NATIONAL STRATEGIC PLAN
PUBLIC-PRIVATE MIX IN TUBERCULOSIS
(2016-2020)

National TB Control Programme
Directorate General of Health Services
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National Tuberculosis Control Programme (NTP)
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Foreword

TB is the leading cause of death from an infectious disease worldwide. In 2014, there were an estimated 9.6 million new TB cases globally and 1.5 million deaths due to TB. These deaths occur despite the fact that TB is a curable disease. Tuberculosis is one of the major public health problems in Bangladesh with an estimated incidence of about 360,000 per year.

With current effort, NTP is achieving more than 90% overall treatment success rate; however detecting only 53% of the estimated cases. It is assumed that most the missing cases are being diagnosed and treated by the large private sectors of Bangladesh and perhaps majority of them are not following the international standards of TB care (ISTC). In this situation, to detect and manage those missing cases with ISTC and to notify those patients to NTP (as TB is a notifiable disease), successful implementation and expansion of Public Private Mix (PPM) is the most appropriate option.

NTP recognizes its critical role in leading national efforts to combat TB through all means, including public-private mix. This PPM strategic plan outlines NTP's priorities for expanding TB case detection, treatment and care through qualified and semi-qualified providers in multiple sectors. The aim of the program is to ensure that quality TB control services are available wherever patients seek care and all diagnosed TB are notified to NTP.

I hope this PPM Strategic Plan will guide NTP and its partners to better engage all health-care professionals involved in the National Tuberculosis Control Programme of Bangladesh. I also hope that expanded services at the central, peripheral and community levels among both public and private providers will enable Bangladesh to close the 47 percent gap in case detection with the guidance of this important document..

On behalf of NTP Bangladesh I would like to express my heartfelt thanks to all who has contributed their efforts in preparing this strategic plan.

Dr. Md. Quamrul Islam
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NTP with gratitude acknowledges the contribution of the resource persons in preparing this document which will provide strategy and guidance for implementation of TB control program through Public Private Mixed approaches.

The contribution of the implementing, technical and academic partners is gratefully acknowledged. We thank them for their enthusiastic participation and support and we hope to implement this together.

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Abbreviations

ACSM	Advocacy Communication and Social Mobilization
BEPZA	Bangladesh Export Processing Zones Authority
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BKMEA	Bangladesh Knitwear Manufacturers and Exporters Association
BLF	Bangladesh Lung Foundation
BMA	Bangladesh Medical Association
BPA	Bangladesh Paediatric Association
BPMPA	Bangladesh Private Medical Practitioners Association
BSCIC	Bangladesh Small and Cottage Industries Corporation
CHCP	Community Healthcare Provider
CME	Continuing Medical Education
CTB	Challenge TB Project
CXR	Chest X-ray
DEPZ	Dhaka Export Processing Zone
DF	Damien Foundation
DGHS	Directorate General of Health Services
DGFP	Directorate General of Family Planning
DMC	Dhaka Medical College
DOTS	Directly Observed Treatment (short-course)
DPM	Deputy Program Manager
DR	Drug resistant
DS	Drug sellers
EP	Extra-pulmonary
GF	Global Fund
GoB	Government of Bangladesh
GPP	Graduate private practitioner
GPS	Global positioning system
GXP	GeneXpert
HR	Human resources
HRD	Human resources development
HSC	Higher Secondary Certificate
IEC	Information, education and communication
IHCP	Informal healthcare provider
ILO	International Labour Organization
IPT	Isoniazid preventive therapy
IRD	Interactive Research and Development
ISTC	International standards of TB care
JMM	Joint Monitoring Mission
LOE	Level of effort
KNCV	KNCV Tuberculosis Foundation

M&E	Monitoring and evaluation
MBA	Master of Business Administration
MBBS	Bachelor of medicine, bachelor of surgery
MBDC	Mycobacterial disease control
MDR	Multi-drug resistant
MIS	Management information system
MO	Medical officer
MoL	Ministry of Labour
MO TB/DC	Medical officer tuberculosis/disease control
MOHFW	Ministry of Health and Family Welfare
MOU	Memorandum of understanding
MPH	Master of public health
MSH	Management Sciences for Health
NGO	Non-governmental organization
NGPP	Non-graduate private practitioner
NSP	National strategic plan
NTP	National TB Control Programme
OPD	Outpatient department
PO	Program organizer
PP	Private provider
PS	Pharmacy staff
PPM	Public-private mix
SC	Screening centres
SEM	Social enterprise model
SIAPS	Systems for Improved Access to Pharmaceuticals and Services Project
SMC	Social Marketing Company
SMS	Short message service
SP	Strategic plan
SS	Shasthya Shebika
TB	Tuberculosis
TLCA	Tuberculosis and leprosy control assistant
TLCO	Tuberculosis and leprosy control officer
ToR	Terms of reference
ToT	Training of Trainers
TWG	Technical working group
UHC	Upazila health complex
UH&FPO	Upazila health and family planning officer
UM	Upazila manager
USAID	United States Agency for International Development
VD	Village doctor
WHO	World Health Organization

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1. Introduction

1.1 Purpose and Scope

This 2016-2020[1] public-private mix strategic plan (PPM SP) is a 4-year framework designed to guide the National TB Control Programme (NTP) and its partners to implement PPM in Bangladesh. It provides goals, strategies and interventions for expanding and scaling up current PPM models and outlines approaches to further enhance and strengthen PPM coordination and partnerships among NTP, non-governmental organizations (NGOs) and private health providers.

1.2 NTP Mission and Strategic Goal

NTP's mission is to eliminate TB as a public health problem in Bangladesh. The PPM strategic goal documented in the National Strategic Plan (NSP) 2015-2020 is to contribute to NTP's overall strategic goal to reduce the prevalence of TB (all forms) by at least 10 percent by 2020, and by five percent annually after 2020. The strategic goals and objectives outlined in this PPM strategic plan have been designed to contribute to this NSP mission.

1.3 PPM Goal and Strategic Objectives

The goal of the PPM SP is to strengthen and expand the engagement of private sector providers, and of selected public institutions, NGOs, corporate sector and professional associations and bodies that are not yet optimally engaged in the fight against TB, in order to reduce the 47 percent gap in case detection, sustain treatment success of 90 percent (drug susceptible), increase access to diagnosis for multi-drug resistant TB (MDR-TB) and contribute to the reduction of MDR-TB incidence.

Six strategic objectives frame the plan. These are to:

1. Ensure effective PPM leadership and stewardship through high-level engagement, active oversight and management, and resource mobilization.
2. Develop and operationalize appropriate PPM mapping tools, data collection systems, databases and supervision tools to standardize and enhance monitoring, recording, reporting and analysis of PPM results.
3. Strengthen collaboration and expand partnerships between NTP, private and public medical college hospitals, select high-volume hospitals and medical associations.
4. Expand the involvement of private individual providers and facility-based graduate medical practitioners in TB case detection, management, care and notification.

[1] The specific time period for this plan is July 2016 through June 2017.

5. Increase the active involvement of village doctors (VDs), drug sellers (DS) and pharmacy staff (PS) in case finding and Directly Observed Treatment (Short-Course) (DOTS) provision.
6. Improve the environment for TB control in factories by introducing policies and regulations for annual TB screening and sustain and strengthen current TB services provided through workers' associations.

1.4 Plan Development

The process of developing the SP was guided by the Bangladesh National TB Control Program and its key partners under the authority of the Directorate General of Health Services (DGHS). The plan was developed through a structured process carried out between May 2nd and June 30th, 2016. Steps in the process included review of key documents (1) (2) (3) (4) (5) (6) (7); stakeholder meetings; a four-day PPM strategic planning workshop to define PPM strategic objectives, key PPM models and activities; follow-up meetings with stakeholders and costing of activities; plan compilation and a participatory stakeholder review of the plan and projected costs. Key contributors to the elaboration of the plan included NTP, representatives from the Ministry of Health and Family Welfare (MOHFW) Human Resources (HR) and finance departments, BRAC, the Damien Foundation (DF), International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), Social Marketing Company (SMC), Bangladesh Garment Manufacturers and Exporters Association (BGMEA), Bangladesh Medical Association (BMA), Bangladesh Private Medical Practitioners Association (BPMPA), Chest and Heart Association, Bangladesh Labour Welfare Foundation (BLF), Bangladesh Paediatric Association (BPA), implementing partners, technical agencies including Challenge TB (CTB), KNCV, and Interactive Research and Development (IRD) as well as the United States Agency for International Aid (USAID) and the World Health Organization (WHO).

The SP aims to focus the NTP and PPM partners on the most important interventions that NTP believes will bring about significant changes in TB case detection and treatment success. It was developed with a focus on outcomes, emphasizing greater involvement of private graduate medical practitioners and public and private hospitals, where it is suspected a significant number of TB cases are currently missed. The PPM models and interventions represented in this plan were identified based on existing evidence and experience. While defining specific goals and approaches, the stakeholders who developed this plan recognize that objectives and interventions must be flexible enough to accommodate new information. For example, it is anticipated that modifications to the PPM SP may be needed once the TB prevalence report is made available in mid-2016. While the plan outlines priority models and interventions, annual operational plans will identify additional PPM interventions throughout the course of the strategic plan implementation. Finally, the PPM strategic plan aims to promote partnerships among stakeholders and to create a shared vision and course of action among NTP and its key PPM partners.

2. Situation Analysis

2.1 The National Context

Tuberculosis (TB) is a major cause of illness and death worldwide. In 2014, 9.6 million people were infected with TB worldwide and 1.5 million died from the disease (8) (9). Over 95 percent of TB deaths occur in low- and middle-income countries, with WHO's South-East Asia region[2] accounting for 58 percent of new cases in 2014 (8).

Bangladesh is among the 22 high TB burden countries identified by WHO and the Stop TB Partnership (10). The 22 'high TB-burden' countries together account for 80 percent of TB cases worldwide. WHO has also ranked Bangladesh among the 27 countries globally considered "high MDR-TB burden." Bangladesh has an estimated TB incidence rate of 227/100,000 for all forms of TB and a prevalence of 404/100,000, resulting in an estimated 640,000 prevalent, 360,000 incident cases, and 81,000 fatalities per year (8) (3). In 2014, there were 187,005 new cases of TB notified in Bangladesh (3). TB is among the top ten causes of death in the country (11). Efforts to stop the spread of disease are consistently hindered by a case detection that hovers only around 53 percent, indicating that almost half of people with active TB are not identified or treated by the existing system (3). It is for this reason that greater involvement of the private sector and expansion of TB services in the public sector are critical to addressing TB in Bangladesh.

The gaps in TB case detection exist despite the substantial TB service expansion achieved by the Bangladesh government. In 1993, NTP introduced the DOTS strategy and since 2007, DOTS has been available throughout the country free of charge (3). Over the last 15 years, TB case detection has steadily increased and the treatment success rate is reported to be around 94 percent. This success is partially attributed to the extended partnerships between NTP and its implementing partners who support TB education and information dissemination, presumptive TB case identification, referral of presumptive cases for diagnosis, provision of DOT, as well as increasing the availability of improved diagnostic technologies such as GeneXpert MTB/FIB and digital X-Rays, which allow for fast and accurate diagnosis of TB cases, including drug resistant (DR) TB.

2.2 The Private Healthcare Sector in Bangladesh

Bangladesh has a pluralistic health sector with public sector health services co-existing with qualified, semi-qualified and non-qualified private sector services. There are roughly 65,000 registered physicians in Bangladesh (12), approximately 53 percent of whom operate exclusively in the private sector. Many of the 24,000 physicians employed by the

[2] The WHO South-East Asia region includes the following countries: Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste.

DGHS also work as private practitioners outside of government service hours. The 2014 Joint Monitoring Mission (JMM) report noted stakeholder estimates that more than 90 percent of public providers also conduct a private practice (6), meaning that virtually all physicians conduct private practices regardless of whether they are also employed in the public sector. There are an estimated 450 chest specialists in Bangladesh, a majority of which serve in public medical institutions.[3] The DGHS has registered 4,280 private hospitals and clinics and 9,061 private diagnostic centres (12). There are 102 registered medical college hospitals in Bangladesh, 29 of which are public, six autonomous (mainly armed forces) and 67 private.[4] To give a sense of the scale of the formal private hospital sector in comparison with the public sector, there are an estimated 48,500 hospital beds available in the public sector, as compared to 74,600 in the private sector (12).

Serving the population throughout urban neighbourhoods and sub-urban areas is a large array of village doctors,[5] drug-sellers and pharmacy staff. There are an estimated 103,450 licensed drug shops and likely an equal number of unlicensed shops in Bangladesh (13). These providers are a frequent first point of care. A 2010 survey found that 84 percent of people with persistent cough in Dhaka first sought care with a private provider (PP) compared to 16 percent who sought care at an NTP DOTS facility (14). Another report similarly estimated that "over 80% of people in Bangladesh turn to non-state sector providers, with village doctors and drug sellers a frequent first resort of uncertain quality" (15 p. i). The numbers of village doctors/drug sellers are not known, but data from The State of Health in Bangladesh 2007, indicates that as many as 340,000 may be operating in the country (15).

Diagnostic and treatment practices among graduate medical practitioners and unqualified providers vary greatly; some refer clients with presumptive TB symptoms for further evaluation and others hold the case and treat clients with cough medicines, antihistamines, antibiotics, or even with variable TB regimens.These practices are harmful and have many implications, the most serious: increasing the diagnostic delay and intensifying the risk for developing MDR-TB. Of note, however, TB drug sales in the private sector in Bangladesh are modest, covering only seven percent of the incident TB cases; importantly, they declined by 51 percent between 2004 and 2009 (16). Anecdotal evidence suggests that the decline was driven by widespread publicity about free public sector TB drugs and that the decrease of the private sector TB drug market has continued due to low customer demand.

