procured 30,000 Falcon Tubes and supplied these to the NTP Central warehouse based on the need of the program.

2.3.2 Hain second-line LPA screening for all detected MDR cases

This activity is linked to the operational research (OR) on the 9 months regimen. As the OR was pending due to the administrative approval of Ministry of Health & Family Welfare, the procurement could not happen. Hain kits will be procured when OR will be conducted in APA2.

2.4 Access, operation and utilization of rapid diagnostics (i.e. GeneXpert) ensured for priority populations

2.4.1 Xpert MTB/RIF cartridges procurement and maintenance of Xpert machines

The Xpert MTB/RIF assay is a new test that is contributing to the rapid diagnosis of TB disease and drug resistance. Xpert MTB/RIF needs regular and proper maintenance to ensure its effective and efficient use.

As soon as CTB started its project activities in Q3, it was noted that the country was experiencing recurring shortage of cartridges due to poor forecasting and supply chain management. To address this, CTB immediately procured 30.000 cartridges. Thereafter, it has been agreed that GF will provide all future cartridges, instead of having several different agencies each following their own timeline .

CTB started with a thorough assessment in Q3 to capture the functioning of the GeneXpert network. Findings showed 21% nonfunctional modules, 54% machines had expired calibration schedule and 4 machines out of 39 were completely non-functional. The assessment report also showed 2 warranty contracts that expired as of July 2015. CTB worked together with the local Cepheid agency resulting in the procurement of 4 warranty contracts and 36 calibration kits. Four visits were conducted by the CTB TB Laboratory advisor along with the designated engineer of Cepheid's local agency to calibrate GeneXpert machines located at RTRL Chittagong, CDC Rangamati, CDC Kishorgonj and DF Hospital in Mymensingh. At the end of Quarter 4, the percentage of nonfunctional modules was reduced from 21% to 19% and expired calibration schedules were reduced from 54% to 49%.

In APA2, CTB will continue to provide the maintenance support for the GeneXpert machines, along with the provision of capacity building of NTP through training entitled, "In-depth", by Cepheid.

2.4.2 Support the NTRL for training and supervision to GeneXpert sites

Currently, there is no formal policy available for supervision by NTRL of Xpert sites. In APA1, 7 GeneXpert sites and NTRL/RTRL were supervised by CTB and orientation of the laboratory staff was done on the spot for improvement. It has been agreed that a better mechanism to supervise the activities of GeneXpert sites should be developed.

Supervision of RTRL Supervision in Chittagong by CTB *lab advisor*

2.6 Expedient laboratory specimen transport and results feedback system operational

2.6.1 Ensure continuation of the sputum transport system and operational feedback system

In APA1, to ensure continuation of the sputum transport system, the procurement of 12,000 sputum transport kits was completed. Provision of courier fee for specimen transportation is being implemented in 19 districts supported by CTB. Each kit can carry 3 samples. On average, the monthly cost for courier fee per district is approximately 5,000 BDT (<$65). Advocacy will be done in APA2 for inclusion of this essential cost item in the operational plan of the NTP.

A meeting was held with NTRL regarding strengthening the early feedback for culture results. The shortage of HR was mentioned as a major constraint. CTB is providing a Lab Coordinator to NTRL and RTRLs.

2.7 Bio-safety measures in laboratories ensured

2.7.1 Biosafety cabinets certified and maintained in 4 laboratories

The implementation of adequate biosafety measures, a prerequisite for the safety of laboratory staff and environment is quite a challenging task and biosafety is often compromised in resource constraint settings. CTB committed support to ensure the biosafety measures in four national and regional reference laboratories (NTRL, Khulna RTRL, Chittagong RTRL, and Damien laboratory).

The project initiated procurement for ensuring the certification of 14 biosafety cabinets in April, 2015. It has been a time consuming process of selection of qualified international vendor in compliance to procurement policy. Spare parts of some biosafety cabinets needed to be collected from different manufacturers due to having different brands of BSCs. All these difficulties hindered the accomplishment of the needed certification and maintenance work in APA1. Services are expected to be provided in APA2.

2.7.2 Sylhet containerized RTRL

Setting up of this laboratory started as an initiative of TB CARE II. The finalization of the set-up until its fruition was entrusted to CTB. CTB, along with NTP and partners, made three visits to the site for the containerized lab to speed up the site preparation work, having environmental and fire bridge clearances from the concerned departments in coordination with the local stakeholders.

The containerized laboratory is waiting for shipment in South Africa as site preparation is delayed and the infrastructure is incomplete, partly due to frequent transition of local administrative officials and unavailability of funds for NTP to cover electricity power set up, customs & excise duty, VAT and additional roofing and fencing. Re-estimation for costs related to power and infrastructure was successfully done following the revised power requirements. CTB has been working on ensuring compliance with USAID policy on environmental issues in coordination with the NTP and relevant departments as well.

CTB is also actively advocating for the NTP to mobilize funds with higher government officials and Finance Minister for covering the areas not covered by USG funding.

Constructed site for Containerized laboratory, Sylhet

Table 1. Laboratory outcome indicator targets and result

Outcome indicator	Baseline (Year/Timeframe)	Target Y1	Result Y1	Remarks Within or more than 10% above or below target
2.2.2. #/% of laboratories showing adequate performance in external quality assurance for smear microscopy.	94% (1,038/1,104) Source: NTP 2014	94% (1,038/1,038)	94% (1,042/1,104)	Within 10%
2.2.3. #/% of laboratories enrolled in EQA for culture/DST.	33% (1/3) (NTRL, Khulna, Chittagong) Source: NTP	33%	33%	Within 10%
2.3.1. % of confirmed TB cases who undergo DST and receive their results, disaggregated by new and previously treated cases	All cases: 3% (3,370/112,402) New case: 2.8% (2,965/106,773) Retreatment: 8% (450/5,629)			Indicator identified to be measured from Year 2 – Year 5

Sub-objective 3. Patient-centered care and treatment

Patient-centered care supports active involvement of patients and their families in the design of new care models and in decision-making about individual options for treatment. The IOM (Institute of Medicine) defines patient-centered care as: "Providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions." Care that is truly patient-centered cannot be achieved without active patient engagement at every level of care design and implementation. It is that care of an individual that is focused on them and no one else.

Patient centered care and treatment will minimize barriers (distance, time etc.), reduce stigma, enhance early diagnosis, and ensure treatment adherence and covering the poorest, underserved and vulnerable groups.

3.1 Intensified case finding for all risk groups by all care providers

3.1.1 Improve detection and management of childhood TB

Only a small proportion of the estimated child TB cases are currently diagnosed. According to NTP data, child TB cases constitute approximately 3% of the total cases reported. Also in Bangladesh childhood TB is gaining momentum in recent years under the active leadership of NTP and supported

by the Bangladesh Pediatric Association (BPA). Lack of skilled human resources across the health care system has been identified as one of the reasons for the low level of detection of childhood TB cases.

CTB performed activities with the NTP to manage and prevent childhood tuberculosis and awarded two sub-grantees (BPA and the Center for Women and Child Health [CWCH]) with special focus of childhood TB. CTB supported the NTP in the revision and update of the national childhood TB guidelines according to WHO 2nd edition. Furthermore, to increase awareness of general health workers on the symptoms of childhood TB, CTB developed with the NTP and partner a Child TB poster as a screening job aid. These 21,500 posters will be used at different levels such as tertiary and district hospitals, CDC, CDH, UHC, NGO clinics, and other health facilities The printing of the TB posters is yet to be done in Q1 of APA2.

The Bangladesh Pediatric Association (BPA) was awarded a grant in 2014 by TB CARE II to develop capacity of the providers about management of childhood TB and to expedite the active case detection at sub district level. After their successful intervention in Dhaka division, CTB awarded them a grant in July 2015 to perform their activity covering another (Sylhet) prioritized division. They have started with two refresher trainings of 40 facilitators at central level who will then act as a master trainer for Sylhet Division for developing trainers at the field level. BPA is gearing towards running the program in the field level in Q1 of APA2. BPA has also been requested to conduct trainings for NHSDP providers in Dhaka with additional funding in APA2.

CWCH also implemented their early case finding activities in pediatric TB since July 2015. They cover one specific district (Tangail) of Dhaka division and focus on the involvement of the Laboratory technicians and front line health workers in early pediatric case finding. CWCH conducted TB training including screening and referral of pediatric TB for their 13 project staff members. So far they have oriented 74 health workers, 8 medical technologist-radiology, 108 graduate medical practitioner and 148 non-graduate doctors.

Table 2: Child TB case identification and prevention by CWCH

Indicator (period Jul-Sep'15)	
Number of presumptive child TB cases identified by referral	269
Total number of child TB cases	22
Total number of Contact investigation (Pediatric cases)	266
Number of under 5 five children started IPT	111

3.1.2 GeneXpert testing of Diabetic patients for TB

To address another risk group, diabetics with tuberculosis, the CTB project awarded a sub-grant to the Diabetes Association of Bangladesh (DAB) to increase TB case finding among diabetes patients. DAB is a network of hospitals and affiliated associations located in all districts (64) of Bangladesh and BIRDEM situated in Dhaka city, which is the largest diabetes hospital in the country. Through this partnership, the project has been supporting an integrated approach with focus on active screening of diabetic patients for detection and management of TB among them.

During APA1, BADAS (previously known as DAB), a CTB grantee, trained 98 data collectors for monitoring and data collection for the affiliated centers in 63 districts. Ten trainers were also capacitated for conducting further training program on TB-Diabetes. This training will improve their knowledge and skills about DOTS strategy, screening, diagnosis and management of TB, and counseling of patients on TB-Diabetes co-morbidities. The project assisted BADAS in its initial training of the doctors, nurses and other health staff of the BIRDEM Hospital and will continue on in APA2 to also include affiliated facilities. Table 6 shows the achievements made by BADAS during Q4 APA1

implementing period. It has been noted that not all diabetics with TB symptoms who are referred to the nearby microscopy centers reported for diagnosis.