Health services are also provided by NGO partners through graduate medical practitioners operating in NGO clinics. NGOs have also served as an important link between NTP and informal, non-qualified, or semi-qualified providers such as village doctors/drug sellers,

[3] Challenge TB estimate based on consultations with relevant medical associations.
[4] DGHS record review.
[5] The term "village doctor" captures a number of different non-qualified medical providers in Bangladesh including non-qualified allopathic providers previously engaged by the Bangladesh government and other non-qualified allopathic providers.

pharmacy staff other non-graduate private practitioners, and community health workers, such as Shasthya Shebika (SS).

2.3 The PPM Response

In 2015, the five-year NSP for TB Control (2015-2020) defined the ambitious goal to: "reduce the prevalence of all forms of TB by at least 10% by 2020 and by 5% annually and thereafter, increase annual detection rates of TB and maintain a treatment success rate of at least 90% for all forms of TB" (4). This goal is in line with the Global End TB strategy and engagement of all public and private providers must be strengthened and expanded in order for it to be reached. Decreasing the gap in case detection and reducing TB prevalence cannot be achieved by the public sector alone; to achieve success, NTP needs to involve other graduate medical practitioners and village doctors/drug sellers and pharmacy staff in the private sector. PPM is thus an essential strategy for achieving the goals of the NSP for TB Control.

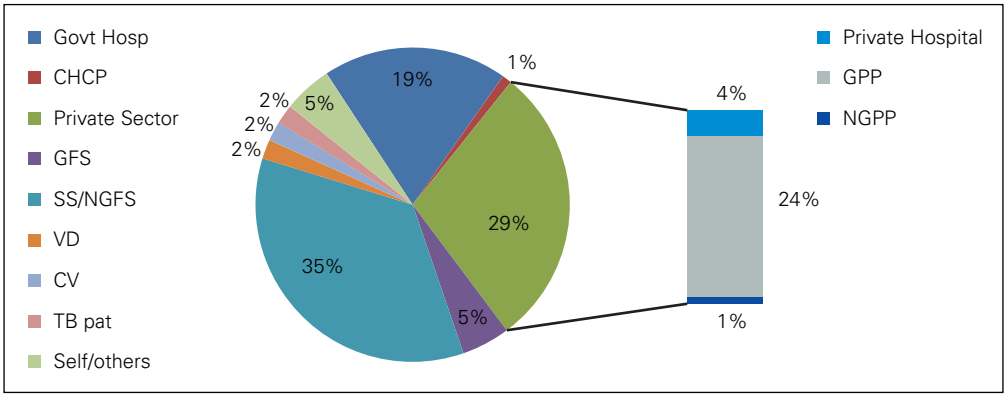
PPM is a cross-cutting strategy within the NSP that contributes to the national TB control goals and objectives. Objective 4, "strengthen the engagement of all public and private care providers" (4 p. 56), directly emphasizes the importance of public-private mix. Under Objective 1, "increase annual case detection of all forms of TB to 230,000 by 2020" (4 p. 58), strategic intervention 8.1.11 stresses the need to "strengthen the engagement of PPs in the diagnosis of TB" (4 p. 60). This strategic objective also aligns with Pillar 2 of the Global End TB strategy, "bold policies and supportive systems," which requires a comprehensive approach to TB detection and management to reach targets (17).

The goal of partnering and engaging with all care providers is to find TB cases early, reduce treatment seeking delays, and ensure fast and appropriate diagnosis and treatment using standardized diagnostic tools and treatment algorithms. Overall, PPM ought to help strengthen the health system by enhancing the contribution of all care providers – public, private, voluntary and corporate – to achieve national and international public health goals. In the context of Bangladesh, NTP recognized early the challenges of finding and successfully treating all TB cases on its own. It responded by engaging NGO partners in TB control. Since the first Memorandum of Understanding (MOU) with NGO partner BRAC was signed in 1994 to implement DOTS activities in rural areas, the partnership has expanded. In general, NTP collaboration with NGOs in broader TB control efforts in Bangladesh is so well established as a concept and practice that it is not further analysed in this PPM strategy, except by examining how NGOs can intensify their efforts specifically to reach private providers.

PPM initiatives in Bangladesh currently involve qualified and semi-qualified healthcare providers, public and private medical college hospitals, graduate institutes, private hospitals, district hospitals, chest diseases clinics and hospitals, NGOs, civil society organizations, and informal healthcare providers (IHCP) such as village doctors, drug sellers and pharmacy staff. PPM initiatives are implemented in urban as well as rural areas and TB case detection rates, though still relatively low, have increased over the years. In

2015, PPM contributed roughly 49 percent of all cases detected, of which 29 percent were from the private sector, 2 percent from the informal sector, and 19 percent from government hospitals (Figure 1). The NTP has formed a national PPM committee, represented by national and international partners, with the task to facilitate PPM activities in the country and a PPM working group at the national level involving the PPM focal point at NTP and key stakeholders from WHO, BRAC, DF, iccdr,b, CTB and the BPA. PPM working groupswere also created at the divisional level, but they are not presently active.

Figure 1: Cases Notified (all forms) 2015 (18)



CV = community volunteer; VD = village doctor; SS = Shasthya Shebika; NGFS = non-governmental facility staff; GFS = government facility staff; NGPP = non-graduate private provider; GPP = graduate private provider; CHC = community healthcare practitioner

Despite the progress made so far, a number of challenges have been identified in the implementation of PPM activities. Many providers are not formally or regularly engaged. Standardized formats for referral of presumptive cases are not in use and there are no feedback systems to inform providers of the status of the referral. Monitoring and supervision of providers has also been a challenge. The NTP M&E system captures the contributions of PPM providers in terms of referrals made and identification of cases referred by provider, but does not currently monitor the number of PPM providers trained, proportion of those actually trained who are "actively engaged" (referring or diagnosing cases, or providing DOTS), or number of TB patients receiving treatment or DOTS from a PPM provider. In addition, lack of clarity about definitions of providers in the TB treatment card raises questions about the accuracy of some of the data. Supervision of PPM providers is irregular and in some areas non-existent and NTP supervision checklists do not include PPM. International Standards of TB Control (ISTC) have been adopted by NTP but have not been disseminated as yet, though plans are underway for translation, printing and dissemination through conferences and associations and other meetings. Involvement of medical associations in PPM is minimal, with only a few relevant medical associations engaged by NTP. Finally, mandatory notification is not yet operationalized and updated PPM guidelines are yet to be finalized (6).

2.4 Summary of Existing PPM Interventionsin Bangladesh

2.4.1 Hospital Engagement

The hospital model has focused on engaging public and private medical college hospitals and select high-volume hospitals in TB control activities. Currently 38 out of 102 medical college hospitalsare involved in PPM activities. These hospitals see a large volume of patients for diverse health issues, including TB, and are well known for their medical expertise and diagnostics. An additional seven high-volume general hospitals have been engaged using the same model. The model increases access to TB services by training physicians and creating DOTS corners in the hospital. Patients are screened and referred to appropriate departments for further evaluation. Typically, in accordance with best practices, the vast majority of patients are referred to DOTS facilities closer to their home soon after treatment initiation. BRAC supports 33 hospitals and DF supports five medical college hospitals. In 2015,16,000 TB cases were identified in these medical colleges and the seven general hospitals. Since its initiation, the model has shown great potential for identifying and successfully treating a large number of TB cases,significantly contributing to NTP's goals. However, there are still a number of bottlenecks in the implementation that should be addressed during the scale-up, such as standardization for screening of presumptive cases; training of providers with a standardized training package; introduction and implementation of mandatory notification; recording and reporting systems; and creating linkages and referral and feedback systems among all hospital departments, as well as NTP- and NGO-supported DOTS providers. It is also a priority to scale-up this and other models to full coverage; see Section 4 for details.

2.4.2 Engagement of Graduate Medical Practitioners

While engagement of community cadres, village doctors and drug sellers has been implemented on a fairly large scale, the engagement of graduate medical practitioners outside of medical college hospitals has been focused mainly in Dhaka and the exact scope of engagement has not been well documented in all interventions. Two principle models have been implemented: a social enterprise model (SEM) and an individual private provider engagement model. The SEM model was initiated by icddr,b in 2014 and has shown some promising results. It has reached 1,800 graduate medical practitioners in individual practices and private hospitals or clinics. In this model, graduate medical providers are linked to a TB screening centre (SC) that carries the icddr,b brand and offers digital x-ray and GeneXpert tests. There are presently three screening centres established in Dhaka with three entry pathways to the SCs for clients with presumptive TB symptoms. They are either referred to the SCs by a PP in the network, referred by a public hospital (for diagnostics of smear negative or extra pulmonary presumptive cases), or they come on their own. TB-confirmed patients have the option of receiving treatment from an NTP DOTS facility, including NTP affiliated DOTS centres supported by NGOs, or continuing care with their private provider and paying for TB medications. In the last 2 years, more than 55,000 presumptive cases were tested in the SCs with GeneXpert and

slightly over 10 percent (5,700) of these were confirmed TB cases. Clients are charged a fee for X-rays and the resultant revenues partially support the operation of the SCs.

The individual private provider engagement intervention has been implemented largely by NGOs as sub-recipients to BRAC, a Global Fund principal recipient, and through NGOs with other implementing partners, such as the USAID-funded Challenge TB project. This approach includes motivating private graduate medical practitioners operating in small clinics and hospitals in the community to link to NTP and affiliated NGOs. Motivation is typically done through networking meetings that provide information and education on NTP, presumptive TB identification, NTP diagnostic centre location and referral procedures. Practitioners are encouraged to refer patients with presumptive TB symptoms to an NTP DOTS facility for diagnosis and treatment. The providers engaged through this approachare not well-captured, making it difficult to assess the effectiveness, both in terms of cost and output, of the model.

NTP has also worked with medical associations to disseminate information about TB treatment, specifically the availability of free DOTS in NTP/NGO centres, mandatory case notification, and TB diagnosis. Few medical associations in Bangladesh, the BPA being an exception, have the administrative and management structures required to manage direct funding. As a result, NTP and its partners have supported medical associations and societies by funding discrete activities, such as publishing TB information in association publications and hosting TB sessions at association conferences. There is scope for improving and formalizing the engagement of medical associations in mobilizing private general medical practitioners to adhere to NTP and ISTC standards of care, referring and linking to NTP treatment centres, and conforming to regulations on mandatory case notification. Medical associations have shown a willingness and interest in collaborating with NTP. Expanding and strengthening the engagement of medical associations will provide opportunities for increasing information dissemination and continuing medical education for private graduate medical practitioners through association platforms. NTP can increase and formalize relationshipswith medical associations and societiesby defining clear activities, objectives and working agreements and documenting these through Memoranda of Understanding (MoUs).

2.4.3 Informal Healthcare Providers[6]

The engagement of village doctors, drug sellers and pharmacy ownersand staff started in 1998 with the goal to engage semi-qualified providers at the community level in TB control activities. The primary model for involvement of these providers was initiated by the Damien Foundation. It is currently implemented by DF and other NGOs. The approach entails engaging village doctors, drug sellers, and pharmacy owners and staff in the

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[6] Informal providers in this context refer to village doctors, drug sellers and pharmacy staff and owners. These providers typically have informal training, collect their payment directly from patients or clients rather than institutions, and are not registered or regulated (24).

identification and referral of presumptive cases to DOTS facilities. Some village doctors are also involved in providing DOTS, contact tracing, keeping TB drugs and records, and supporting sputum collection and slide smearing.

There are approximately 340,000 village doctors and drug sellers of which 36,016 have been trained in identification and referral of presumed cases and roughly 4,000 are estimated to be actively referring. Though contributing only two to three percent of case detection nationwide, data from DF-supported areas where the model is implemented suggests that, in those areas, it is contributing 14 percent to case detection. Village doctors and drug sellers also provide more than 60 percent of DOTS in DF locations.Engagement of rural providers has been more systematic than that of urban providers and there is now an opportunity to expand engagement of these providers in both rural and urban settings. However, the model needs to be better defined in terms of types, numbers and location of the different providers engaged. The level of engagement of each provider needs to be defined, measured and accurately recorded and reported and differences in the tasks and level of engagement for rural versus urban areas needs to be more clearly defined. Standardized referral and feedback systems also need to be designed and introduced; these will include referral tools and appropriate feedback approaches. In addition, the cost effectiveness of this model needs further evaluation.

2.4.4 Promotion and integration of TB Services in Workplaces

BRAC, in partnership with a number of associations, has integrated TB control services into workplaces with a focus on factory settings. BGMEA established DOTS centres in the 11 clinics it operates for factory workers employed in 600 of roughly 3,500 factories and has put in place policies that entitle workers who have TB to 14 days paid leave. The Damien Foundation is also working in Dhaka Export Processing Zone (DEPZ) covering approximately 80,000 garment workers. Other initiatives have targeted Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA), Bangladesh Small and Cottage Industries Corporation (BSCIC) and Bangladesh Export Processing Zone Authority (BEPZA). Despite serving large populations of workers, roughly one million[7], these efforts have yielded relatively few TB cases to date; BGMEA, for example, identified roughly 300 TB patients in 2015 and DF 166. Fear of job loss or lost wages inhibits patients from seeking services, despite the fact that workers are legally entitled to two weeks paid leave to start treatment and job protection. While having tremendous potential, this approach will remain inefficient and ineffective if worker awareness of existing policies is not expanded and if policies and regulations are not enhanced to mandate routine health screening for factory workers. In addition, a 2015 study by BRAC suggests that while workers in factories with TB outreach and services have a good awareness about TB

[7] This estimate includes 700,000 reached through BGMEA (roughly 14% of the total workforce covered by BGMEA, source interview with BGMEA TB project director) and 273,000 (73% of the total reported workforce of 374,008) for the BEPZA areas of Chittagong and Dhaka where TB interventions have been implemented. (20)

symptoms (72%) and free treatment (86%), knowledge of TB prevention, transmission, and the need for treatment completion are poor, suggesting that more needs to be done to expand worker awareness of TB transmission and treatment adherence in workplace settings (19).

2.4.5 Other Interventions

There are several other interventions that have been included under PPM in Bangladesh in the past, which will not be a focus in this strategic plan. Community interventions, such as the BRAC Shasthya Shebika model, have previously been reported as part of PPM. For this strategic plan, SS are considered to be outside of PPM and part of community DOTS. Likewise, provision of TB services in prisons has been undertaken by icddr,b, BRAC and DF. The approaches used have been diverse because the prison system in Bangladesh is varied. Only the largest national prison has a doctorthough screening for TB is available in all prisons. Up to now, screening for TB has been done by project staff, but efforts are planned to train inmates as TB screeners.Inmates diagnosed with smear negative or extra pulmonary TB are referred out for further evaluation. DOTS is done by the prison paramedic with doctors doing follow-up wherever available. NTP considers prisons a special initiative to be addressed outside of this PPM strategic plan.

2.5 Policy and Regulatory Environment for PPM

The collaboration between the NTP and its PPM partners has contributed to significant progress in integrating qualified, semi-qualified, and non-qualified providers in TB control. However, appropriate and timely dissemination and utilization of national and international policies and guidelines will improve the environment for and implementation of PPM.In addition,unification of PPM indicators and utilization of monitoring and evaluation databasesacross all PPM partners can improve recording and reporting and thus provide a more accurate representation of types and numbers of providers engaged and their contribution to case detection and treatment success. This information can be very useful for future planning, help mobilize funding and also be used to share progress in national and international reports and forums. Mandatory notification of TB is now gazetted, providing the NTP with an opportunity to improve the identification and monitoring of TB cases in the country, but this will require a simple, likely electronic referral and notification system that is acceptable to private providers.

2.6 PPM-relatedGaps Identified in the TB NSP

In addition to the gaps and opportunities noted above, there are a number of other gaps in NTP activities outlined in the NSP 2015-2020 that PPM can bridge by engaging all public and private providers and strengthening linkages and collaboration between NTP and all partners. These include:

1. Case detection (6.1)
    - No systematic screening for TB in hospital outpatient departments (OPDs)(6.1.3)

- Insufficient access to TB diagnostic and treatment facilities in urban areas (6.1.4)
- Active contact tracing policy not yet implemented everywhere (6.1.6)
- No systematic screening efforts at the upazila level (6.1.8)

2. Treatment (6.3)
   - Insufficient supervision of DOTS providers (6.3.1)
3. Supervision (6.5)
   - Insufficient frequency of supervision activities (6.5.1)
   - No integration of NTP and NGO supervision activities
4. Involving all care providers (including public, private, and all care providers including partners such as NGOs (6.10)
   - Incomplete programmatic coverage results in variable practices by providers 6.10.1
   - No standardized recording and reporting for patients detected in the private sector 6.10.2
   - Insufficient monitoring and strategic planning of the NTP's partners' involvement with the private sector 6.10.3
   - Lack of operationalization of the gazette on mandatory case notifications 6.10.4

3. Strategic Design

3.1 Alignment with NTP Strategies

The PPM objectives in Table 1 align with the objectives outlined in the NSP under Pillar 1 and Pillar 2.

Table 1: Comparison of TB NSP and PPM SP Goals and Objectives

NTP Strategic Goal: Reduce prevalence of TB (all forms) by at least 10% by 2020 and by 5% annually after 2020.	PPM SP Strategic Goal: Strengthen and expand the engagement of private sector providers and selected public institutions, NGOs, corporate sector and professional associations and bodies that are not yet optimally engaged in the fight against TB, in order to reduce the 47 percent gap in case detection, sustain treatment success of 90 percent (drug susceptible), increase access to diagnosis for MDR-TB and contribute to the reduction of MDR-TB incidence.
TB control objectives that can be addressed by PPM interventions under Pillar 1 and Pillar 2 Objective 1: Increase annual case detection of all forms of TB to 230,000 by 2020 (from baseline of 184,507 in 2013) Objective 2: Maintain a treatment success rate of at least 90% in all forms of detected non MDR-TB cases (drug sensitive TB cases) and ensure quality-controlled treatment services at all implementation sites Objective 4: Strengthen the engagement of all public and private care providers Objective 6: Ensure that all TB service facilities will receive regular supervision and monitoring, and produce timely and accurate reports by 2017	PPM Strategic Objectives 1. Ensure effective PPM leadership and stewardship through high-level engagement, active oversight and management, and resource mobilization. 2. Develop and operationalize appropriate PPM mapping tools, data collection systems, databases and supervision tools to standardize and enhance monitoring, recording, reporting and analysis of PPM results. 3. Strengthen collaboration and expand partnerships between NTP, private and public medical college hospitals, select high-volume hospitals and medical associations. 4. Expand the involvement of private individual providers and facility-based graduate medical practitioners in TB case detection, management, care, and notification. 5. Increase the active involvement of village doctors, drug sellers and pharmacy staff in case finding and DOTS provision. 6. Improve the environment for TB control in factories by introducing policies and regulations for annual TB screening and sustain and strengthen current TB services provided through workers' associations.

3.2 Providers and Targets

Between 2016 and 2020, NTP and its partners will focus their efforts on expanding the engagement of qualified private physicians (including chest specialists), village doctors, drug sellers and pharmacy staff and public medical college hospitals in TB control. Several PPM models have been prioritized to achieve this aim. Table 2 presents the providers and expectations for expansion by 2020. Section 4 provides detailed descriptions of these models.

Table 2: Provider Targets 2016-2020

Private Providers	Total	Currently "Engaged"	Expansion Target	Target %
Medical College Hospitals!	102	38	80	78%
Graduate Medical Practitioners	60,761	29,795!!	49,954*	82%
Relevant Professional Associations	12	2	12	100%
Informal Healthcare Providers**	340,000	4,000!	40,000	12%
Workplaces	6,334#	688	1156^	18%

! In addition to the 38 medical college hospitals, seven high-volume general hospitals have been engaged using this same approach. Expansion targets for high volume hospitals are yet to be identified.

!! Includes SEM = 1800; BRAC 38 MCH = 6251 (estimate); BRAC PP through NGOs = 21,744.

* Includes SEM target =14,700; BRAC 80 MCH = 13,160; BRAC PP pilot target = 350; BRAC PP through NGOs 21,744.

** Scale-up numbers include those to be engaged by all partners implementing this model and related interventions (e.g. DF, BRAC, SMC and CTB).

! Note that previous estimates of village doctors, drug sellers and pharmacy staff "engaged" were based only on those "oriented/trained." In this strategic plan "engaged" has been defined more narrowly to represent those who are actually referring cases and/or providing DOTS. The number currently engaged represents DF's estimate of those who are actually active rather than merely those who have been oriented/trained.

Considers 3,500 garment factories, 2,000 knitwear factories, 117 tobacco factories, 148 jute factories, 419 factories under BEPZA and 150 tea gardens. Together, these factories represent roughly 6 million workers.

^ represents 800 garment factories (BGMEA); 154 industrial areas to be covered by CTB; and 200 additional factories in the Dhaka EPZA and 2 EPZA covered by BRAC.

3.3 PPM Leadership and Coordination

The leadership and coordination of all partners and PPM activities is under the responsibility of the NTP. The NTP has established the PPM committee whose responsibility is to lead, advocate for resource mobilization, coordinate and provide guidance to all PPM activities. The PPM Committee terms of reference will be revised and bi-annual meetings will be organized to discuss progress and technical issues and develop and agree on action plans. The PPM committee, under its coordination agenda, will seek to strengthen and expand the partnerships between the professional associations and societies engaged in PPM and also with the International Labour Organization (ILO), Ministry of Labour (MoL) and factory owners to ensure inclusion of TB in workplaces.

The PPM technical working group (TWG) is made up of representatives of NTP, partners and donors. The TWG meets on a quarterly basis and will be responsible for monitoring progress in the implementation of PPM strategic and operational plans and other activities in line with its terms of reference.

NTP, the PPM Committee and the PPM TWG will oversee the implementation of the PPM SP and co-ordinate the work of all PPM partners. NTP and PPM partners will ensure a high level of responsibility, accountability and transparency at all levels of implementation. Development, adaptation and dissemination of related policies, protocols, guidelines and training materials will enable successful implementation and better outcomes. The implementation of the PPM strategic plan will also be guided by the key finding of the TB prevalence report due to be released in mid-2016 and modifications to the plan will be made as needed.

3.4 Roles and Responsibilities of PPM Partners

NTP and its partners will work collaboratively to implement the PPM SP and will jointly work to achieve PPM strategic objectives by assuming the following roles and responsibilities.

NTP: The role of NTP is to provide leadership and stewardship to all TB control activities inclusive of PPM interventions, which falls under the component of engaging all public and private providers in TB control.

The NTPs' responsibilities include but are not limited to the following:

- Advocacy and policy that places TB high in the agenda of the Government of Bangladesh (GOB) and MOHFW.
- Create, enhance and expand partnerships at all levels, including the provision of training, when and where needed.
- Ensure engagement of NTP staff at divisional, district and upazila levels in PPM planning, supervision, monitoring and reporting.

- Policy development and adaptation of related policies, tools, guidelines and strategies.
- Appropriate and timely dissemination of related TB documents and annual reports.
- Appropriate management of GOB resources and grants with uninterrupted supplies of anti-TB drugs, supplies, and commodities and available financial support for activities.
- Training and supervision of providers.
- Program supervision, monitoring and evaluation.

The key responsibilities of PPM Partners include but are not limited to the following:

- Utilization of national NTP guidelines, training materials, referral and monitoring and supervision tools.
- Appropriate and timely implementation of PPM activities outlined in the SP Activity Framework and those to be defined in annual operational plans.
- Appropriate recording and reporting of PPM activities.
- Timely sharing of reports, tools, and lessons learned with NTP and among other PPM partners.

3.5 PPM Provider Task Mix

Identifying and agreeing on tasks for each provider involved in PPM is crucial as it enables for better defining training needs and additional staff needed to support PPM activities. Tasks should be the same for each provider regardless of which partner is implementing a specific PPM model. Tables 3 and 4 present the agreed task mix for individual and institutional providers.[8]

Table 3: Task Mix for Individual Providers (18)

	TASK	Graduate PPs/Specialist physicians	Non/semi-qualified PPs (Informal HC Providers)
TASKS	Identify presumptive TB cases	✓	✓
	Refer presumptive TB cases	✓	✓
	Collect sputum samples	✓	✓
	Diagnose TB	✓	-
	Prescribe treatment	✓	-
	Provide DOT	✓	✓
	Inform TB patients about the disease	✓	✓
	Notify cases	✓	-

[8] Tables 3 and 4 are adapted from the Draft PPM Guidelines 2016, currently under review by NTP and key stakeholders.

Table 4: Task Mix for Institutional Providers (18)

	TASK	NTP all Levels	NGOs	Public institutions 9	Academic institutions10	Private institutions11	Prisons	Corporate/ workplace	Private labs
CLINICAL TASKS	Identify presumptive TB cases	✓	✓	✓	✓	✓	✓	✓	-
	Refer presumptive TB cases	✓	✓	✓	✓	✓	✓	✓	-
	Collect sputum samples	✓	✓	✓	✓	✓	✓	✓	✓
	Do smear microscopy	✓	✓	✓	✓	✓	✓	✓	✓
	Diagnose TB	✓	✓	✓	✓	✓	✓	✓	-
	Prescribe treatment	✓	✓	✓	✓	✓	✓	✓	-
	Provide DOTS	✓	✓	✓	✓	✓	✓	✓	-
	Inform TB patients about the disease	✓	✓	✓	✓	✓	✓	✓	-
PUBLIC HEALTH TASKS	Notify cases	✓	✓	✓	✓	✓	✓	✓	✓
	Identify or link with DOTS providers	✓	✓	✓	✓	✓	✓	✓	-
	Follow-up patient treatment adherence	✓	✓	✓	-	-	✓	✓	-
	Contact tracing/ investigations	✓	✓	✓	-	-	✓	✓	-
	Training of care providers	✓	✓	-	✓	-	-	-	-
	Supervision & monitoring	✓	✓	-	-	-	-	✓	-
	Evaluation	✓	✓	-	-	-	-	-	-
	Quality assurance for laboratories	✓	✓	-	-	-	-	-	-
	Drugs and supplies management	✓	✓	-	-	-	-	-	-
	Advocacy, awareness	✓	✓	-	-	-	✓	✓	-
	Stewardship, financing and regulation	✓	-	-	-	-	-	-	-

[9] CDH, CDC, IDH, CBC, District hospitals and UHCs, Police, Railway, or Armed forces hospitals or facilities.
[10] Public and private academic medical college hospitals, post-graduate medical institutions (e.g. BSMMU) and research institutions (e.g. IEDCR).
[11] Private hospitals that are not teaching institutions.

3.6 Implementation Requirements for PPM Strategic Objectives

Strengthen Training for PPM Providers

At present, training tools are generic, not designed to meet the needs or develop skills of specific providers, and are not competency based. To improve access to information and provider knowledge of TB and TB care and treatment standards, NTP will work with its key partners to develop standardized, provider specific, training packages that include ISTC, Patient Charter information, information on mandatory notification and other relevant material. Implementing partners, such as the USAID-funded CTB, will provide technical support for strengthening training tools. Training packages will include guidance for facilitators, materials for trainees, standard presentations, handouts and training evaluation formats. PPM partners responsible for training of providers will also be responsible for ensuring coordination with other relevant partners and adherence to NTP training guidelines. NTP will ensure that training needs assessments and training tool development outlined in the national Human Resources Development (HRD) Plan will address, as required, training for PPM providers (2). In addition, as per the HRD Action Plan 2016-2019, NTP will work with the Centre for Medical Education and Bangladesh Medical and Dental Council to ensure that existing medical education curricula are reviewed and updated with the latest approaches in TB Control.