Screening of DM patients at BIRDEM, OPD

Fig: TB symptomatic being examined by the BADAS physician

Table 3: Detection of TB among DM patients

Indicator(period- Jul-Sep'15)	**Achievements**
Number of DM patients screened for TB	236,837
Number of DM patients identified as TB symptomatic and referred for testing by both trained and untrained BADAS providers	4,026 (1.7%)
Number of DM patients identified as TB symptomatic and actually tested (Number of actual referrals from trained BADAS providers = 135)	3,134

Number of all TB cases including relapses notified	380 (12%)
Number of Child TB cases identified	1
Number of DM TB patients identified by Doctor, nurse and allied staff oriented/Trained	39 out of 380 (10%)

BADAS also identified 33 TB cases among the 229 non-diabetic patients. They have tested 86 presumptive MDR TB cases by Xpert out of which 13 (15%) were diagnosed as MTB. No DR TB cases have been found.

3.1.3 TB Screening in Prisons

CTB has reviewed available documents on implementation of TB in prison models conducted in Bangladesh, including that of ICDDR,B. TB in prison model will be scaled up in APA2.

Three NGOs are currently working with prisons - ICDDRB under an operational research model with entry screening of the inmates, and both BRAC and DF in a programmatic way, to support the case finding in prisons. The contact person in prisons is the pharmacist/medical assistant or medical staff if there is a clinic (only in 2 prisons in Chittagong and Dhaka). Geographic coverage is 88% (56/64 districts). Challenges include irregular reporting to the NTP, lost to follow up for transfer out and released prisoners, and case finding approach which is still predominantly passive.

Active screening of inmates at entry and during their stay in prison as well as strengthening proper referral system upon release are areas for intervention in APA2.

TB-HIV coinfection

In APA1, WHO is leading the update of TB/HIV guidelines and CTB has contributed with technical inputs.

3.2 Access to quality treatment and care ensured for TB, DR TB and TB/HIV for all risk groups from all care providers

The number of MDR TB cases diagnosed is still low compared to the estimated number of MDR TB cases projected in the PMDT Expansion Plan 2013-2017 of the NTP. The NTP projected to diagnose and enroll 1,400 cases in 2014 but enrolled only 945 in 2014 nationally. This was due to low access to Xpert-equipped diagnostic centers, insufficient counseling and history taking of TB patients.

In APA1, there was also a GeneXpert cartridge shortage, malfunctioning of GeneXpert machines (module failure of 20%) of machines and foremost a weak mechanism of dissemination of results to patients. CTB procured 30,000 cartridges during APA1. CTB met with The Global Fund to agree on streamlined practices surrounding Xpert support with one partner (Global Fund) procuring Xpert cartridges while CTB ensures maintenance for the Xpert machines and network.

3.2.1 cPMDT roll out in 4 districts

Training of Out Patient DR TB Team:

NTP policy calls for a working committee at each DOTS centers entitled "Out Patient DR TB Team" to provide comprehensive management of DR TB patients in the community. The Upazila Outpatient MDR TB Team is primarily responsible for providing routine treatment including side effect management, and monitoring of the patients and MDR TB DOTS provider. The Outpatient DR TB Team consisting of

7 members at upazilla level (NTP Guidelines) is responsible for overall management including supervision of DR TB patients for about 18 to 20 months at community level. CTB planned to develop the clinical capacity of the teams to be able to provide on-going treatment support to the MDR TB patients. Although originally planned for the majority of districts in-country, due to time constraints of the trainees, the plan was downsized to 2 districts, Bhola and Barguna districts of Barisal Division, in three batches of training. A total 70 members (65 Male /5 Female) were trained on community-based DR TB management.

Director Health, Barisal Division at the training on cPMDT at Barisal

3.2.2 Improved detection of DR TB presumptive cases

CTB (central and field staff) conducted two one-day sensitization workshops in the Dhaka Division to promote identification of presumptive DR TB cases through proper history taking and by monitoring laboratory quality. These sensitization workshops were directed to a wide audience including: Civil Surgeons of all districts and UH & FPOs from all sub-districts of Dhaka Division, NTP staff, WHO and representatives from key partners, some representatives from public and private hospitals connected with the TB program and Prison Medical staff.

A total of 97 (87 male / 10 female) participants attended the two workshops. There was sharing of field experiences which ultimately led to generation of interest among field managers for the maintenance of quality laboratory activities including the importance of history taking for proper classification of the patients. The need to enhance referral of presumptive DR TB cases was well appreciated by the attendees. CTB will monitor the increase in referrals of DRTB presumptive patients to better appreciate the impact of this intervention.

Inaugural ceremony of DR Sensitization Workshop

During the last 12 months, Bangladesh detected 986 MDR-TB cases, almost reaching their target of 1,000. In addition to emphasis on history taking and counseling of the TB patients, maintenance of Xpert machines and nationwide scale up of sputum transport mechanism is also essential for enhancing access to diagnostic DR TB care. DR TB cases enrolled for DR TB treatment among the diagnosed cases is 92% (911/ 986) for the APA1 period.

Social Support for DR TB patients and DOT providers at community

Social Support for DR TB patients and DOT providers was not originally included in the APA1 work plan but the activity was taken on by CTB as per request of NTP, due to limited funding from GF for BRAC.

Since July 2015, CTB is providing social support for 835 out of a total of 911 cases (92%) DR-TB patients and their DOT providers in 19 districts and 4 City Corporations. The rest of the cases are supported by the Global Fund.

The project staff works closely with the hospital and the Upazila Outpatient DR TB Team to coordinate the timing of the discharge of the patients after confirmation of the field preparedness for continuation of treatment in the community. The CTB Field staff are actively engaged in distributing nutritional support and providing cost for baseline investigations when the patients are admitted at hospitals. They also closely monitor the DR TB patients in the community responsible for reimbursing allowable costs for performing ancillary investigations of patients, travel cost for patients and DOT providers, including disbursing courier cost for sputum transport from community to laboratories for follow-up sputum culture. Provision of support may have contributed to increases in the cure rates from 64% to 73% (2011 versus 2012, NTP), halved the defaulter rate from 27% to 13% (2011 versus 2012, NTP), and reduced patient vulnerability. Although the social support package for MDR-TB care brings along its costs, the costs are low when compared with the societal costs of incomplete treatment and potential for incurable TB, whose costs are extremely high.

Table 4: Areas and Number of Patients and DOT providers for Social support provided by CTB, Bangladesh (As of end of September, 2015):

No	Name of Areas			
City Corporation			No of Patients	No of DOT Provider
1.	Dhaka	City Corporation	South-76 North-104=180	47 59=106
2.	Chittagong	Chittagong City Corporation	88	52
3.	Khulna	**City Corporation**	4	4
4.	Barisal	**City Corporation**	**3**	**3**
Districts				
1.	Dhaka	District	44	33
		NIDCH	87	
2.	Chittagong	District	37	33
		CDH	26	
3.	Cox's Bazar	District	20	16
4.	Chandpur	District	25	19
5.	Gazipur	District	37	24
6.	Narshingdi	District	19	18
7.	Narayanganj	District	40	26
8.	Munshiganj	District	11	11
9.	Pabna	District	15	14
		CDH	03	0
10	Natore	District	4	4
11	Sirajganj	District	22	18
12	Bogra	District	0	0
13.	Sylhet	District	40	38
		CDH	7	
14.	Comilla	District	27	25
15.	B.Baria	District	27	24
16.	Sunamganj	District	37	36
17.	Dinajpur	District	7	6
18.	Jessore	District	13	11
19.	Barisal	District	12	12
		Total	**835**	**533**

Patients in other areas of the country receive social support from the Global Fund.

3.2.3 Sustain mHealth system for DOT for MDR patients[1]

CTB is continuing support for the mHealth system for DOT for MDR TB patients from July 2015, after TB CARE II closed down. The TB mHealth application was carried over and sustained by the CTB in the selected 19 districts and 4 city corporations where this was originally introduced by TBCARE II. Enhancements will be done to ensure quality of the system as it will be utilized in APA2 onwards.

[1] Activity in APA1 to sustain mHealth system for DOT for MDR patients was originally under "Access to quality culture/DST ensured" but it was decided that this activity was more aligned with patient-centered care and treatment so it has been included in the APA2 workplan accordingly.

This application is a web based monitoring tool which assists to monitor DOT providers to perform their responsibilities at patients' homes managed by the project's Field Staff. There are 676 DOT providers now using the mHealth Technology. Soon after the recent and formal transfer of the system from TB CARE II to CTB in Q4, CTB has initiated groundwork in ensuring functionality and maximized reach of both available software and hardware.

A family living in one of the poorest slums of Dhaka affected by DR and sensitive TB and receiving community based treatment (cPMDT) through one of the collaborating NGOs.

Supervision and Monitoring of the PMDT program.

CTB has adopted a monitoring and supervision system for effective implementation of PMDT activities according to NTP policy. The Outpatient DR TB Team members, at the upazila level regularly monitor and supervise the DR TB DOT providers. In addition, project field staff members make visits to patients' homes and treatment facilities to monitor treatment compliance, assess patient management needs and take follow up actions in discussion with the Outpatient DR TB Team.

The CTB central project staff conducted one supervisory visit at Rajshahi Chest Diseases Hospital (CDH) to supervise activities at the GeneXpert site, microscopy facility and MDR TB ward. Based on gaps identified the team observed some gaps in recording system in microscopy center and also communication gap between Microscopy center and patient wards. The team provided technical support through giving advice and on job training to the relevant health service providers.