Design and Evaluate Incentives and Enablers

To keep providers engaged and encourage active involvement and adherence to NTP standards and protocols for TB control, NTP and its partners will introduce and evaluate financial and non-financial incentives for private and selected providers or institutions. While financial incentives may be effective, they can be difficult to maintain over an extended period and thus should be carefully designed and assessed with sustainability in mind. Incentives such as certificates of appreciation, invitations to local conferences or to the annual National TB Review meetings, additional training or public recognition will be explored and tested as ways of motivating PPM providers, particularly chest specialists who can provide leadership.

NTP and its partners will develop criteria and outline requirements for evaluating performance and selecting candidates for recognition or reward. Criteria should consider not only the quantity of outputs, but also quality, such as the percentage of referrals that are positive for TB, which is an indication of effective screening and referral. Objective criteria from TB databases such as numbers of referrals initiated by a provider, numbers of TB cases identified and other measures will be used. Mechanisms for NTP and partners operating at the district level will be developed for provider selection to ensure fairness and transparency. The PPM TWG will be involved in reviewing and verifying providers selected for reward and recognition. As appropriate, names of selected providers will be published in annual documentation and literature produced and disseminated by professional associations, societies engaged in PPM and/or local papers.

Standardization and effective utilization of the ISTC and Patient Charter

Where diverse pools of providers exist, utilization of standardized screening, diagnosis and treatment protocols is crucial. The ISTC are presently being translated into Bengali and a session on the standards is to be included in the Provider Training Package for PPM. During the SP implementation period, providers will be trained on the standards through initial PPM trainings and refresher trainings. Professional associations will also service as an important vehicle for the dissemination of standards to their members at association meetings or conferences. To improve patient centred care among private providers, guidance on implementation of the Patient Charter will be included in the provider training packages with emphasis on provider-patient interaction counselling skills.

Improve compliance with mandatory case notification

In 2014 the GOB declared TB as a notifiable disease and gazetted mandatory case notification.To improve provider awareness of mandatory case notification and options for notifying cases, by 2017 NTP will develop and establish appropriate, provider-friendly notification systems (including a shorter list of simplified fields to report and an mHealth reporting system that is easy to use); clear step-wise guidance on mandatory notification; and training packages for private providers in case notification, including who has to notify, when, and how. These will be rolled out to private providers throughout Bangladesh by 2020.

Ensure effective communication among partners and key stakeholders

Through quarterly PPM TWG meetings, NTP will update key stakeholders on PPM implementation, challenges and results. NTP will also ensure that annual NTP reports contain a summary of PPM Implementation achievements, shortfalls, challenges, and results in the reporting period. NTP will also ensure the integration of PPM activities, issues and results into routine quarterly meetings at the district level. The PPM TWG and PPM Expert[12] will ensure that reports and minutes generated from quarterly PPM meetings at central level are shared with the district authority and PPM partners. The PPM Expert will monitor whether PPM is being discussed and reported on in quarterly meetings and will report out to the PPM TWG and NTP managers.

Advocacy communication and social mobilization (ACSM) plays an essential role in PPM and cuts across all strategic objectives and interventions. NTP, through the PPM Committee and TWG and in collaboration with the ACSM Committee and TWG, will ensure that national ACSM plans and initiatives adequately address PPM providers. NTP will advocate with the Ministry of Labour and significant international and national stakeholders including the ILO and Better Work Bangladesh, for new polices that will

[12] The PPM Expert is a position designated in the NTP staffing chart. If the position is not filled, then the NTP staff person with the designation of PPM Focal Point should play this role.

require annual health screening, including TB, for all workers. NTP will also develop an approach for better engaging the media in the dissemination of key PPM TB control activities, challenges and successes.

Enhance monitoring and evaluation systems and tools

In year one of the strategic planning period (2016-2020), NTP and its key partners will strengthen PPM M&E systems at all levels – from the national NTP office to the divisional, upazila, facility, and provider or field officer levels – to enable better monitoring of PPM activity implementation and results. PPM M&E systems and tools will be enhanced and standardized to enable all partners to collect the same information and compare results. NTP will establish expectations and guidelines for provider mapping so that all partners define providers in the same way, collect the same information and report it in standardized forms. NTP will also develop or improve tools used for referral, referral feedback,patient data recording, and PPM reporting. The TB book and treatment cards will be reviewed and updated to be in-line with current definitions of individual and institutional private providers. The DOTS directory will be standardized and options for an electronic, GPS-based directory will be explored and tested to enable private providers and others to more quickly identify DOTS facilities that are conveniently located for patients. Referral formats and data collection tools, including TB treatment cards, will be translated into Bengali to ensure staff are able to complete them effectively and that patients can understand what is being recorded. Key NTP partners, such as CTB will provide technical support for the improvement of M&E systems and PPM assessments and evaluations.

Together with key partners, NTP will test innovations and technologies to streamline mapping, referral and/or recording and reporting systems. Innovations will be evaluated and findings and recommendations will be shared in PPM TWG meetings. NTP will review standard supervision tools and will integrate supervision of PPM into these standard tools and processes. Finally, NTP will ensure that key stakeholders at all levels are trained to accurately complete new tools and adhere to standard processes.

To improve PPM coverage reporting, NTP will revise reporting formats and define standards for analysis and reporting. Databases and data analysis protocols will be updated to enable consistent and regular reporting of PPM results. Data collection and analysis will enable NTP to monitor total numbers of providers by type; numbers engaged by NTP and partners; numbers actively referring prospective TB cases; as well as the numbers of TB patients identified. Unique provider IDs or other codes will be established to enable NTP and partners to monitor the active engagement of private providers and strategically target interventions to improve engagement among inactive providers as appropriate. NTP will also ensure that annual TB Control reports contain a summary of the status of PPM implementation, challenges and results. In the first quarter of every year, the PPM Committee and TWG will review and assess actual achievement of PPM activities against PPM operation plans and will propose recommendations for strengthening PPM implementation in the coming year.

In the NSP 2015-2020,Objective 8.1.11 calls for a baseline assessment to determine the numbers and types of providers and the level of engagement in PPM. NTP will address this concern by conducting an interim evaluation of the PPM SP implementation, rather than a baseline. It is recommended that an interim evaluation of the SP is conducted and modifications of the plan can be made based on the key findings.

In addition, the issue of engagement of private laboratories remains a point of discussion among NTP and its partners. To identify opportunities and constraints for engaging private laboratories in TB diagnosis and regulating private laboratories that meet NTP standards through certification, NTP will conduct an assessment. Assessment findings will be disseminated and discussed with NTP partners so that a clearer decision can be made and future plans adjusted to include better engagement of private laboratories as appropriate.

Planning for PPM monitoring and evaluation is an essential part of overall PPM planning. Measuring progress must be a joint activity between NTP and PPM partners; reports will be generated with inputs from partners and results will be communicated across levels of the NTP system. At a minimum NTP will ensure that annual PPM monitoring reports are produced, shared with partners and included in NTP TB reports. An evaluation report will also be producedat the end of the SP and evaluation results will be used to develop the next strategic plan. PPM reports will be shared with all partners and will also be available in the NTP website.

4. Expansion Plans for Priority PPM Models

The following section describes the priority models for PPM expansion emphasized in this strategic plan. Appendix 1 provides provider and staff task mapping charts and human resource requirement tables for these models.

4.1 Hospital Model

Description and targets

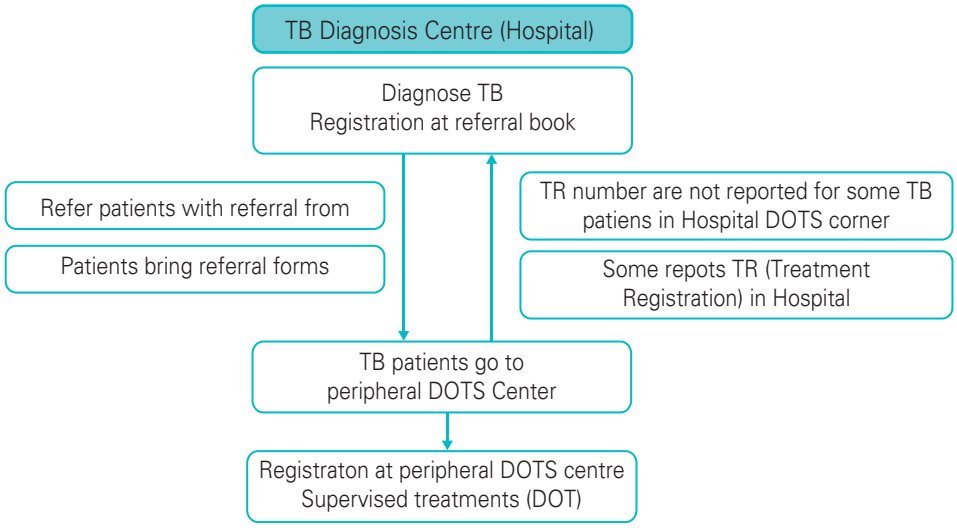
BRAC and DF, in collaboration with NTP, have been implementing the medical college hospital model for TB care in 38 out of approximately 102 medical college hospitals in Bangladesh by establishing hospital TB corners that identify presumptive cases and refer them to different departments within the hospital for further evaluation. Once a patient is diagnosed with TB, he/she is referred back to the DOTS corner to start treatment. Treatment is initiated at the DOTS corner and patients whose residence is far from the hospitals, which are the vast majority, are referred to their closest DOTS facility where they are registered and continue treatment. Cases are formally transferred to minimize the potential for double counting. The model has been successful and has already been expanded to seven additional high-volume general hospitals as well.

Over the next 4-years, the NTP will scale-up the hospital model from 38 to 80 medical college hospitals. As appropriate, additional high-volume general hospitals may also be engaged using this same approach. In the first 18 months of the scale up, 22 DOTS corners will be established and then an additional nine DOTS corners in years three and four, and 11 in year 5 of the scale-up. For training, providers will be selected based on the services they provide and their clients, with a focus on chest specialists; BRAC and NTP will provide training on TB and the referral mechanism and linkages between each department and the DOTS corners. Providers will be trained on ISTC and TB clinical topics such as MDR-TB treatment, paediatric and extra pulmonary TB. DOTS corner staff and laboratory staff will also be trained using standardized training materials. Monitoring and supervision will be conducted on a regular basis.

This model will reach an estimated 13,160 physicians in 80 medical college hospitals. BRAC projects that it will expand case detection by 5 percent in year 1 and 6 percent per year for years 2-4 from the 2015 baseline of 15,992. This will yield an average of 26,820 cases per year within the strategic planning period (2016-2020) and an estimated 34,330 cases per year once all 80 medical college hospitals are engaged.

Patient Flow: Hospital Model

Flow Chart of TB patients referral system from Hospitals to peripheral DOTS Centres:



4.2 Social Enterprise Model

Description and Targets

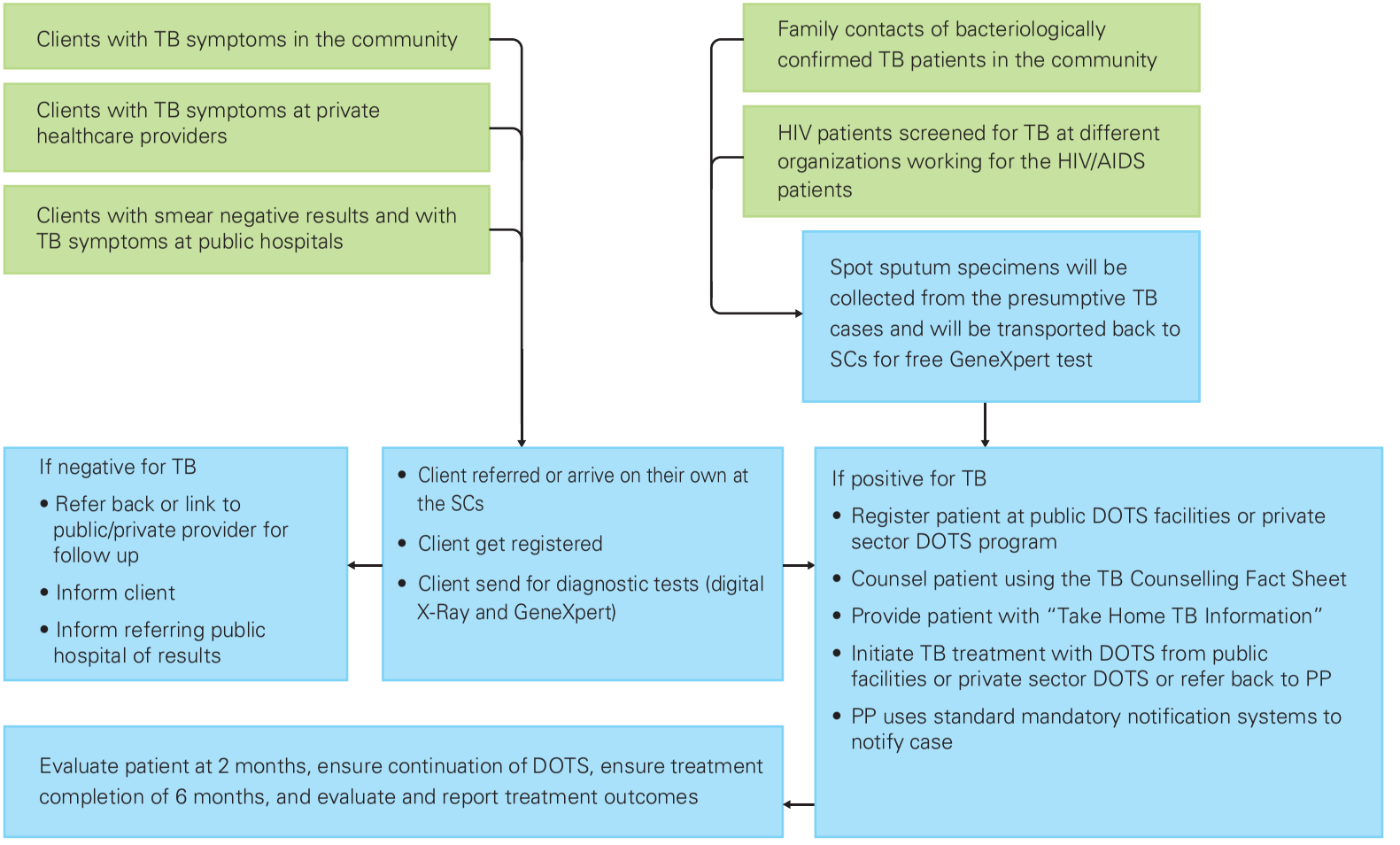
The social enterprise pilot model was introduced in 2014 in the Dhaka metropolitan area with the aim to strengthen the private sector in the management and care of TB by offering state of the art diagnostics, physician follow-up and support, and patient referral to DOTS centres. The model is led by icddr,b and since its introduction has involved 1,800 private providers, established three TB screening centres (SCs), and created strong linkages with public DOTS facilities, especially for the referrals of smear negative presumptive TB.

Based on lessons learned, icddr,b plans to strengthen the model implementation in Dhaka and further expand the model to five more cities (Chittagong Metro, Khulna Metro, Rajshahi Metro, Sylhet Metro, and Barisal Metro). Ten additional screening centres, two in each city, will be established, equipped with digital chest x-ray, GeneXpert, and tools for screening for co-morbid conditions related to TB such as diabetes. Providers will be mapped and selected based on high patient volume and willingness to participate in PPM and field staff will be recruited and trained. During this expansion phase, icddr,b will also coordinate with NTP to introduce a private sector DOTS program in the SCs which will ensure quality-assured anti-TB drugs from NTP for patients who prefer taking treatment in the private sector. It is anticipated that during the first year of expansion, with eight months' operational time, four months are needed to establish the additional SCs, select and train providers and recruit field staff. Icddr,b anticipates it will identify 94,113 additional cases through this model by 2020.

Table 5: SEM Model Targets (2016-2020)

	Year 1 (8 months)	Year 2 to Year 4 (annually)
SEM model scaled-up in metropolitan cities	5	5
ICDDR,B TB SCs established	10 SCs	10 SCs
Presumptive TB cases visiting SC for CXR (40 per SC/day)	83,200	124,800
Presumptive TB cases with abnormal CXR (82% of the CXRs)	68,224	102,336
Presumptive TB cases submitted sputum specimens (95% sputum submission rate)	64,813	97,219
Xpert tests performed (considering 100% collected specimens will be tested)	64,813	97,219
Xpert positive cases identified (17% positivity rate)	11,018	16,527
Clinically diagnosed cases (5% GXP negative cases with abnormal CXRs)	2,690	4,034
Extra pulmonary TB cases diagnosed (considering 1 EP-TB case in 5 AF TB cases)	3,302	5,140
TB cases identified (Bacteriologically confirmed, EP and pulmonary cases)	17,010	25,701

Patient Flow: SEM Model

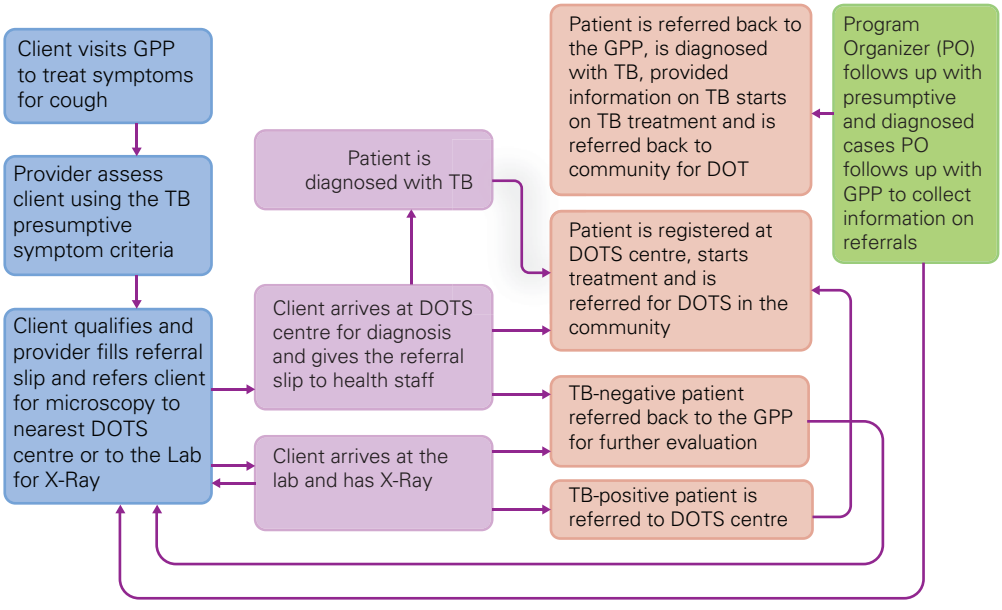


4.3 Urban Private Provider Pilot

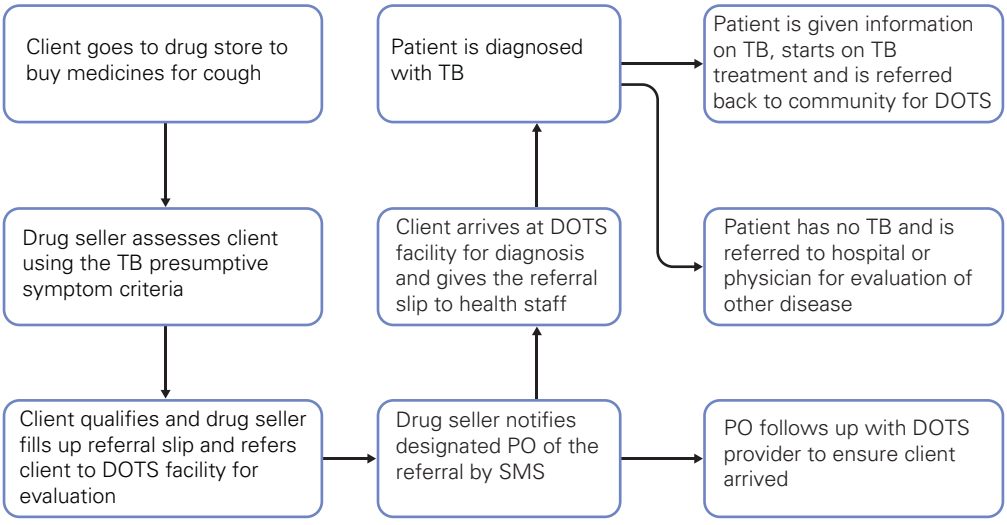
Description and Targets

This pilot model aims to engage physicians operating in individual clinics, diagnostic centres and small private hospitals as well as drug sellers and pharmacy staff in TB detection and notification. It will be led by BRAC and will be implemented in specific geographic areas in Dhaka, urban and sub-urban, and in Gazipur, Narayanganj and Chittagong City Corporations. Providers will be selected based on the high patient volume; patients in these areas are often seeking healthcare from private providers and are not always reported under NTP. Seventy GPPs and seventy 70 drug sellers and pharmacy staff will be selected in each geographical area, providing a total 350 private practitioners and 350 drug sellers/ pharmacy staff to identify 700 TB cases annually. Graduate medical practitioners will be trained on the symptoms of TB, ISTC and other TB related areas and referral linkages between the providers and DOTS centres will be strengthened. Pharmacy staff and drug sellers will be trained on recognition of presumptive patients and use a referral system. This model emphasizes referral from private providers to NTP diagnostic facilities. Field staff will be recruited and will be responsible for coordination, networking and referral follow-up. A referral system, using SMS, will be used by the providers in the network to alert DOTS centres and project field staff when a presumptive referral is initiated. Quarterly performance review meetings will be conducted to review outcomes and performance and address bottlenecks during the implementation. In urban areas, drug sellers will receive from BRAC ($2.50 US) as reinbursement for mobile phone referrals and in rural areas village doctors receive the same amount from DF.

Patient Flow: Formal Providers



Patient Flow: Informal Provider (Pharmacist/Drug Seller)



4.4 Informal Healthcare Provider Model

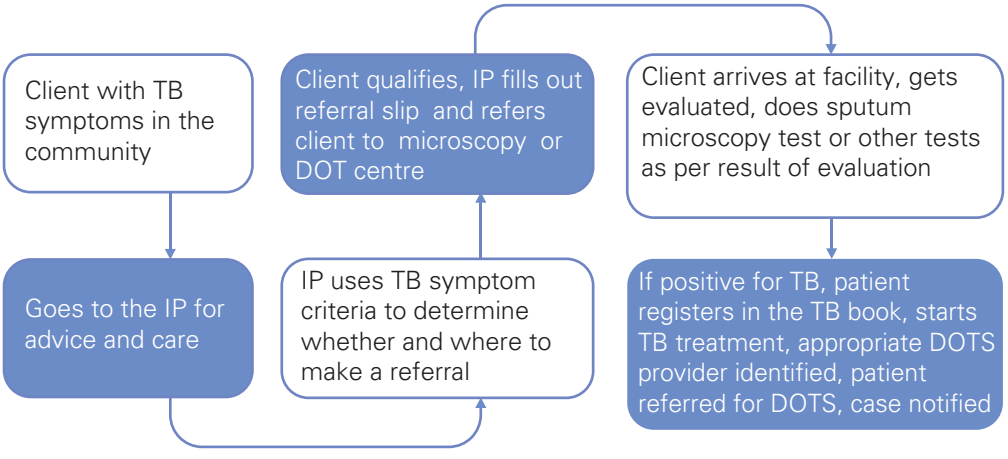
Description and Targets

The informal healthcare provider model aims to engage village doctors, drug sellers and pharmacy owners and staff. These providers are situated in urban and rural communities and are often the first point of care. During the scale-up period, 10,000 village doctors, drug sellers and pharmacy owners and staff will be engaged annually in TB referral and /or provision of DOT, a total of 40,000 over the next 4-years. This is a substantial increase over the 4,000 VDs currently engaged in PPM. To begin with, a rapid assessment will be conducted by the implementing partners to determine the types and numbers of providers in the selected areas. Selected village doctors, drug sellers and pharmacy owners and staff will be provided with training and regular distribution of TB supplies (anti-TB drugs and sputum cups) will ensure smooth and uninterrupted treatment. Project-based outreach workers will supervise the village doctors, drug sellers or pharmacy owners and staff and quarterly meetings will be organized to review performance, identify challenges and develop action plans. One outreach worker will be responsible for the supervision of 75 providers. Standardized referral slips will be introduced which will enable to trace referrals initiated by the providers and feedback systems using mHealth will be piloted. Appropriate performance appreciation schemes will also be introduced with the aim to keep providers motivated and engaged. It is anticipated that 7,000 TB cases per year will be detected through this model.

It is important to note that several additional interventions will contribute to the integration of drug sellers and pharmacy staff in urban settings that differ slightly from this model. This includes the SMC-supported Blue Star model which aims to use the existing SMC Blue Star network of drug sellers to make TB case detection and referral to NTP diagnosis

and treatment centres.[13] SMC will sustain 2,000 pharmacy staff in its network, referring presumptive cases for TB diagnosis and treatment, and anticipates that this will contribute to the overall VD/DS/PS target for TB case finding. The USAID CTB Project also plans to contribute to enhancing the engagement and training of pharmacy staff in TB control. CTB will engage different pharmacy associations through the development of a training of trainers (TOT) for pharmacy association members and through the associations will train pharmacy staff in TB control, provide simple job aids for the identification and referral of presumed cases, and will assist in the strengthening of referral systems between pharmacy staff and NTP or NGO diagnostic centres.

Patient flow: Informal Provider (Village Doctor)



4.5 Workplace Model

Description and Targets

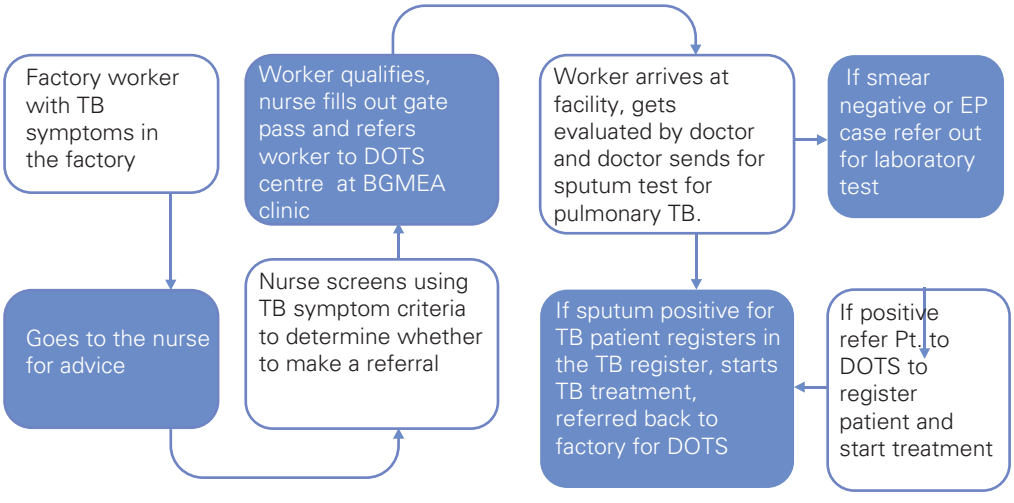
The workplace TB care model aims to improve the environment for TB control in workplace settings. It does this principally through the introduction of outreach, TB diagnostics and DOTS into workplace health services. The model is diverse, encompassing three approaches. The first of these approaches is based on the BGMEA workplace service delivery model. Since 2010, BGMEA has established 11 health centres which provide TB diagnosis, treatment services and anti-TB drugs and education to 700,000 garment factory workers. It has also introduced the 14-day sick leave with pay for workers who are diagnosed with TB. Over the next 4-years BGMEA will scale up the model to an additional 114 garment factories, from 686 to 800, covering an additional 100,000 workers. They will establish 2 additional DOTS centres, bringing the total from 11 to 13, and strengthen existing TB services. BGMEA plans to conduct an interim evaluation that will inform the scale-up of the workplace model to other garment factories by 2020.