Joint supervision of PMDT by Dr. Sabera Sultana, NPO, DR-TB, WHO and MDR-TB Advisor, CTB at RTRL, Rajshahi

Table 5: Indicators related to patients centered care

Outcome Indicator	Baseline (Year/Timeframe)	Target Y1	Result Y1	Remarks Within or more than 10% above or below target
3.1.1. #/% of cases notified by setting (all forms)	191,166 Source: NTP 2014	193,000	204,208 (Oct 2014 – Sep 2015) 7,708 (children, 3.8%)	Within 10%
3.1.3. Case notification rate	122	125	128	Within 10%
3.1.4. # of MDR-TB cases diagnosed	994	1,400	986	**More than 10% below target** - Poorutilization of GXpert machines - Malfunctioning of GXpert machines (module failure of 20% of machines) - GXpert cartridge shortage - Weak mechanism of dissemination of results to patients
3.1.8. % of TB cases (all forms) diagnosed among children (0-14)	2.9% (5,543/191,155)	3% (5,790/193,000)	3.8% (7,708/204,208)	**More than 10% above target** NTP special focus on Child TB
3.2.1. #/% of TB cases successfully treated all forms by setting and/or population	94% (99,140/105,390) 2013 cohort Source: NTP	95% (101,595/106,773) 2014 cohort Source: NTP	92% (97,745/106,773) 2014 cohort Source: NTP	Within 10%
3.2.4. # of MDR-TB cases initiating/enrolled on second-line treatment	945 (95%)	1,400 (100%)	911 (92%)	**More than 10% below target** - Weak mechanism of dissemination of results to patients - Patient refusal - Initial lost to

				follow-up
3.2.7. Treatment success rate for MDR-TB patients on treatment	73%	73%	73%	Within 10%
# of extra pulmonary TB (EPTB) detected	37,712	38,600	42,252	Within 10%

Objective 2: Prevention of transmission and disease progression

Sub-objective 4. Targeted screening for active TB

4.1 Contact investigation implemented and monitored

It is necessary to raise awareness in the community and increase screening for childhood TB through contact tracing of pulmonary TB contacts at household level to identify presumptive TB cases early. The implementation is however not always according to the guidelines. Considering the different challenges, CTB, under the guidance and leadership of the NTP, initiated the implementation of contact tracing in children.

4.1.1 Systematic contact tracing of all cases according to national guidelines

In APA1, CTB has implemented contact tracing activities through sub-grantees as discussed in the earlier sections of this report. During their households visit, health workers give health education to the family on TB transmission and other basic messages, identify presumptive cases and refer them to the specific centers. In Y1, a total of 1,402 eligible children were identified and 1,392 provided IPT. One NGO was unable to provide reports regarding contact investigation and IPT. In total, 25 children have been diagnosed through CTB-supported contact investigations.

To strengthen this key area, CTB intends to continue child TB contact tracing and INH prophylaxis of children under five under the guidance of NTP. CTB also implements these preventive activities through the sub-grantees by applying a simple symptom-based approach for screening by providers of under five children who are a household contact of a sputum smear positive index. However improvements in referral practices are also needed.

To start IPT rigorously at the community level is still a great challenge. To provide prophylactic therapy to children under the age of 5 for 6 months, who appear quite healthy, needs extensive counselling to convince the parents.

Table 6: Outcome Indicators of active case finding and LTBI

Outcome Indicators	**Baseline Year / Timeframe**	**Target Y1**	**Result Y1**	**Remarks Within or more than 10% above or below target**
4.1.2. #/% of children (under the age of five) who are contacts of bacteriologically-confirmed TB cases that	Unrecorded	100% (2,500/2,500)	100% (1,031/1,031)	**More than 10% below target** Lack of appropriate

are screened for TB				screening tool being used nationwide. Screening done but not recorded appropriately.
6.1.11. Number of children under the age of 5 years who initiate IPT	3,848 Source : NTP 2014	4,000	5,260	**More than 10% above target** Through the CTB sub-grantees: 1,392 There is a prescribed tool for IPT supplied by the NTP.

Sub-objective 5. Infection control

The TB Care II project was providing N95 masks for cPMDT use until June 2015. CTB was to continue on the provision of N95 masks. For Q4, CTB procured 5,000 N95 respirators and these were delivered to the NTP Central warehouse, Shyamoli.

FAST expansion was shifted to APA2. The N95 fitting procedure and fit testing were not continued as the NTP decided against it due to its "cumbersome" procedure.

Table 7: Indicator value for ancillary drug values and result

Outcome Indicators	**Baseline Year / Timeframe**	**Target Y1**	**Result Y1**	**Remarks more than 10% above or below target**
5.1.2. #/% of health facilities implementing TB IC measures with Challenge TB support (PMDT services)	0	33% 2/6	0	**more than 10% below target** 2 facilities were targeted for FAST expansion. Expansion will be done in APA2. N95 masks were provided to all 6 PMDT hospitals.

				Fit testing was not approved by the NTP.

Objective 3. Strengthened TB Platforms

Sub-objective 7. Political commitment and leadership

7.1 In-country political commitment strengthened

7.2.1 Develop strategic plan to transition some/all NTP costs from donor to gov't funding

The high level of political commitment has not been reflected in budget allocations for TB. There is a limited contribution in the implementation of the TB control activities (approximately 4.9% funded by the Government), covering staff salaries and facilities. The dependency on donor possesses challenges to expansion and sustainability of TB control activities. It was therefore planned that a strategic plan towards larger budget allocation from the government of Bangladesh. However, the NTP leadership did not agree to participate in the formulation of this plan due to frequent transitions at the position of Line Director, TB –Leprosy control, DGHS in APA 1.

In APA2, the formation of a budget mobilization (caucus) group to include a parliament member is planned to ensure appropriate budget allocation for the NTP. Advocacy efforts to leverage funding inherently from domestic resources will also be part of the planning. This segues to the project indicator 7.2.1.

7.2.2 Give technical support to CCM Secretariat

The CCM plays a key role in the management of GF grants in the country. Some weaknesses in the CCM mechanism have been identified by the GF HQ. Provision of technical support to the CCM secretariat through the recruitment of a full-time advisor was envisaged as a means of improving CCM performance and facilitating compliance with GF eligibility requirements.

The recruitment process for the advisor was not initiated due to lack of a formal request from the CCM. The CCM still has shortcomings in this aspect, and the provision for technical support to CCM has been retained in APA 2.

Table 8: Indicator value for operations research, evaluation or epidemiological assessment study

Outcome Indicators	**Baseline Year / Timeframe**	**Target Y1**	**Result Y1**	**Remarks more than 10% above or below target**
7.2.1. % of NTP budget financed by domestic resources	4.9% Source: NTP	10%	4.9%	**more than 10% below target** ACSM activities yet to be implemented (advocacy to policy makers yet to be strengthened).

Sub-objective 9. Drug and commodity management systems

9.2 New and ancillary drug regimens for TB/MDR/LTBI patients available, as appropriate

9.2.1 Operational research on 9-month regimen

The OR on the 9 month shorter regimen for MDR-TB patients will provide vital information for the global community at large and Bangladeshi policymakers in particular regarding a way forward towards countrywide scale up of the 9 month regimen replacing the 20 month regimen. It is projected to have multiple benefits in terms of better treatment success rates, fewer ADRs and better adherence.

The Protocol for the OR was awaiting administrative approval of the Ministry of Health and Family Welfare for a considerable period of time. The Ministry has provided its approval recently. The Request for proposal (RFP) for recruiting a research organization to conduct this operational research is in the final stages of preparation. Very soon, the RFP will be issued and APA 2 we will see the implementation of this OR.

Sub-objective 10. Quality data, surveillance and M&E

10.1 Well-functioning case or patient-based electronic recording and reporting system in place

Quality Data and M&E

NTP is conducting quarterly monitoring meetings at the end of each quarter at the district level involving all the district and upazila level TB staff. In APA2, CTB intends to actively participate in all these meetings of the districts, through the CTB M&E Advisor and respective project division and district coordinators.

No system of DQA is in place in NTP. Data is only verified during NTP-led supervision which is irregular. In APA2, CTB will initiate the development of a standard DQA tool in coordination with the NTP and other partners, and conduct a quarterly DQA at the district and upazila levels in collaboration with the NTP, WHO and partners. The findings of the DQA will be analyzed at the central level and findings will be disseminated to the local health authorities.

Surveillance

NTP is conducting surveillance routinely and following the WHO system, which is still mainly paper based. For the last 3-4 years NTP has been working with e-TB manager, a tool supported by the SIAPS project (MSH). It is only established in 2 divisions and these are not completely covered yet (210 out of 870 service center). SIAPS is working with NTP in scaling up the system throughout the country by June 2016. CTB will provide technical assistance (TA) to support its roll-out and will coordinate closely with SIAPS. CTB divisional staff will provide all assistance in the field level. CTB will train the health workers in data collection, data entry and reporting.

From the district level there is supervision for the upazila level under the guidance of civil surgeon. But it is not conducted on a regular basis. Civil surgeons are overburdened with other activities. Moreover, it is solely dependent on global fund money. CTB will provide further TA in this area in APA2.

10.2 Epidemiologic assessments conducted and results incorporated into national strategic plans

10.2.1 Establish a research agenda

This is elaborated in item 6: Operations Research

Sub-objective 11. Human resource development

Human resource development is concerned with the different functions involved in planning, managing and supporting the development of health workforce within the health system. The aim of HRD development is getting the right people, with the right skill and motivation in the right place, and at right time.

11.1 Qualified staff available and supportive supervisory systems in place

Bangladesh is suffering from a severe human resource crisis in terms of a shortage of qualified health care providers, an inappropriate skill mix and inequality in distribution, especially between urban and rural areas. The NTP drafted an HRD plan for 2009 -15, which is is not yet finalized.

A lot of posts are vacant and need to be filled. NTP has taken initiatives to fill the vacant post of 206 TB Leprosy Control Assistants (TLCA). TLCA are the base level health worker who works in the service delivery point. CTB will arrange training for the newly recruited TLCA and other field staff. CTB will take the initiative of developing a new HRD plan or update the existing one along with partners under NTP leadershipin APA2.

Fig: Dr Jahangir Alam Sarker, Deputy Director and Program Manager, TB along with Civil Surgeon, Sylhet on Joint supportive Supervision at Sylhet.