[13] Though the shops in the SMC network are all licensed drug shops, they are usually operated by unqualified providers and do not have trained pharmacists on staff.

The second approach focuses on a workers' rights based intervention. In this approach, NTP's partners, including the CTB Project, will develop a set of information education and communication (IEC) tools and training materials for workplaces to increase awareness among workers about their rights to 14 days of leave and free treatment. Training tools will also aim to improve worker understanding of TB prevention and treatment completion. Challenge TB will work with local implementing partners and the labour union network to expand TB services and awareness in three industrial zones, across three cities and 154 new workplace settings as well as through the geographical and workplace settings supported through the labour union network.

The third approach focuses on advocacy for policy and legislative change. In this approach, NTP and partners will conduct advocacy and consultative meetings with ILO, MoL and buyers to improve the environment for the delivery of patient-centred care for TB control by introducing mandatory "annual health screenings for TB" for all factory workers. Such a policy change has the potential to greatly increase TB screening and case detection among factory workers, which is currently limited due to workers' fears of job-loss and lost wages.

Patient flow workplace model (BGMEA)



5. Activity Framework

The PPM SP activity framework outlines the key strategic objectives and main activities to be carried out between 2016 and 2020. Monitoring of the plan, indicators and achievements will be done by the PPM technical working group and the PPM Committee. While NTP is responsible for the overall management of the plan, key partners will lead implementation of activities under specific strategic objectives with the support of key partners.

Table 6: Lead and Key Partners in Activity Implementation

Strategic Objective		Lead Partner	Implementing Partners	Collaborating Partners
SO1	Ensure effective leadership and stewardship of PPM through resource mobilization, active oversight and management, and fulfillment and coordination of PPM roles, and responsibilities among NTP and partners.	NTP	NTP	Challenge TB BRAC
SO2	Develop and introduce operationalize appropriate PPM mapping tools, data collection systems, databases and supervision tools to standardize and enhance monitoring, recording, reporting and analysis of PPM results.		NTP	BRAC DF Icddr,b Challenge TB
SO3	Strengthen collaboration and expand partnerships between NTP, private and public medical college hospitals, select high-volume hospitals and medical associations.		NTP BRAC	Director General of Health Services DF Challenge TB
SO4	Expand the involvement of private individual providers and facility-based graduate medical practitioners in TB case detection, management, and notification.		Icddr,b (SEM) BRAC (PP)	Challenge TB
SO5	Increase the active involvement of village doctors, drug sellers and pharmacy staff in case finding and DOTS provision.		DF (rural) BRAC (urban)	Challenge TB SMC
SO6	Improve the environment for TB control in factories by introducing policies and regulations for annual TB screening and sustain and strengthen current TB services provided through workers' associations.		BRAC	MoL BGMEA BEPZA BKMEA Challenge TB ILO Better Work Bangladesh DF Labour Unions

PPM Strategic Goal: Strengthen and expand the engagement of private sector providers, and of selected public institutions, NGOs, corporate sector and professional associations and bodies that are not yet optimally engaged in the fight against TB, in order to reduce the 47% gap in case detection, sustain treatment success of 90% (drug susceptible), increase access to MDR-TB and contribute to the reduction of MDR-TB incidence.							
Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
1. Ensure effective leadership and stewardship of PPM through resource mobilization, active oversight and management, and fulfilment and coordination of PPM roles, and responsibilities among NTP and partners.	1.1 Ensure the effective functioning of the PPM Committee and TWG in PPM representation and implementation by the end of 2016 (NTP).	1.1.1 Review and update ToR for PPM Committee	x				TOR for PPM Committee revised
		1.1.2 Conduct bi-annual PPM Committee meetings and PPM TWG quarterly meeting	x	x	x	x	# of Semi-annual Committee meeting held and minutes shared with partners (2/Y = 8) # of quarterly TWG meetings held
	1.2 Ensure NTP PPM Expert position at central level is revitalized with qualified staff by the end of 2016 (NTP).	1.2.1 Review and updated TOR for PPM expert at central level and recruit for position	x				TOR for PPM revised and position filled
	1.3 Ensure standardization of PPM training and IEC materials by the end of 2017 (NTP).	1.3.1 Develop and/or adapt Training Package and Tools for different PPM providers	x				Package of training materials and tools developed and shared with partners
		1.3.2 Include NTP notification information, training and IEC materials for download by PPM partners from the NTP website	x				NTP website include information and resources on mandatory notification, NTP training and IEC materials for PPM providers and partners.
	1.4 Mobilize required funds for all planned PPM activities and disbursement of 100% of available PPM funds (NTP).	1.4.1 Identify and mobilize resources for PPM	x	x	x	x	Additional PPM resources identified
		1.4.2 Conduct quarterly reviews of PPM expenditure in line with planned activities and budgets	x	x	x	x	Minutes of quarterly meetings include an assessment of PPM expenditure in line with activity implementation
2. Develop and operationalize appropriate PPM mapping tools, data collection systems, databases and supervision tools to	2.1 Strengthen recording, reporting and monitoring systems of PPM activities and referral and feedback mechanisms among PPM providers at all levels by 2018 (NTP).	2.1 1 Add PPM indicators into NTP recording and reporting frameworks	x				# of PPM indicators used to gather PPM data
		2.1.2Review, update, translate patient materials (TB treatment card DOTS, corner referral slip), and share with PPM partners	x	x	x	x	PPM materials updated, shared with partners and posted on NTP website

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Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
standardize and enhance monitoring, recording, reporting and analysis of PPM results.		2.1.3 Revise electronic data collection tools to include PPM data	x				PPM data integrated into national data collection tool
		2.1.4 Revise NTP M&E tools and supervision check-list to include PPM	x				PPM integrated into the NTP M&E supervision list
		2.1.5 Update eTB manager recording and reporting system to include source of referral	x				eTB manager updated and PPM data
		2.1.6 Develop an mHealth referral and feedback system for both referrals and notification	x				mHealth system in place and used by PPM partners and providers
		2.1.7 Conduct PPM interim evaluation		x		x	PPM interim evaluation conducted and key findings published
	2.2 Determine opportunities and approaches for expanding engagement of private laboratories in quality TB diagnosis by 2020 (NTP).	2.2.1 Conduct an assessment of the opportunities and constraints to expanding quality TB diagnostics to private laboratories through NTP laboratory certification processes.		x			Assessment report completed and disseminated and recommendations incorporated into PPM plans as appropriate
3. Strengthen collaboration and expand partnerships between NTP, private and public medical college, select high-volume hospitals, hospitals and medical associations.	3.1 Increase public and private medical college hospital engagement in NTP TB control activities from 36 to 80 in order to increase TB case finding by 5% (from 2015 baseline) by 2017 and 6% for each year up to 2020 (Hospital Model).	3.1.1 Select hospitals using selection criteria	x	x	x	x	# of hospitals selected
		3.1.2 Introduce PPM and coordinate with hospital management to establish DOTS corners	x	x	x	x	# of public and # of private hospitals selected
		3.1.3. Establish DOTS corners	x	x	x	x	# of DOTS corners established
		3.1.4 Update the DOTS corner referral directory and screening tools	x				Referral directory updated and TB screening tool introduced

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Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
		3.1.5 Create linkages among DOTS corners and related hospital departments	x	x	x		Linkages established with all related hospital departmentsand DOTS corners
		3.1.6 Train and provide refresher training for DOTS corner staff	x	x	x	x	# of DOTS corner staff trained and # of participated in refresher training
		3.1.7 Train and provide refresher training for public and private hospital healthcare providers	x	x	x	x	# of public hospital healthcare providers and # of private hospital health trained
		3.1.8 Train and provide refresher training for laboratory technicians	x	x	x	x	# of laboratory technicians trained
		3.1 9 Distribute PPM training packages, tools and other TB related materials to providers, heads of hospital departments, and DOTS corners	x	x	x	x	Updated PPM Training materials and tools shared
		3.1.10 Organize networking meetings with hospital management and heads of related departments	x	x	x	x	# of networking meetings conducted
		3.1.11 Conduct bi-annual performance review meetings	x	x	x	x	# of bi-annual meetings conducted
		3.1.12 Generate quarterly reports and share with NTP and partners	x	x	x	x	Quarterly reports shared with NTP on regular bases
		3.1.13 Develop monitoring and supervision plans	x	x	x	x	Monitoring and supervision plans developed
		3.1.14 Conduct monitoring and supervision	x	x	x	x	Monitoring and supervision visits conducted and findings documented
	3.2 Strengthen the capacity of professional associations	3.2.1 Develop ToR for professional associations and societies	x	x	x	x	TOR developed and implemented

PPM Strategic Goal: Strengthen and expand the engagement of private sector providers, and of selected public institutions, NGOs, corporate sector and professional associations and bodies that are not yet optimally engaged in the fight against TB, in order to reduce the 47% gap in case detection, sustain treatment success of 90% (drug susceptible), increase access to MDR-TB and contribute to the reduction of MDR-TB incidence.								
Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
	and societies to promote quality TB control practices among their members by increasing the active engagement of medical associations from 2 to 12 by 2020 (NTP).	3.2.2 Conduct advocacy and consultative meetings with professional associations and societies to review and plan PPM activities	x	x			# of advocacy and consultative meetings conducted
		3.2.3 Adapt, print, and distribute the ISTC, Patient Charter, PPM guidelines and other related TB documents and post on NTP website	x				ISTC and other TB related materials developed and distributed to PPM partners
		3.2.4 Train PPM providers	x	x	x	x	# of providers trained on PPM
		3.2.5 Conduct advocacy and consultative meeting with medical academic institutions to sensitize unengaged facilities and review data and approaches with engaged facilities	x	x	x	x	ISTC and Patient Charter translated, PPM guidelines finalized, material printed and distributed
		3.2.6 work with medical associations to develop CME courses for general practitioners and for chest specialists	x	x	x	x	CME courses developed
		3.2.7 Partner with medical association technical experts to conduct TB sessions at medical association conferences	x	x	x	x	# of TB sessions included in TB conferences and national meetings
		3.2.8 Include information dissemination plans through medical associations in annual operational plans	x	x	x	x	Operational plans inclusive of TB related information
4. Expand the involvement of private	4.1 To scale up the SEM model to five cities and cover	4.1 1 Select geographical areas for expansion	x				Areas mapped by location, # of providers, and population

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Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
individual and facility-based graduate medical practitioners in TB case detection, management and notification.	15,000 PPs to increase case detection by 20% (NSP) and 30% (AF) by 2020 (SEM).	4.1.2 Establish SCs	x	x	x	x	# of SCs established
		4.1 3 Establish private sector DOTS Program	x				# of SCs with DOTS program
		4.1 4 Map graduate medical practitioners	x	x	x	x	# of graduate medical practitioners in selected areas
		4.1 5 Develop and pilot notification tool with qualified medical practitioners	x				Case notification tool piloted
		4.12 Conduct interim evaluation of pilot		x			Interim evaluation conducted and key findings shared with PPM partners
		5.1 Conduct rapid assessment with providers in selected areas	x				Assessment report completed
		4.1.6 Select providers per criteria	x	x	x	x	# of graduate medical practitioners selected
		4.1.7 Train and provide refresher training for providers	x	x	x	x	# of providers trained
		4.1.8 Develop monitoring and supervision plans	x				Monitoring and supervision plans in place
		4.1. 9 Conduct quarterly monitoring and supervision	x	x	x	x	# of monitoring and supervision visits conducted
		4.1.10 Generate PPM data and related reports and share with NTP and partners	x	x	x	x	PPM data and reports shared with NTP
		4.1.11 Introduce mandatory notification to PPM providers	x	x	x	x	% of providers using the mandatory notification system
	4.2 Implement an urban private healthcare provider model to pilot in five city corporations with 70 graduate medical	4.2.1 Recruit and train field-level staff through 3-day training programme	x				All required staff in place and appropriately trained
		4.2.2 Map PPs in all 5 city corporation areas and identify	x				Providers map and map available for NTP and stakeholders

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Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
	practitioners in each city corporation area to strengthen referral systems and identify 700 TB patients in the pilot period (Urban PP Model).	providers with high client loads for inclusion in the pilot					
		4.2.3 Develop a mobile SMS referral communication system, including reimbursement systems for provider	x				Mobile SMS referral communication system developed
		4.2.4 Develop materials, including referral slips and conduct half-day information sessions.	x				Referral slips completed and disseminated to 100% of selected providers 100% of selected providers participate in half day information session
		4.2.5 Conduct follow-up visits to providers and DOTS centres	x				100% of providers receive at least 1 follow-up visit
		4.2.6 Quarterly review meetings conducted with PPs to review pilot project performance	x				# of quarterly performance reviews conducted with PPs
		4.3.6 Conduct pilot evaluation and report on results and findings and develop scale-up plan	x				Pilot evaluation report completed and disseminated to NTP and stakeholders Scale up plan developed
5. Increase active engagement of village doctors, drug sellers and pharmacists for the referral of presumptive TB cases and provision of DOTS to contribute to national goals for TB case detection and	5.1 Actively engage 10,000 VDs/DSs/PSs every year in TB referral and/or DOTS by 2020 (IHCP Model)	5.1.1 Conduct rapid assessment to determine the type and number of VDs/DSs/PSs	x				Rapid assessment conducted, findings informed the development of the database
		5.1. 2 Develop database of village doctors, drug sellers and pharmacies	x				VD/DS/PS database developed
		5.1.3 Select providers by type: VD, DS, PSs	x	x	x	x	# of VSs/DSs/PSs selected
		5.1.4 Develop standard training and referral tools for VDs,DSs,PSs.	x				Standard training and referral tools developed

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Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
treatment success.		5.1.5 Train VDs, DSs and PSs on PPM	x	x	x	x	# of VD/DS/PS trained
		5.1.6 Conduct regular supportive supervision and program monitoring	x	x	x	x	Quarterly supportive supervision conducted, reports shared with partners
		5.1.7 Pilot mHealth system to support referral from VD/DS/PS to diagnostic centres and promote information and appropriate screening	x				mHealth system in place
	5.2 Strengthen the engagement of pharmacy associations in mobilizing DSs and PS for TB case detection and referral (CTB)	5.2.1 Develop a pharmacy association engagement model, training tools and IEC materials	x				Training tools and IEC materials for pharmacy associations leaders and pharmacy staff developed # of pharmacy associations actively engaged
		5.2.2 Train pharmacy association leaders to engage members in TB control through routine meetings	x	x	x	x	# of pharmacy association leaders trained # of pharmacy staff trained
	5.3 Implement an urban private healthcare provider model pilot in five city corporations with 70 DS/PS in each city corporation area to strengthen engagement and referral systems (Urban PP Model).	See objective 4.2 for activities related to this pilot	x				See objective 4.2 for activities related to this pilot
6. Improve the environment for TB control in factories by introducing policies and regulations for annual	6.1 Create enabling environment in garment factory settings for the delivery of patient centred care for TB control and	6.1.1 Map garment factories in Dhaka and other industrial areas by type, size and location	x				List of garment factories documented and shared with NTP
		6.1.2 Consultative meetings with factory managers, ILO and MoL to	x	x	x	x	# of consultative meetings

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Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
TB screening and sustain and strengthen current TB services provided through workers' associations.	expand the factory modelfrom 686 garment factories in 2016 to 800 by 2020 through BGMEA and an additional 200 garment/factories in DPEZ and surrounding areas by DF (Workplace Model).	improve awareness of TB					
		6.1.3 Establish 2 additional DOTS centres for BGMEA and 2 DOT and 4 smearing centres for DF	x		x	x	# of DOTS corners established
		6.1.4 Train providers	x	x	x	x	# providers trained
		6.1.5 Create TB education teams	x	x	x	x	# of TB teams in place
		6.1.6 Conduct education sessions on TB, factory paid leave policies, and availability of TB services with expanded information on TB prevention and treatment	x	x	x	x	# of education sessions conducted
		6.1.7 Conduct quarterly monitoring and supervision visits	x	x	x	x	# of monitoring and supervision visits conducted, # of reports shared
		6.1.8 Conduct interim evaluation		x			Key findings report generated and shared with NTP and PPM partners
		6.1.9 Use evaluation finding to scale up, after 2020, factory PPM model to other types of factories	x	x	x	x	# of factories implementing PPM and # of additional DOTS corners
	6.2 Expand access and usage of TB services in 3 industrial zones across 3 cities and 154 workplace settings by implementing a rights-based	6.2.1 Develop advocacy fact sheets for trade associations	x				Advocacy fact sheet developed
		6.2.2 Develop training and audio-visual materials for managers, labour union activists TB leaders	x				Training and audio visual materials developed

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Strategic Objective	**Objective**	**Activity Description**	**Activity Timeframe**				**Indicators**
			Year 1	**Year 2**	**Year 3**	**Year 4**	
	approach to expand awareness of labour laws and workers' rights related to TB (CTB).	and workers in factories					
		6.2.3 Strengthen existing M&E and referral systems for workplace programs	x				M and E and referral processes and tools revised
		6.2.4 Support partners to conduct training and ACSM activities in industry settings	x				# of trainings conducted # of ACSM activities conducted
		6.2.5 Assess interventions and develop a scale-up plan	x				Assessment conducted and report produced Scale-up plan developed
	6.3 NTP to establish effective collaboration with ILO, MoL and factory owners' associations to improve engagement and policies for TB control in workplaces (NTP).	6.3.1 Conduct consultative meetings with ILO, MoL, to advocate for the formation of annual health policies in workplaces	x	x	x	x	# of advocacy and consultative meetings conducted (2/Y = 8) Policy for annual health screening, including TB, in workplaces established by 2020

6. Projected Costs

CONSOLIDATED BUGET[14]					Total 4 Years Budget	
Cost grouping	**Year 1: BDT**	**Year 2: BDT**	**Year 3: BDT**	**Year 4: BDT**	**4 years: BDT**	**4 years: USD**
1.0 Human Resources (HR)	82,030,630	75,931,654	75,346,559	75,360,019	308,668,863	$3,967,466
2.0 Travel related costs (TRC)	145,404,776	114,765,837	115,479,108	115,550,450	491,200,171	$6,313,627
3.0 External Professional services (EPS)	0	778,000	778,000	778,000	2,334,000	$30,000
4.0 Health Products - Pharmaceutical Products (HPPP)	101,140,000	101,140,000	101,140,000	101,140,000	404,560,000	$5,200,000
5.0 Health Products - Non-Pharmaceuticals (HPNP)	0	0	0	0	-	$0
6.0 Health Products - Equipment (HPE)	0	0	0	0	-	$0
7.0 Procurement and Supply-Chain Management costs (PSM)	630,000	630,000	630,000	630,000	2,520,000	$32,391
8.0 Infrastructure (INF)	156,158,200	10,025,601	10,025,601	10,025,601	186,235,003	$2,393,766
9.0 Non-health equipment (NHP)	17,146,000	0	0	0	17,146,000	$220,386
10.0 Communication Material and Publications (CMP)	11,655,420	11,188,620	11,188,620	11,188,620	45,221,280	$581,250
11.0 Programme Administration costs (PA)	6,235,326	6,235,326	6,235,326	6,235,326	24,941,304	$320,582
12.0 Living support to client/ target population (LSCTP)	0	0	0	0	-	$0
13.0 Results-based financing (RBF)	0	0	0	0	-	$0
Others: Staff salary increase 20% from year 2	0	6,362,600	6,218,600	6,218,600	18,799,800	$241,643
Others: Festival bonus 10% of total HR budget	0	1,588,800	1,516,800	1,516,800	4,622,400	$59,414

[14] These projected costs are based on estimates for each model; the summaries and detailed budgets for each are provided as separate MS Excel files.

CONSOLIDATED BUGET[14]					Total 4 Years Budget	
Cost grouping	**Year 1: BDT**	**Year 2: BDT**	**Year 3: BDT**	**Year 4: BDT**	**4 years: BDT**	**4 years: USD**
Others: Staff salary increase 10% from year 2	0	4,411,865	4,425,356	4,426,702	13,263,923	$170,487
Others: Inflation rate @ 5% for activities cost, excluded HR	165,485	12,384,580	12,420,244	12,384,911	37,355,220	$480,144
Sub total	**520,565,837**	**345,442,884**	**345,404,214**	**345,455,029**	**1,556,867,964**	**$20,011,156**
Overhead 20% of subtotal cost	98,832,383	65,258,563	65,250,829	65,260,992	294,602,766	$3,786,668
Overhead 7% of subtotal cost	1,848,274	1,340,505	1,340,505	1,340,505	5,869,789	$75,447
Grand total	**621,246,495**	**412,041,952**	**411,995,547**	**412,056,525**	**1,857,340,519**	**$23,873,271**

By Model	**Year 1: BDT**	**Year 2: BDT**	**Year 3: BDT**	**Year 4: BDT**	**Total 4 Years Budget**	
					4 years: BDT	**4 years: USD**
HOSPITAL MODEL	19,132,691	20,490,576	20,490,576	20,490,576	80,604,418	$1,036,047
SOCIAL ENTERPRISE MODEL	482,078,924	290,665,857	291,742,653	291,850,311	1,356,337,744	$17,433,647
PRIVATE PROVIDER PILOT MODEL	9,119,505	0	0	0	9,119,505	$117,217
INFORMAL HEALTHCARE PROVIDERMODEL	22,336,180	25,864,188	25,864,188	25,864,188	99,928,743	$1,284,431
WORKPLACE MODEL	55,078,075	40,994,419	39,871,219	40,804,819	176,748,532	$2,271,832
NTP	33,501,120	34,026,912	34,026,912	33,046,632	134,601,576	$1,730,097
Grand total: BDT	**621,246,495**	**412,041,952**	**411,995,547**	**412,056,525**	**1,857,340,518.88**	**$23,873,271**

7. References

1. **Furth, Rebecca**. *Bangladesh PPM Huamn Resources Assessment Report*. Boston : Initiatives Inc. for PATH, NTP and the United States Agency for international Development (USAID) under Contract No. GHN-1-00-09-00006, May 2014.
2. **National TB Control Programme**. *Bangladesh Human Resoruces Development (HRD) Action Plan for TB Control 2016-2019*. Dhaka : Directorate General of Health Services, Ministry of Health and Family Welfare, April 2016.
3. **National Tuberculosis Control Programme**. *Tuberculosis Control in Bangladesh Annual Report 2015*. Dhaka : National Tuberculosis Programme, Directorate General of Health Services, November 2015.
4. **National TB Control Programme**. *National Strategic Plan for TB Control 2015-2020*. Dhaka: Government of the People's Republic of Bangladesh, Directorate General of Helath Services, Ministry of Health and Family Welfare, 2015.
5. **Challenge TB**. Workshop Report: *Moving Forwards with teh Engagement of Private for Profit Providers in TB Services (unpublished)*. Medford and The Hague : MSH and KNCV, August 2015.
6. **The World Health Organization**. *6th Joint Monitoring Mission of the National TB Control Programme 30 March -10 April 2014*. Geneva : WHO Press, 2014.
7. **National Tuberculosis Control Programme**. *Guidelines on Public Private mix for Tuberculosis Control, First Edition 2006*. Dhaka: NTP, DGHS, Ministry of Health and Family Welfare, 2006.
8. **The World Health Organization**. *Global Tuberculosis Report 2015*. Geneva : WHO Press, 2015.
9. **Stop TB Partnership**. *Annual Report 2014*. Switzerland : UNOPS, April 2015.
10. **WHO**. *Use of high burden country lists for WHO in the post 2015-era*. Geneva : WHO , June 2015.
11. **CDC**. Global Health: Bangladesh. *CDC*. [Online] August 14, 2014. [Cited: April 30, 2016.] http://www.cdc.gov/globalhealth/countries/bangladesh/.
12. **Ministry of Health and Family Welfare**. *Health Bullitin 2015*. Dhaka : Management Information System, Directorate General of Health Services, December 2015.
13. **SIAPS**. *Baseline study of private drug shops in Bangladesh: Findings and Recommendations*. Arlington, VA : Submitted to the United States Agency for International Development by The Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program. Management Science for Health, 2015.
14. *Adults with chronic cough in urban Bangladesh: healthcare utilization and management of cases by private practitioners*. **Hossain S, Larson CP, Quaiyum MA, Khan AI, Zaman K, Begum V, Saha NC. 1**, s.l. : World Health and Population, June 2010, World Health Population, Vol. 12.

15. **James P Grant School of Public Health Center for Health Systems Studies**. *The State of Health in Bangladesh: Health Workforce in Bangladesh, Who Consitutes the Healthcare System?* Dhaka : BRAC University, 2007.

16. *Size and Usage Patterns of Private TB Drug Markets in the High Burden Countries*. **Wells, William A., et al. 5, s.l**. : Plos One, May 2011, Plos One, Vol. 6. e18964. doi:10.1371/journal.pone.0018964.

17. **WHO**. *Global Plan to End TB: The Paradigm Shift 2016-2020*. Geneva : WHO Press, 2015.

18. **National TB Control Program**. *Guidelines on Public-Private Mix for Tuberculosis Control: Second Edition (Draft)*. Dhaka : Directorate General of Health Services, Ministry of Health and Family Welfare, 2016.

19. *Prevention and control of tuberculosis in workplaces: how knowledgeable are the workers in Bangladesh*. **Qazi Shafayetul Islam, Md Akramul Islam, Shayla Islam and Syed Masud Ahmed**. 1291, s.l. : BioMed Central, 2015, Vol. 15.

20. **Bangladesh Export Processing Zone Authority**. *Annual Report 2012-2013*. Dhaka: BEPZA, ND.

21. **Stop TB Partnership**. Tuberculosis Profiles by Country. *Stop TB Partnership*. [Online] May 27, 2016. http://www.stoptb.org/countries/tbdata.asp.

22. **Study, Textile Fashion**. Jute Mills in Bangladesh Government and Private Sector. *Textile Fashion Study*. [Online] [Cited: June 20, 2016.] http://textilefashionstudy.com/-jute-mills-in-bangladesh-government-and-private-sector/.

23. **Sudhinaraset, May, et al**. *What Is the Role of Informal Healthcare Providers in Developing Countries? A Systematic Review*. 2013.