11.1.1 Joint supportive supervision

A quarterly general program of supportive supervision is jointly conducted by a 3-4 member team from NTP, WHO, Partners and CTB. The objective of these visits is to supervise the overall TB activities, including but not limited to PMDT services, laboratory activities, Xpert services, EQA performance as well as coordination with partners. In Q4, 3 visits were scheduled and budgeted out of which two visits were conducted. Remaining one was not conducted due to time constraints of NTP.

11.1.2. Assess the balance of staffing and tasks between NTP and NGO's including supervision

Assessment of the balancing of staff and tasks between NTP and NGOs including supervision were not conducted due to transition at level of Line Director, NTP and the inability to recruit an HR consultant. This is planned to be initiated in APA2.

Table 9: Indicator value and result on HRD

Outcome Indicators	Baseline (Year/Timeframe)	Target Y1	Result Y1	Remarks Within or more than 10% above or below target
11.1.3. # of healthcare workers trained, by gender and technical area	0 Source: NTP 2004	6,500	654 Male: 529 Female: 125	More than 10% below target Actual implementation of activities and capacity-building activities were initiated in Q3. Approval of the work plan was in February 2015 (Q2).

4. Challenge TB Support to Global Fund Implementation

Table 10: Current Global Fund TB Grants

Name of grant & principal recipient *(i.e., Tuberculosis NFM - MoH)*	Average Rating*	Current Rating	Total Approved Amount	Total Disbursed to Date	Total expensed *(if available)*
NFM from July 2015			$242.5 m(ref: http://www.aidspan.org/page/grants-country	$178.6m(http://www.aidspan.org/page/grants-country)	
Principal					

Recipient					
ERD(MOF)	A2	A2	36.4 million USD(NFM)	NA	
BRAC	A2	A2	44.5 million USD(NFM)	NA	

** Since January 2010*

In-country Global Fund status - key updates, current conditions, challenges and bottlenecks

The Global Fund for AIDS, TB and Malaria is funding Bangladesh since 2004. The grant implementation started in 2005 with Round 3 Tuberculosis grant for 2004- 2009. In 2006, Bangladesh was also awarded Round 5 TB grant for 5 years for 2006-2011. The two grants were running parallel. The country implemented both grants.

The country is currently implementing the New Funding Model (NFM) amounting to an amount of USD 80.9M for both PR. The grant duration is 30 months from July 2015 to December 2017. The upcoming challenge is that the PR2 (BRAC) has already cut 800 staff in different category who was working in the field level. Though, NTP is hiring a good number of the field staff, officers and experts now, but it will take more than two months for them to be on board after being trained.

The global fund rating on performance has been increasing progressively from B1 to A2. Present average rating for NTP is A2 and current rating is also A2 but PR BRAC average rating is A1 and current rating is A2. CTB will monitor the performances and assist in implementing the programme successfully.

Challenge TB involvement in GF support/implementation, any actions taken during Year 1

CTB is working in close collaboration and coordination with the GF, in partnership with the NTP. CTB is providing technical support to GF-supported trainings; specifically, on PMDT.

In APA1, CTB procured 30,000 cartridges for Xpert machine and handed these over to NTP. Recently, calibration of Xpert machines has been done in two districts. Effective July 2015, CTB is also providing social support to MDR TB patients and DOT providers in 19 districts and 4 City Corporations, other than the GF supported area. This kind of support will continue in APA2. In August, 2015 a high level Global Fund Team visited Bangladesh under the leadership of Richard Cunliffe, Fund Portfolio Manager, High Impact Asia Department. A joint meeting was conducted between the Global Fund team and the CTB team. On the other hand, GFATM will purchase cartridges for X-pert machine from 2016 onwards. GFATM has reduced number of trainings and requested CTB to increase the number of training in the different areas of STOP TB Partnership. Collaboration on the 9 month OR was discussed, as were several other areas. Both teams agreed to collaborate closely in upcoming years, with CTB as a scheduled part of each quarterly visit to Bangladesh.

5. Challenge TB Success Story

Anika's story – Intensified Case Finding in Bangladesh

Anika and her mother

Anika was a twenty-two month old baby girl living in Belai Chandi Kuthipara in the northern part of Bangladesh when she became sick. She was admitted to the LAMB's Missionary Hospital in Parbotipur one of the many NGOs where Challenge TB is funding active case-finding among high-risk groups such as children, people living with HIV and diabetics. She had the classic TB symptoms (fever, cough, and weight loss) combined with a suspect chest x-ray, so she was immediately put on treatment for TB.

Diagnosing TB in children is made difficult by their inability to provide a sputum sample, so a process called gastric lavage and sputum-smear microscopy are used to complete the diagnosis and for Anika this showed a positive result for TB.

After six months of directly observed treatment (DOT) she was finally cured. Contact tracing was done to find the origin of the TB, her parents were screened as were those around her and in the neighborhood, but no one suffering from TB symptoms was found.

Unfortunately one year later, Anika became ill again and her parents went back to the hospital. As it was a relapse case, the doctor also sent her sample for GeneXpert. GeneXpert is a highly sensitive test that can also detect drug resistant strains of TB and it showed that this time Anika had drug resistant TB (DR-TB).

She was immediately referred to the National Institute of Chest Diseases and Hospital (NIDCH) in Dhaka, where Challenge TB supports treatment initiation for DR-TB. Anika was hospitalized for two months until she showed improvement, before being allowed to continue her treatment at home under community-based programmatic management of DR-TB (cPMDT) that is provided by Challenge TB trained out-patient teams.

Initially the drugs upset her stomach and made her nauseas, but after the doctor taught her parents how to administer the medicine with sugar and milk she was able to tolerate her medication. Anika's family is also receiving social support from Challenge TB in the form of food and all the costs relating to her treatment, and as a result her physical condition is slowly improving.

"Thanks to the doctor in the hospital who taught me how to mix the drug with milk and sugar to make them palatable to my child, I can now administer her drugs myself"

"আল্লাহর রহমত" ***by the blessing of Almighty God we are getting all kinds of help and support. Otherwise, how would we able to cure our daughter of this dreadful disease?"***

Currently childhood TB cases constitute approximately three percent of the total cases reported in Bangladesh, but the actual disease burden of childhood TB is unknown. However, it is clear that only a small proportion of the estimated number of childhood TB cases are being diagnosed and that DR-TB

is on the rise (12 children have been treated for multi-drug resistant TB since 2008). Anika's story shows that intensified case finding, investing in training, and new technologies are saving lives.

6. Operations Research

A more formal research working group (RWG) has been revived on 6th July, 2015, with active support of CTB. The members are from NTP, WHO, NIDCH, representatives of the implementation partners BRAC, Damien Foundation and Challenge TB Project. The participants requested this RWG.

CTB organized a 2 day research workshop as technical support to the NTP with STTA from Dr. Susan Van den Hoff and with the purpose to identify a research agenda and prioritize research topics for the coming years, while ultimately integrating the TB research findings into national policy.
Nine research topics were selected (Table 11).

The objectives of the workshop were as follows:
1. To develop TB research agenda, through:
   - Selecting priority problems related to TB control in Bangladesh
   - Assisting in solving TB control problems encountered in Bangladesh
   - Identifying knowledge gaps for TB control in Bangladesh
2. To obtain an overview of ongoing and planned TB related research
3. To identify priority Operational Research topics related to TB control in Bangladesh
4. To identify Operational Research study types applicable to the research agenda
5. To identify human resource and capacity building needs and funding opportunities

During the workshop led by Susan vd Hof and attended by 35 participants (25 males, 10 females) NTP, WHO, partners and other research institutions gave presentations on current research activities. This was followed by group discussion to identify key constraints and challenges and finally the participants were guided to identify priority titles and study types

Table 11: Identified OR topics:

SL No	Title of OR study
01	What is the quality of microscopy in routine practice?
02	What are the reasons for underutilization of Xpert?
03	What is the effectiveness of Short MDR regimen implementation by NTP?
04	What is the DR-TB data collected after the 2010-11 DRS, what are the data gaps, and whether and how to obtain nationally representative DR data?
05	How to improve the TB case detection among children, including through contact tracing?
06	What is the effect of specific interventions (e.g. ISTC, as implemented by CTB) on notification by the private sector and public sector?
07	What would be mechanisms that would ensure notification by private providers and public sector?
08	What would be mechanisms for reaching the risk groups for ACF?
09	What is the TB burden among HCW at highest risk for contact with TB patients?

7. Key Challenges during Implementation and Actions to Overcome Them

The CTB/Bangladesh project has overcome some significant challenges during this initial year, but even overcoming the challenges has had an impact on overall implementation.

The key challenges faced during this initial 9-month year are:

- **Recruitment delays**

Most staff were unavailable to join the program until at least a month after they were selected. When combined with the mid-February approval of the plan and consequent authorization to begin recruitment, that means that most of the small Dhaka team was only able to start work in April 2015, giving us less than six months to implement activities. The recruitment of the Country Project Director was particularly challenging, and a suitable candidate was not able to join the project full-time until late August. MSH provided coverage from Interim Country Project Directors, usually in Bangladesh, and KNCV provided crucial support through the Interim Technical Advisor to ensure that the team was able to implement the workplan.

- **Delays in site preparations for Sylhet Containerized Lab**.

TB CARE II was responsible for all of the site preparations for the Sylhet lab, through 30 June. This included the construction of the concrete footing & stairs, and ensuring the Government of Bangladesh would financially support the lab's establishment in several ways – primarily customs duties and electrical supply – and also ensure the various approvals were received. When TB CARE II stopped most technical operations at the end of June, the construction was complete, but only the fire brigade approval had been provided. CTB/Bangladesh is now actively working with the NTP to ensure that the local approvals and funding are received from the Government of Bangladesh.

- **Pending maintenance issues of GeneXpert Machines**

TB CARE II installed and supported 39 GeneXpert machines in different areas of Bangladesh for the National TB Control Program throughout their project period. At the end of the project in August, 2015, CTB was requested by the NTP to continue the support and maintenance of these GeneXpert machines. Assessment conducted by CTB in July, 2015 showed 21% nonfunctional modules, 54% of machines had expired calibration schedules, and 4 machines out of 39 were completely non-functional. The assessment also showed 2 warranty contracts expiring as of July, 2015. Additionally, there were nonfunctional UPS and air conditioning units, as well as substandard electrical wiring and appliances noted which affected overall performance of the GeneXpert machines.

8. Lessons Learnt/ Next Steps

Adopting a systems approach in the development or in the application of the different technical interventions is valuable and effective. The systems approach allows for an integrated manner of addressing issues, which has motivated the partners to become more responsive as shown by the results of the initiation workshops on PPM, Urban DOTS, and research development in Q4. A thorough assessment and identification of issues and concerns, as it affects implementation at the various levels and/or landscapes is critical.

The Research Working Group has been revived through CTB this year and a workshop conducted to formulate the research agenda has been conducted in Q4. This is the foundation that is needed before the identification of research priorities is done and before capacity-building workshops to develop research protocols is initiated. Operations research findings are critical as these are used for improvement of TB program performance, as it cross cuts through all major systems – access to care, prevention, and TB platforms.

Partnerships and collaboration is essential to ensure maximization of available resources – technical and financial. Ensuring non-duplication of efforts and complementation of activities leads to efficient use of resources. Effective leadership, at various levels, is therefore key in orchestrating and ensuring a unified approach in addressing a common goal. The NTP is key the programmatic implementation of the TB program. Ownership is key. Engagement is essential.

The "use" of local TB champions or a national figure facilitates early engagement. In the PPM workshop conducted in August 2015, discussions among private providers with regards to the need to implement the mandatory notification was led by the Secretary General of the Bangladesh Medical Association (BMA) in partnership with the NTP which further legitimizes the partnership and urgent need for an appropriate system to address a common public health concern.

Community-based approaches for increasing case detection and management of TB is critical to maximize reach and ensure close and regular contact with the target population. Supporting existing NGOs in the realization of their organizational mandates addresses both the capacity-building needs of implementers and strengthens long-term implementation of their respective program relating to TB control efforts. Examples include the strategies implemented through grants that include active screening among vulnerable populations, contact tracing of index TB cases, and expanding PPM.

The strengthening of program management skills of TB implementers in areas like joint monitoring and supervision is essential in a successful TB program. To ensure its sustainability, the enthusiasm of health providers and their improved capabilities need to be complemented with institutionalized administrative and logistic support.

The NTP target on the number of MDR-TB cases who initiate second line treatment was not achieved due to various factors such as poor utilization of GeneXpert machines**,** malfunctioning of GeneXpert machines, GeneXpert cartridge shortage**,** weak mechanism of dissemination of results to patients. At the end of the day, it is the patient that is much affected. Given the nature of this illness, a public health issue, it is the community that is ultimately affected.

It is imperative that all best practices and lessons learned are constantly reviewed and analyzed as these may serve as basis for scale-up. A mechanism for integration of these best practices onto the local program is crucial to ensure its continuous implementation and sustainability. "Integration" means having to ensure its support in terms of policy and budget.

In APA2, CTB will continue to address the key issues targeted in APA1 through a coordinated and coherent strategy, taking into account the CTB APA1 work plan, the CTB Results Framework (Appendix IV), the NSP, the results of the 2014 JMM of the NTP and the USAID/Bangladesh Country Development Cooperation Strategy. CTB will assist the NTP, through maximization of collaborative efforts with partner-stakeholders, to achieve its targets by providing full access to high quality, patient-centered care for TB, DR-TB, and TB/HIV services in prioritized areas through a) increased case finding, b) improved detection of DR TB cases, expansion of cPMDT, social support, and support to the mHealth system, c) strengthening the laboratory network, d) support for operational research and practical implementation of the surveillance system; and e) strong political commitment.

Appendix 1

1.2.2 Sub-grants to Local NGOs (LNGOs) for community case finding activities

Table 12: CTB Grantees

CTB Bangladesh Sub-grants	Risk Group Targeted	Geographic Focus	Population Covered
1. Bangladesh Pediatric Association (BPA)	Below age 15 population is the direct target beneficiary and their parents are the indirect beneficiary	Sylhet Division and Dhaka City (NHSDP clinics)	13.4 Million
2. Bangladesh Diabetes Association (BADAS)	1,000,000 Diabetes Mellitus (DM) and Non DM Patients	Dhaka City Corporation (DCC) and 63 districts where BADAS has diabetes health care delivery program through its affiliated, sub-affiliated associations and other projects	1 Million
3. Centre for Woman and Child Health (CWCH)	Children who are in contact with Bacteriologically confirmed Patients	Dhaka division, specifically Tangail district	1.3 Million
4. Damien Foundation Bangladesh	Women, children, garments workers, Some high risk for HIV	Dhaka Division, with focus districts: Faridpur, Gopalganj, Madaripur, Rajbari, Sariatpur	1.9 Million
5. Health Education, Environment and Development (HEED) Bangladesh	Targeting to cover underserved population of 184 Tea Gardens, 72 Punji Communities (ethnic/indigenous minorities) and 56 Rubber Gardens	184 Tea Gardens, 72 Punji Communities (ethnic/indigenous minorities) and 56 Rubber Gardens under sixteen sub districts of Sylhet division (Moulovibazar, Habiganj and Sylhet districts	0.7 Million
6. World Mission Prayer League (LAMB)	Women, children, floating Population, people living with HIV, Urban slum population, diabetic patients	Rangpur Division, specifically Nilphamari and Dinajpur Districts	5 Million
7. Nari Maitree	Women, children, workers, laborers, floating people, people living with HIV, slum population, diabetic and other NCD patients	Dhaka North City Corporation & Dhaka South City Corporation area	2.6 Million
8. Rangpur Dinajpur Rural Service (RDRS)	Slum dwellers, Day labor, Floating people, Construction workers , Sex workers, Transsexual Rickshaw/van pullers, Baggers, Chars dwellers, Cluster villagers,Transport workers ,Contact index cases, Female (widow, divorce, separated & split), Children, Prisoners, Aged person, Orphanages, Physical and mental disorder etc.	Rangpur division, specifically Lalmonirhat & Kurigram districts	3.6 Million

. The table below shows the case identification by these NGOs in their current implementation period in their respective project areas.

Table13: Grants in APA1

CTB Bangladesh Sub-grants	Ceiling Amount (BDT, official)	Ceiling (USD, approx.)	Technical Focus	Geographic Focus
1. Bangladesh Pediatric Association (BPA)	BDT 15,159,988.00	*$ 194,359*	Increase case detection among children through: Capacity building of doctors Capacity building of the HCWs at UHC Refresher training for facilitators Orientation of Civil Surgeons and Director (Health) of Sylhet Division Orientation of Program Organizers (PO) of District Meeting with stakeholders	Sylhet Division and Dhaka City (NHSDP clinics)
2. Bangladesh Diabetic Somity (BADAS)	BDT 22,740,000.00	*$ 291,538*	BADAS will undertake two major strategies in BIRDEM hospital and affiliated sites: Improve the early detection of TB in persons with diabetes by: Integrate regular TB and DM services Detection of TB cases Management of TB cases Patient follow-up Develop referral networks with NGOs Infection prevention Strengthen provider capacity in diabetes-TB diagnosis &case management and Increase patients' and community awareness about TB-DM co-morbidity through: Improve the capacity of service providers	Dhaka City Corporation (DCC) and 63 districts where BADAS has diabetes health care delivery program through its affiliated, sub-affiliated associations and other projects

			Increase patients' awareness about TB-DM co-morbidity Enhance community awareness Observe special days (World TB Day, World Diabetes Day) Radio & TV program (talk show re: TB & diabetes) Press Conference/ Round Table	
3. Centre for Woman and Child Health (CWCH)	BDT 14,022,311.00	*$ 179,773*	OBJECTIVE 1 is to increase child TB detection through a number of intensive interventions within existing NTP mechanisms and other health services across the whole of Tangail district: screening in microscopy centres, strengthening CI and IPT in the community, lowering doctors' threshold for suspecting and referring for child TB investigations in all facilities and through advocacy and community social mobilisation (ACSM) OBJECTIVE 2 is to closely monitor and supervise these new interventions in order to learn how best to scale up these child TB interventions to the rest of the country.	Dhaka division, specifically Tangail district
4. Damien Foundation Bangladesh	BDT 16,992,397.00	*$ 217,851*	To sustain present TB Case Notification rate in the general population, and to increase case finding among high risk groups through 2 strategic objectives: 33 well-trained DFBD staffs are needed to provide basic TB services, integrated into GoB health facilities, hereby securing collaboration and referrals by GoB health staff and community	Dhaka Division, with focus districts: 1. Faridpur 2. Gopalganj 3. Madaripur 4. Rajbari 5. Sariatpur

			stakeholders. In order to increase the TB case notification, orientation trainings and support need to be organized in the 13 Districts within DFBD controlled area for: a) Village Doctors, b) TB-cured patients (TB-clubs), and, c) in garment factories (including DEPZ).	
5. HEED Bangladesh	BDT 15,538,150.00	*$ 199,207*	To increase awareness and case detection from these areas through: Increase & Improve case detection and related management in project area. Ensure standard TB regimens administered correctly in project area. Advocacy for improving TB situation in project area. Ensure communication and social mobilization for improving TB situation in project area	184 Tea Gardens, 72 Punji Communities (ethnic/indigenous minorities) and 56 Rubber Gardens under sixteen sub districts of Sylhet division (Moulovibazar, Habiganj and Sylhet districts). Specific upazillas: Sreemongal , Kamalgonj, Moulovibazar, Kulaura Rajnagar , Borolekha Juri , Sylhet Sadar Gwainghat , Kanaighat Joyontapur , Fenchigonj Madhabpur , Bahubal Chunarughat , Nobigonj
6. World Mission Prayer League (LAMB)	BDT 14,930,931.00	*$ 191,422*	Increased TB case detection through two major streams: increasing partnership with health providers and enhancing the capacity of volunteers & health staff to detect, refer & treat non-smear positive, child and MDR-TB.	Rangpur Division, specifically Nilphamari and Dinajpur Districts
7. Nari Maitree	BDT 12,782,360.00	*$ 163,876*	Increase case finding among high risk groups in selected wards of Dhaka City Corporation through the following strategies: Evidence-based contact screening Extensive community work Involvement of all relevant stakeholders Public-private Mix (PPM)	Dhaka North City Corporation & Dhaka South City Corporation area (Dhaka North City Corporation, ward no: 1, 10, 11, 16, 17, 20, 21, 28, 31, 32, 33, 34, 35, 36 and in Dhaka South City Corporation ward no:1, 2, 3, 5, 6, 8, 9, 10, 11, 12, 22, 23, 24, 27, 28, 29, 46, 47, 50, 51, 52,

			Missed Opportunity Capacity building of local service providers Mass awareness through BCC & social mobilization Efficient coordination Referral linkage Proper documentation and reporting	54)
8. RDRS	BDT 8,717,000.00	*$ 111,756*	The objective of this program is to develop and implement methodologies to increase case finding among high risk groups. Specifically, RDRS will: Increase access to quality TB and MDR TB services. Ensure presumptive TB detection and treatment of SSN, EPTB, child TB, MDR-TB cases. Assess household contact of known cases of TB, MDR-TB & TB HIV. Maintain a cure rate over 90%. Assure proper follow up of the patients: supervision of the DOTS and defaulters and absent cases tracing. Ensure proper laboratory service for sputum examination, Diabetic check up etc. Set up proposed ACSM activities to increase referrals system.	Rangpur division, specifically Lalmonirhat & Kurigram districts

Table14: Case Notification by NGO Sub-grantees*

Name of NGO	Case Identification with Project Support (Jul- Sep'15)				
	Bacteriologically Positive (Sm+)	Clinically Diagnosed (Sm-)	EPTB	Total	Child TB (referral and contact tracing)
RDRS	83	39	40	162	31
LAMB	59	18	10	87	2
Damien Foundation	3,025	905	1,498	5,428	247
Nari Maitree	469	226	410	1,105	84
Heed Bangladesh	311	204	59	574	
Total	**3,947**	**1,392**	**2,017**	**7,356**	**732**

** The bacteriologically positive cases are directly diagnosed by the NGOs. For Sm(-) and EPTB, they are diagnosed by affiliated health providers upon referral by the NGOs. All diagnosed cases are referred to the upazila level for initiation of treatment.*

Through the Finding TB cases Actively, Separating safely and Treating effectively (FAST) approach initiated by TB CARE II implemented by BADAS in BIRDEM Hospital, 69 out 303 presumptive TB cases (22%) were diagnosed during Quarter 4, as a grantee of CTB.

The sub-grantees have also identified 25 child TB cases by screening of 1,031 pediatric contacts. CWCH alone found 22 of the 25 cases. 1,392 children under 5 years of age have started and received IPT in Quarter 4. BPA had conducted a refresher course to 40 facilitators who would eventually conduct training in childhood TB in Sylhet and other potential expansion sites in APA2.

Appendix 2

1.3.1 Inventory of health seeking behavior interventions and research

In APA 1, CTB carried out a literature inventory to explore factors influencing health seeking behavior in Bangladesh. Seven articles on health care seeking and patient and system delays were reviewed. In addition, three of these seven found important gender differences in health seeking behavior.

- A study carried out by URC under TB CARE II, found that 60% of patients waited more than a month before seeking medical care for their symptoms, while 90% of the patients said they were not aware of the severity of the symptoms and felt no need for medical assistance.
- A study in 10 sub-districts showed that women had significant longer delays (total (>60 days) than men in both patient and health system delay. Older women and young men are less likely to be diagnosed. Women face several socio-cultural barriers in accessing TB care and are related to not being allowed to go unaccompanied, need for permission of head household and travel. They prefer using first traditional medicine for access and confidentiality reasons. Delays in males are contributed to self-medication as this is cheaper and more accessible. TB Stigma affecting TB patient's relationships was also more experienced by females than by men. Another study found that the group of 15-44 age female TB patients were mostly illiterate, live in poor housing conditions and have restricted movements due to socio-cultural norms. Patient satisfaction with health services was explored by one of the studies and found that a third of studied TB patients and nearly 40% of the female TB patients were not satisfied with the provider's behavior due to the avoiding tendency of the HCW, poor counseling and unfriendliness. Treatment initiation delay was found to be higher among patients with a history of previously being treated for TB, marital status (married more social obligations) and age (youth more delay related to school hours).
- A study on informal health providers showed that patients seeking care from them do access care more promptly, but have prolonged delays in initiating treatment. Impact evaluation of initiatives of already engaged informal providers and mapping of other types of not yet engaged providers can give valuable information to draft policy guidelines and tools.

It can be concluded that health and TB services need to be shaped to the needs of the patients. Hereby taking into account gender differences and addressing the different age groups at policy, facility level and outreach community ACSM interventions.

Patient centered tools developed under TB CARE II and other agencies can be used to improve quality and make interventions more gender balanced and patient centered. A study on informal health providers showed that patients seeking care from them do access care more promptly, but have prolonged delays in initiating treatment. Impact evaluation of initiatives of already engaged informal providers and mapping of other types of not yet engaged providers can give valuable information to draft policy guidelines and tools. All these critical findings will form bases in the development of an effective ACSM strategy in Year 2.

Appendix 3

1.4.1 Inventory on costing and other patient-centered studies and materials

The Patient Centered Approach (PCA) package developed under TB CARE I states that a patient centered approach is an important underlying principle of quality health care systems and interventions.

The Institute of Medicine defines patient-centered care as "Providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions." Within the context of TB, PCA respects an individual's right to participate actively as an informed partner in decisions and activities related to TB diagnosis and treatment. Patient-centered care forms an integral part of the first pillar of the new global END TB strategy. Standard 9 of the International Standards for TB Control and Care (ISTC) describe a patient-centered approach as the "core element of all TB control and care efforts". The PCA developed under TB CARE I defines the 5 principles of PCA as:

1. Enable Partnerships
2. Recognize Patient rights
3. Empower an activate patients and communities
4. Engage all stakeholders and
5. Monitor and document.

A package of tools has been piloted in 5 countries at district levels. The toolkit consists of the Patient Charter, QuoteTB, a tool to measure the quality of services from patient perspective, a patient cost tool, a literacy kit and a practical guide to improve quality TB patient care.

The PCA pilot demonstrated that with a few practical approaches, TB programs and health facilities can make the first steps to improve patient-centered care. Most tools were found to be easy to implement. As a result of the pilot, patients became more aware of their rights and responsibilities, empowering them to demand better services, organize themselves and become involved in TB activities. HCWs gained new insight into the experiences and challenges faced by patients in accessing TB services. They were also provided with new tools to strengthen their important role in providing information and adherence support to TB patients.

Several barriers and quality of care issues were identified through the use of the tools, providing each of the countries with an evidence base to develop interventions for PCA improvements based on the patient perspective. However, use of the tools alone does not guarantee that patient-centered care is fully implemented. Applying a patient-centered approach is an investment in changing health care culture. It involves multiple stakeholders and it takes time. Patient-centered care is a shared responsibility that needs to be defined within each cultural context and fully integrated into TB programs and health services.

Photovoices is another instrument of PCA developed under TB CARE I for Advocacy, Stigma Reduction and Patient Empowerment, a type of participative research, using photography to help people to identify, represent and manifest their needs related to TB. It uses the principles of documentary photography to capture experiences from the perspective of the most vulnerable. The photography gives TB patients a chance to recognize their strengths, priorities and worries related to life and to the disease, giving a voice to those who normally are not heard. It also promotes the generation of knowledge and a critical dialogue around the most important issues and stigma related to TB through discussions about the pictures. The method has been developed in the Dominican Republic under TB CARE I and used successfully for advocacy to national and local decision makers while showing the general public the human face of the patient behind the disease. Also other

organizations are now using Photovoices in TB in different countries and in different ways, like URC in South Africa, and an international platform http://tbphotovoice.org/ which unites TB patients around the world.

Patient costs studies

The patient cost tool of the PCA package was used in 3 countries (Ghana, Vietnam, Dominican Republic) and findings showed similar patterns and challenges of TB-related costs for patients across the three countries: 27–70% of patients stopped working and experienced reduced income, 5– 37% sold property and 17–47% borrowed money due to TB. Hospitalization costs (US$42–118) and additional food items formed the largest part of direct costs during treatment. Average total patient costs (US$538– 1268) were equivalent to approximately 1 year of individual income.

A study done in Tanzania and Bangladesh, using the Stop TB patient cost questionnaire to measure the costs incurred by patients on 6 month TB treatment showed that costs for patients is high and can often be benchmarked as catastrophic (> 10% annual household income). Costs decrease from intensive to continuation phase but remain significant. A shorter regimen of 4 month would represent a minimum saving of 8.5% of the national income in Bangladesh and allow an earlier return to productive activities. (Gospodarevskaya, 2014)

A study on costs incurred by patients with pulmonary tuberculosis in rural South India showed that TB patients incur large costs and that the greatest single cost was time lost during admission. Total patient costs represent 193% of the estimated monthly income of a manual laborer. (John Kr 2009)

Another study in Rio de Janeiro, Brazil also showed that costs incurred by TB patients are high, especially for those under DOT. The DOT strategy doubles patients' costs and increases by fourfold the health system costs per completed treatment. The additional costs for DOT may be one of the contributing factors to the completion rates below the targeted 85%. (Ricardo Steffen1,2 PLOSone2010)

A study in rural Bangladesh found that the involvement of CHWs was more cost-effective for patients. The patient costs while using CHWs (BRAC) was around 10 USD and 19 USD in the non CHWs NTP areas.

Appendix 4: Year 1 Results on Mandatory Indicators

MANDATORY Indicators				
Please provide data for the following mandatory indicators:				
2.1.2 A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions.	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Score as of September 30, 2015	**0**		**Substantial**	Draft plan has been developed with the help of STTA. Draft plan is under review by the competent authority.
2.2.6 Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Number and percent as of September 30, 2015	0%, (0/3)		**None**	It is planned in APA2
2.2.7 Number of GLI-approved TB microscopy network standards met	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**

Number of standards met as of September 30, 2015	**4**		**None**	The Standard that are met: 2,6,7,& 9. The Checklist has been filled up by Laboratory Expert, NTP on 21 October, 2015 and CTB Lab advisor discussed within the CTB team.
2.3.1 Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result.	**National 2014**	**CTB 2014**	**CTB APA 1 investment**	**Additional Information/Comments**
Percent (new cases), include numerator/denominator	2.8% (2,965/106,773)	N/A	**Limited**	In APA1, CTB provided TA for maintainance of Xpert and procured 30,000 cartridges. NTP will develop a plan for increasing DST of all bacteriologically confirmed TB pateints in APA2. CTB will be the part of it.
Percent (previously treated cases), include numerator/denominator	8% (450/5,629)	N/A		
Percent (total cases), include numerator/denominator	3% (3,415/112,402)	N/A		
3.1.1. Number and percent of cases notified by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach	**National 2014**	**CTB 2014**	**CTB APA 1 investment**	**Additional Information/Comments**

Number and percent	National : 191,155 TB/Diabetes: 0.63% (1210/191155) Children: 3.4% (6662/191,155) Prisoners: 0.15% (291/191,155) Urban high-risk: U	N/A	**Limited**	Mandatory notification is in place; however, its implementation is poor. There is no formal operationalization of this mandate. CTB in coordination with NTP will work with local partners to address this. CTB together with the NTP and other partners (NHSDP, LTCC. and UPHCSDP through their implementing NGOs, technical Partners like WHO, UNDP) have identified priority risk groups to focus on i.e. Slum dwellers, floating and migrant population, children and people suffering from malnutrition, TB/HIV, prisons and the other areas which are still not reached by the national program properly such as orphanages and madrasha. PPM and Urban TB strategies addressing these key population have been drafted in APA1 and will be finalized in APA2.
3.1.4. Number of MDR-TB cases detected	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Total 2014	994	N/A	**Moderate**	The July - September data is not available till to date
Jan-Mar 2015	250	N/A		
Apr-June 2015	226	N/A		
Jul-Sept 2015	U	N/A		
To date in 2015	476	0		

3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.).	**National 2013 cohort**	**CTB 2013 cohort**	**CTB APA 1 investment**	**Additional Information/Comments**
Number and percent of TB cases successfully treated in a calendar year cohort	Getting from WHO	N/A	**None**	
3.2.4. Number of MDR-TB cases initiating second-line treatment	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Total 2014	945	N/A	**Moderate**	The July - September data is not available till to date
Jan-Mar 2015	229	N/A		
Apr-June 2015	228	N/A		
Jul-Sept 2015	U	N/A		
To date in 2015	457	0		
3.2.7. Number and percent of MDR-TB cases successfully treated	**National 2012 cohort**	**CTB 2012 cohort**	**CTB APA 1 investment**	**Additional Information/Comments**
Number and percent of MDR-TB cases successfully treated in a calendar year cohort	Getting from WHO	N/A	**None**	
5.2.3. Number and % of health care workers diagnosed with TB during reporting period	**National 2014**	**CTB 2014**	**CTB APA 1 investment**	**Additional Information/Comments**
Number and percent reported annually	N/A	N/A	**None**	No TB surveillance among HCWs in place, and no relevant study has been conducted.
6.1.11. Number of children under the age of 5 years who initiate IPT	**National 2014**	**CTB 2014**	**CTB APA 1 investment**	**Additional Information/Comments**

Number reported annually	3,848	N/A	**Limited**	Data source - NTP.
7.2.3. % of activity budget covered by private sector cost share, by specific activity	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Percent as of September 30, 2015 (include numerator/denominator)		1. PPM 6.4%,($519/ $8143) 2. Urban TB12.5%,($732/ $5850 and 3. TB Research 5.4% ($96/$1762). Avarage of all 3 workshop 8.5% ($1347/$15755)	**Substantial**	. CTB in Q4, APA1 conducted PPM , Urban and Research workshop. A good number of private sector attended the workshop and contributed.
8.1.3. Status of National Stop TB Partnerships	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Score as of September 30, 2015	0	N/A	**None**	Bangladesh is implementing the concept of STOP TB PARTNERSHIP in the country but no formal partnership formation is existing within the country.CTB will assist in the formalization of the partnership.
8.1.4. % of local partners' operating budget covered by diverse non-USG funding sources	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**

Percent as of September 30, 2015 (include numerator/denominator)		N/A	**None**	CTB will be working closely with local partner NGOs and other stakeholders through the provision of grant mechanisms to address and support the NTP programme. The following is the initial list of local partners with which CTB will working: Bangladesh Pediatric Association (BPA), BADAS, CWCH, HEED Bangladesh, World Mission Prayer League (LAMB), Nari Maitree, RDRS, Damien Foundation CTB will show % of their overall operating budget funded by non-USG funding sources.Special questionnaires to be distributed to the partners in APA2
8.2.1. Global Fund grant rating	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Score as of September 30, 2015	A2		**None**	
9.1.1. Number of stock outs of anti-TB drugs, by type (first and second line) and level (ex, national, provincial, district)	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Number	U	N/A	**None**	NTP takes care of this indicator with the assistance of SIAPS, however relevant data regsitration/reporting system is under development and no data are available yet.
10.1.4. Status of electronic recording and reporting system	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Score as of September 30, 2015: 210 sites out of 850 sites has been covered	2	N/A	**None**	SIAPS is working with NTP in implementing and scaling up of e-TB Manager.

10.2.1. Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Yes or No as of September 30, 2015: NO	No	N/A	**None**	NTP is not implementing WHO grading
10.2.6. % of operations research project funding provided to local partner (provide % for each OR project)	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Percent as of September 30, 2015 (include numerator/denominator)	N/A	0	**None**	No OR was conducted in APA1
10.2.7. Operational research findings are used to change policy or practices (ex, change guidelines or implementation approach)	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Yes or No as of September 30, 2015	N/A	0	**None**	No OR was conducted in APA1
11.1.3. Number of health care workers trained, by gender and technical area	**CTB APA 1**		**CTB APA 1 investment**	**Additional Information/Comments**
			Substantial	**Data has placed accordingly**
	# trained males APA 1	**# trained females APA 1**	**Total # trained in APA 1**	**Total # planned trainees in APA 1**
1. Enabling environment	**0**	**0**	**0**	**0**

2. Comprehensive, high quality diagnostics	**23**	**10**	**33**	**33**
3. Patient-centered care and treatment	**65**	**5**	**70**	**61**
4. Targeted screening for active TB	**0**	**0**	**0**	**0**
5. Infection control	**0**	**0**	**0**	**0**
6. Management of latent TB infection	**0**	**0**	**0**	**0**
7. Political commitment and leadership	**0**	**0**	**0**	**0**
8. Comprehensive partnerships and informed community involvement	**0**	**0**	**0**	**0**
9. Drug and commodity management systems	**0**	**0**	**0**	**0**
10. Quality data, surveillance and M&E	**0**	**0**	**0**	**0**
11. Human resource development	**0**	**0**	**0**	**0**
Others:Training for Subawardee and CTB Field staff	**43**	**10**	**53**	**53**
Others : Workshop	**398**	**100**	**498**	**504**
Grand Total	**529**	**125**	**654**	**651**
11.1.5. % of USAID TB funding directed to local partners	**National APA 1**	**CTB APA 1**	**CTB APA 1 investment**	**Additional Information/Comments**
Percent as of September 30, 2015 (include numerator/denominator)	N/A	31%($2,494,484/$ 8,105,598)	**Moderate**	To be increased in APA2

Appendix 5: Status of EMMP activities

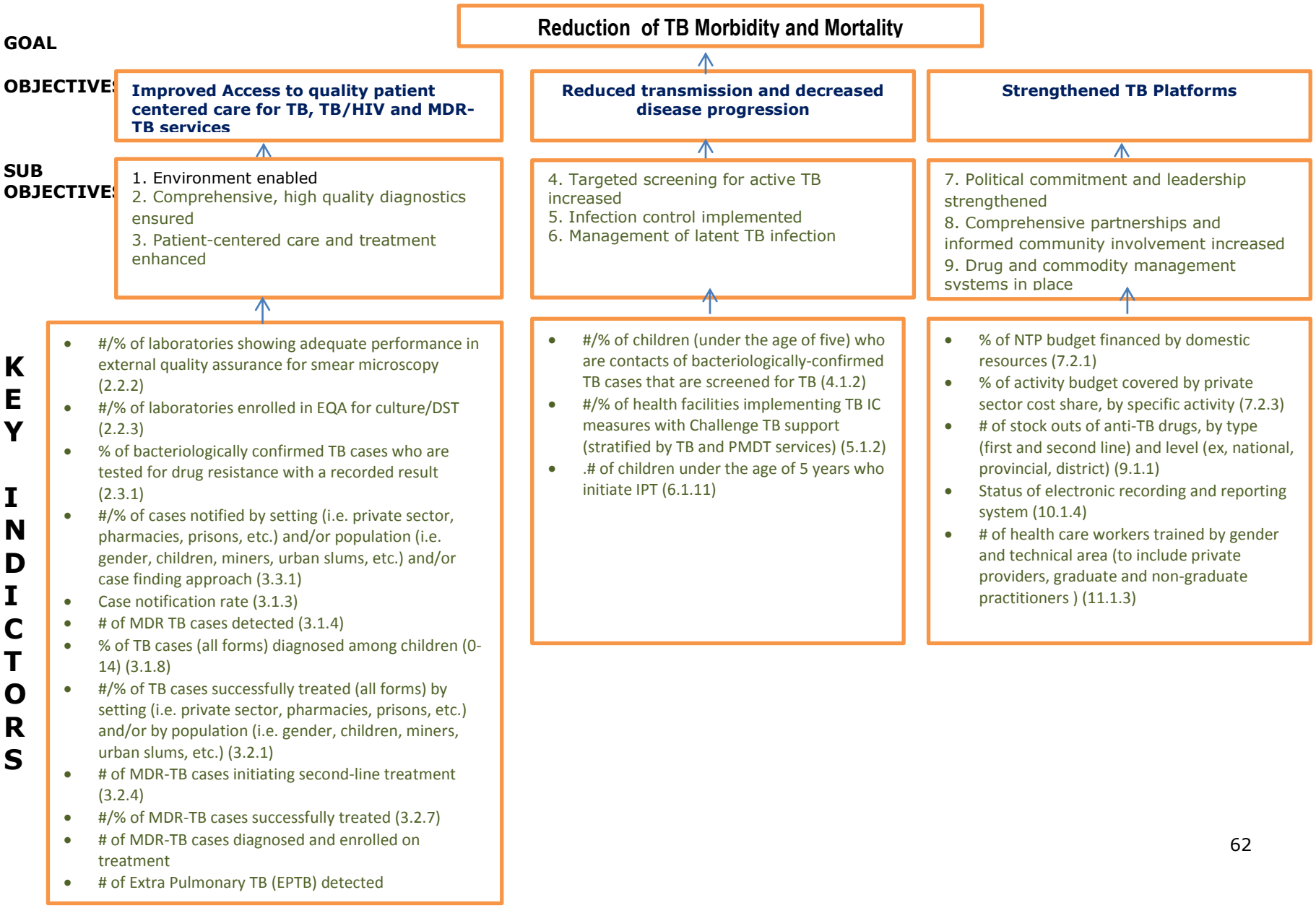
Status of EMMP activities

CTB submitted an Environmental Mitigation & Monitoring Plan (EMMP) in APA1 but it has not yet been approved to-date due to refinements that still needs to be done. CTB was asked to answer several questions raised by USAID with regards to the project's EMMP. The questions dealt mainly on the issues - GeneXpert MTB/RIF cartridge and its proper disposal, TB segregation of clinics medical waste and general waste , training for health care professionals on medical waste compliance, annual testing or refreshers for the staff , presence of Standard Operating Procedures (SOPs) in the facilities, and availability of SOPs in Bangla.

These concerns of USAID were earlier addressed by the project. Firstly, it was mentioned that there was no radioactive element in the GeneXpert MTB/RIF cartridge. The disposal practice of cartridges is to seal the contaminated material (such as used sputum containers, transfer pipettes and used cartridges) in a biohazard bag, and then burn it. Secondly, there is no structured training for health care professionals on medical waste compliance. However, the issue is discussed in GeneXpert MTB/RIF / Culture, Microscopy, TB culture and DST basic training. Also, there is no provision of annual testing or refreshers training system with regards to medical waste compliance. Lastly, there is no dedicated SOP for waste management in any TB facilities. However, TB microscopy laboratory has its own SOP. As for RTRLs / NTRL, waste management is described in the SOP for TB Culture and DST. This is mainly developed based on international tools. NTP has drafted the biosafety and waste management SOP and it needs to be finalized. Some of the SOPs have been printed but all are not in Bangla. Bangladesh has a "blue" book that discusses medical waste handling and disposal procedures that complies with international (WHO) and US EPA standards. Lastly, CTB is enforcing existing NTP/WHO guidelines on proper waste disposal, including those related to GeneXpert use.

In June 2015, CTB was invited to attend training on "USAID 22 CFR 216 ENVRONMENTAL COMPLIANCE TRAINING". In September 2015, CTB met with USAID/B to discuss further the finalization of EMMP in APA2.

Appendix 7: Results Framework



Appendix 8: Results on Year 1 Indicators

Complete listing of Year 1 indicators. Indicators in the body of the report are Mission-specific indicator.

Table 15: PPM and ACSM outcome indicator targets and result

Indicators	Baseline (Year / Timeframe)	Target Y1	Result Y1
1.1.7. PPM strategy drafted(Yes/No)	No strategy available (2014) Source : CTB	Yes	No. PPM workshop completed. Revival of the PPM working group in Q1 of APA2 and develop the PPM strategic plan based on the input of this workshop will be finalized in Q2 of AP2
1.2.3. Inventory ACSM activities and plan for future ACSM activities completed (Yes/No)	No (2014) Source : CTB	Yes	Yes (Inventory ACSM completed)
1.3.2.Inventory of health seeking behavior completed (Yes/No)	No (2014) Source : CTB	Yes	Yes (Inventory of health seeking behavior completed)
1.4.1. One or more components of the patients centered approach are adopted into practice/policy	No (2014) Source : CTB	Yes	Contact tracing and reverse contact tracing has been started by LNGOs
1.4.10. Inventory on costing and other patient-oriented studies completed (Yes/No)	No (2014) Source : CTB	Yes	No. Literature reviewed (Inventory completed; formal report to be complete early November 2015)

Laboratory outcome indicator targets and result

Indicator	Baseline (Year/Timeframe)	Target Y1	Result Y1
2.1.1. # of laboratories performing microscopy (stratified by LED florescence, Ziehl-Neelsen)	240 LED, 864 ZN (2014) Source : NTP	280 LED, 844 ZN	240 LED, 864 ZN
2.1.2. A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions.	0 (2014) Source : CTB	1	0. Not yet completed. To be completed in Q1, APA2.
2.2.1. #/% of laboratories enrolled in EQA for smear microscopy	1104 (100%) Source : NTP	100% (1104/1104)	100% (1,104/1,104) *Public and NGO facilities affiliated with the NTP included in these numbers.*
2.2.2. #/% of laboratories showing adequate performance in external quality assurance for smear microscopy	94% (1,038/1,104) Source : NTP, 2014	94% (1,038/1,104)	94% (1,042/1,104)
2.2.3. #/% of laboratories enrolled in EQA for culture/DST	33% (1/3) (NTRL Khulna, Chittagong) Source : NTP	33% (1/3)	33% (1/3)
2.2.6. Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System (LQMS).	0% (0/3) (2014) Source CTB	0	0

2.2.7. Number of GLI-approved TB microscopy network standards met	Not evaluated (2014) Source: CTB	N/A	4 (Standards met are 2,6,7,9)
2.3.1. Percent of confirmed TB cases who undergo DST and receive their results	New 2.8% Previous 8% All 3%	0	0
2.4.2. #/% of Xpert machines that are functional in country (stratified by Challenge TB, other)	95% (37/39) (2014) Source: NTP	100% (39/39)	90% (35/39)
2.4.7. % of labs using WHO approved rapid diagnostic tools (disaggregated by type: Xpert MTB/RIF, LPA, etc.)	100% ; 41 (38 Xpert, 1 NTRL, 2 RTRLs)/41 Source: NTP	100% (41/41)	100% (41/41)
2.5.1. Status of national LQMS	0	0	0
2.6.4. # of specimens transported for TB diagnostic services	75/Quarter (2014) Source : CTB	75/qtr.	75/qtr.
2.7.1. #/% of laboratories implementing (internationally recommended) national biosafety standards (stratified by laboratories performing culture, DST and Xpert)	33% (1/3), 2014 Source: NTP	67% (2/3)	33% (1/3)

Indicators related to patient centered care

Outcome Indicator	**Baseline** **(Year/Timeframe)**	**Target Y1**	**Result Y1**
3.1.1. Number and percent of cases notified by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach	191,166 (2014)	193,000 (121)	204,208 (128) (Oct 2014-Sept 2015) 7,708 are children (3.8%)
3.1.3. Case Notification Rate	122	125	128
3.1.4. Number of MDR-TB cases detected	994	1000	986
3.1.8. % of TB cases (all forms) diagnosed among children (0-14)	2.9% (5,543/ 191,155)	3% (5,790/ 193,000)	3.8% (7,708/ 204,208)
3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.).	94% (99,140/ 105,390) 2013 Cohort Source : NTP	101,595 95%, (101,595/106,773), 2014 Cohort Source : NTP	97,745 92% (97,745 / 106,773) Source : NTP 2014

3.2.4. Number of MDR-TB cases initiating second-line treatment	945	1,400	911
3.2.7. Number and percent of MDR-TB cases successfully treated	73%	73%	73%
3.2.24. % MDR patients who receive social or economic benefits	100% (835/835)	100% (835/835)	Nationwide: 100% (911/911) CTB-supported: 100% (835/835)
Number of EPTB cases detected	37,712	38,600	42,252
5.1.2. Number and percent of health facilities implementing TB IC measures with CTB support (PMDT services)	0, 0%	2, 33%	0, 0%

Outcome indicators for active case finding and LTBI.

Outcome Indicators	Baseline (Year/Timeframe)	Target Y1	Result Y1
4.1.2. #/% of children (under the age of five) who are contacts of bacteriologically-confirmed TB cases that are screened for TB	Unrecorded	2,500, 100%	1,031, 100%
6.1.11. Number of children under the age of 5 years who initiate IPT	3848 (2014) Source : NTP	4,000	5,260 Through CTB: 1,392 (sub-grantees)

Indicator value for ancillary drug values and result

Outcome Indicator	Baseline (Year/Timeframe)	Target Y1	Result Y1
9.2.1. # of new and ancillary drug regimens that have become available in country since the start of Challenge TB	0	1	0

Indicator value for operations research, evaluation or epidemiological assessment study

Outcome Indicator	Baseline (Year/Timeframe)	Target Y1	Result Y1
10.2.4. #/% of operations research, evaluation or epidemiological assessment study results disseminated (stratified by level of dissemination: report, presentation, publication)	0	0	0

Indicators value and result on HRD

Outcome Indicators	Baseline (Year/Timeframe)	Target Y1	Result Y1
11.1.3. # of healthcare workers trained, by gender and technical area	0 (2014)	6,500	654 Male: 529 Female: 125

Indicators value and result on political commitment and leadership strengthened

Outcome Indicators	Baseline (Year/Timeframe)	Target Y1	Result Y1
7.2.1. Percent of NTP budget financed by domestic resources	4.9%	10%	4.9%