8. Appendices

Appendix 1: PPM Targets and Gap Analysis

An analysis of the expected increases in case detection to be achieved through the implementation of the priority models suggests that the models will enable NTP to achieve its PPM goal to close the 43 percent gap in case detection. This analysis assumes that PPM will be responsible for 70 percent of the gap, which, based on the NTP target to expand case detection to 230,000 per year, is 62,605 cases. Taking this assumption, PPM would need to identify an additional 43,824 cases per year, or a total of 125, 847 cases annually. The targets and analysis of scale-up for the models suggests that 125,700 per year (on average) will be identified through the priority PPM models, virtually meeting the goal. Table 7 presents the gap analysis while Table 8 defines the assumptions used to identify the targets.

Table 7: PPM Gap Analysis

PPM Gap Analysis	
TB Incidence (227100,000)*	356,160
NTP annual case detection target (NSP)	230,000
Case detection rate (53%)*	167,395
GAP	62,605
PPM Contribution to Case Detection	82,024
Number value of assumption about percent PPM should contribute to closing the GAP (70%)	43,824
Number of cases that would need to be identified annually for PPM to close 70% of the gap	125,847
Number PPM will identify (sum of all targets)	125,700
PPM Gap	147

*2013 (from NTP report 2015) population 159,000,000

Table 8: Case Detection Scale-up Assumptions

Hospital model: 47,872 cases were identified in 2015 from hospitals of all types; this breaks down into 15,992 from medical college and select high-volume general hospitals and the remaining 31,880 from other hospitals.1	47,872	49,700	1,828
SEM + Urban PP models: assumes roughly 44,600 attributed to existing NGO and other models will remain static when SEM will increase to 23,000/year and the urban PP pilot will contribute an additional 700/year.	50,291	68,300	18,009
VD/DS/PS model: assume 10,000 providers to be actively engaged per year and 7,000 cases per year to be identified. This number was estimated by DF and BRAC based on their existing data.	4,364	7,000	23,636
Workplace models: assumes an increase to 500/year in BGMEA sites and 200 per year for the rights-based approach expansion, does not take into consideration BRAC or DF expected increases as these have yet to be estimated.	466	700	234
TOTAL	**102,993**	**125,700**	**43,707**

[15] This analysis is an annual average based on BRAC's assessment that through the expansion of the medical college hospital engagement in TB control from 38 to 80 hospitals, case detection will increase from the 2015 baseline (15,992) by 5 percent in year 1 and by 6 percent for years 2-4. However, an analysis of projections that takes into consideration hospital size indicates that this model could achieve an average of as much as 26,820 per year.

Appendix 2: Analysis of Cost per Output per Model

Table 9: Projected Cost per TB Patient Detected per Mode

	Year 1			All Years (2016 -2020)		
Model	Cost	Estimated TB Cases	Cost/TB patient identified	Cost	Estimated TB Cases	Cost/TB patient identified
Hospital Model	$248,477	16,799	$15	$1,036,047	91,316	$11
SEM	$6,196,387	17,010	$364	$17,433,647	94,000	$185
Urban PP Pilot	$114,941	700	$164	$487,420	2,800	$174
Informal Provider Model	$287,097	7,000	$41	$1,284,431	28,000	$46
Workp lace Model (BGMEA only)	$707,944	300	$2,360	$2,271,832	2,000	$1,136

Appendix 3: Task Mix and HR Requirements for Priority Models

Staff Task Mix Hospital Model

		SERVICE DELIVERY TASKS																				PUBLIC HEALTH TASKS									
	Title/Type	Suspect Identification	Suspect Referral	Sputum Collection	Microscopy	Diagnose TB	Notify Cases	Inform patients about TB and TB treatment	Prescribe treatment	Provide treatment	DOT S provider selection	DOT S/supervise treatment	Follow up with patient	MDR TB treatment supervision	TB-HIV diagnostic and treatment linkages	Paediatric IPT	Referral for follow up microscopy	Contact Tracing	Defaulter Tracing	Recording and data entry	Reporting	Stewardship, financial management	Coordination with government/other stakeholders	Drugs and Supply Management	Monitoring and Evaluation	Laboratory Quality Assurance	Identification and supervision of treatment supporters	Supervision	Training, Orientation or Sensitization	ACSM	Mapping and Enrolment of Private Providers	Quarterly oversight
Provider	Specialists/ doctors	X	X			X	X	X	X		X				X	X	X														
Support Staff	Program Organizer (Lab)	X	X	X	X	X	X	X			X	X	X			X	X	X	X	X	X			X						X	X	

Human Resources Requirements Hospital Model

Staff	Employed by	Number			Level	Qualifications	Tasks	LOE	Monthly Salary	
		Existing	Scale-up	TOTAL					TK	USD
Senior Sector Specialist	BRAC	21	0	21	HO	MBBS/MBA/Masters in social science	Technical support, coordination with NTP, supervision and monitoring	10%*	ND	ND
Divisional Manager	BRAC	60	0	60	District	Promoted from UM level	Supervision & monitoring ofPO/UM activities, coordination with government staff, drug requisition, logistic requisition, ensuring quality of TB program (E&A)	7%*	ND	ND
Upazila Manager	BRAC	186	0	186	Upazila	Masters	Supervise the activities of PO, follow up with patient, ensure drugs & logistic and reagents, recording and reporting	15%*	ND	ND
Program Organizer lab	BRAC	33	47	80	Upazila District	BA (PASS)	Mapping providers, suspect identification and referral, sputum collection, case notification, providing patients information on TB, selecting a DOTS provider and supervising treatment, MDR-TB treatment supervision, referral for follow microscopy, contact tracing, reporting and recording and drug supply management.	100%	25,556	$319

Staff Task Mix Urban Private Provider Model

	Title/Type	GPP	Program Organizer	Shasthya Shebika
Provider	**SERVICE DELIVERY TASKS**			
	Suspect Identification	X	X	
	Suspect Referral	X	X	X
	Sputum Collection		X	X
	Microscopy		X	X
	Diagnose TB	X		
	Notify Cases	X	X	
	Inform patients about TB and TB treatment	X	X	
	Prescribe treatment	X		X
	Provide treatment		X	
	DOT provider selection	X	X	X
	DOT/supervise treatment		X	
	Follow up with patient		X	
	MDR TB treatment supervision		X	X
	TB-HIV diagnostic and treatment linkages	X	X	
	Paediatric IPT	X	X	X
	Referral for follow up microscopy	X	X	X
	Contact Tracing	X	X	X
	Defaulter Tracing		X	
	Recording and dataentry		X	
	Reporting		X	
	PUBLIC HEALTH TASKS			
	Stewardship, financial management			
	Coordination with government/other stakeholders			
	Drugs and Supply Management		X	
	Monitoring and Evaluation			
	Laboratory Quality Assurance			
	Identification and supervision of treatment supporters			
	Supervision			
	Training, Orientation or Sensitization		X	
	ACSM		X	
	Mapping and Enrolmentof Private Providers		X	
	Quarterly oversight			

Human Resources Requirements Urban Private Provider Model

Staff	Employed by	Existing	Number Scale-up	TOTAL	Level	Qualifications	Tasks	LOE	Monthly Salary	
									TK	USD
Senior Sector Specialist	BRAC	1	0	1	HO	MBBS/MBA/ Masters in social science	Technical support, coordination with NTP, supervision and monitoring	10%*	ND	ND
Divisional Manager	BRAC	60	0	60	District	Promoted from UM level	Supervision & monitoring of PO/UM activities, coordination with government staff, drug requisition, logistic requisition, ensuring quality of TB program (E&A)	7%*	ND	ND
Upazila Manager	BRAC	35	0	35	Upazila	Masters	Supervise the activities of PO, follow up with patient, ensure drugs & logistic and reagents, recording and reporting	15%*	ND	ND
Program Organizer	BRAC	0	35	35	Upazila	BA (PASS)	Mapping providers, suspect identification and referral, sputum collection, case notification, providing patients information on TB, selecting a DOTS provider and supervising treatment, MDR-TB treatment supervision, referral for follow microscopy, contact tracing, reporting and recording and drug supply management.	100%	26,825	$335
Shasthya Shebika	BRAC	ND	ND	ND	Comm unity	Class 8	Suspect Identification; Suspect referral; DOT, TB awareness message dissemination	5%		

**LOE estimate is for support of implementation all PPM models implemented by BRAC and not the Hospital Model alone. The required Level of effort for the hospital model for management staff is likely to be lower.*

Staff Task Mix SEM Model

		SERVICE DELIVERY TASKS																				PUBLIC HEALTH TASKS										OTHER				
	Title/Type	Suspect Identification	Suspect Referral	Sputum Collection	Microscopy	Diagnose TB	Notify Cases	Inform patients about TB and TB treatment	Prescribe treatment	Provide treatment	DOT provider selection	DOT/supervise treatment	Follow up with patient	MDR TB treatment supervision	TB-HIV diagnostic and treatment linkages	Paediatric IPT	Referral for follow up microscopy	Contact Tracing	Defaulter Tracing	Recording and data entry	Reporting	Stewardship, financial management	Coordination with government/other stakeholders	Drugs and Supply Management	Monitoring and Evaluation	Laboratory Quality Assurance	Identification and supervision of treatment supporters	Supervision	Training, Orientation or Sensitization	ACSM	Mapping and Enrolment of Private Providers	Quarterly oversight	Outreach Community Campaign	CD and EPTB case identification	Detection of TB with co-morbidities	Involve civil society and non-allopathic doctors	Engage Community Pharmacy
Provider	Private Physicians	X	X			X	X	X	X	X	X	X	X			X	X																			
Support Staff	Medical Officer											X		X									X					X	X	X	X					
	Project Research Physician								X			X		X		X						X						X	X	X	X				X	
	Field Research Officer						X				X	X		X	X					X	X			X				X		X	X				X	
	GP liaison officer																													X	X					
	Health Worker (Screening Centre)	X	X	X		X		X					X																				X		X	
	Health Worker (Contact Tracing)	X	X	X		X		X										X	X										X						
	Surveillance Officer (Treatment)									X							X										X		X						
	Community Volunteer	X		X																									X			X			X
	Monitoring and Evaluation Officer																								X	X										

Human Resources Requirements SEM Model

Staff	Employed by	Number			Level	Qualifications	Tasks	LOE	Monthly Salary	
		Existing	Scale-up	TOTAL					TK	USD
Project Director	icddr,b	1	0	1	International	PhD, MS, MBBS	Maintain liaison with donors and Intl. stakeholders, Relationship with NTP and other local partners, Overall project supervision, Budget management, Reporting to NTP	60%	624,000	$7,800
Coordinator	icddr,b	1	0	1	National	MPH, MBBS	Project Supervision, liaison with local partners and NTP, Maintain Liaison with Physicians, Supervision of other managers, M& E, Reporting to NTP, Training, operational management of GeneXpert® system	100%	191,920	$2,399
Business Dev. Mgr.	icddr,b	1	0	1	National	MBA	Establish Screening Centre, Procurement and logistics, Development of communication materials, Business case preparation, forecasting, Budgeting, Business projections.	100%	169,920	$2,124
Monitorin g and Evaluation Officer	Icddr,b	0	1	1	National	Masters	Conduct monitoring and evaluation and laboratory quality assurance	100%	96,560	$1,207
Medical Officer	Icddr,b	0	3	3	National	MBBS	Participate in mapping and networking of PPs; training and orientation of private providers; supervise TB treatment all TB patients, including MDR-TB; ensure effective coordination between SEM centres, NTP centres and PPs.	50%	96,560	$1,207
Project Research Physician	icddr,b	1	5	6	National	MBBS	Mapping and networking of physicians; orientation of physicians; Checking appropriate treatment regimens, monitoring treatment outcomes; resource for managing side effects, continuous training	100%	46,000	$575
Field Research Officer	icddr,b	1	11	12	National	Masters	Role similar to the Project research physician, supervise community volunteers and field research assistant, assess screening quality, monitor number referred out of those screened. Training conduct	100%	46,000	$575

Staff	Employed by	Number			Level	Qualifications	Tasks	LOE	Monthly Salary	
		Existing	Scale-up	TOTAL					TK	USD
GP Liaison Officer	icddr,b	3	27	30	National	Masters	Mapping and networking of PPs, FU physician in an area; get input and provide feedback; Some supervision of community screeners	100%	30,160	$377
Health Worker Screening Centre	Icddr,b	8	34	42	Field – Urban Screening Centre	HSC	Interview patients at the Screening Centre; do further screening; provide additional information on TB; provide sputum sample instructions; Counselling patients on options for treatment - DOTS or physician	100%	18,800	$235
Health Workers (contact tracing)	icddr,b	0	12	12	Field – Urban Screening Centre	HSC	Contact tracing and presumptive cases identification; spot sputum collection of the presumptive contacts; provide additional information on TB; provide sputum sample instructions; Counselling patients on treatment initiation in DOTS; track down treatment defaulters	100%	18,800	$235
Radiographer	icddr,b	6	30	36	Field- Urban Laboratory	Dip. Med Tech. Radiography	Do chest X-ray; report; refer patients for GeneXpert®	100%	12,000	$150
Surveillance worker	icddr,b	0	30	30	Field Urban Laboratory	HSC	Provide treatment, Follow-up treatment adherence and identification and supervision of treatment supporters	100%	18,800	$235
Community Volunteer	icddr,b	4	26	30	Field GP Offices	HSC	Screen Patients; get feedback from physicians; make sure suspects show up at screening centre	100%	8,580	$110
Receptionist	Icddr,b	3	27	30	Field- Urban Laboratory	HSC	Handling patient registration, receiving payments, providing token after payment, waiting area and queue management, patient gowning and de-gowning and overall service flow management	100%	8500	$109
Porter	Icddr,b	1	11	12	HSC	HSC	Sample transportation, report delivery and logistics distribution	100%	8970	$115
Cleaner	Icddr,b	2	22	24	HSC	HSC	Maintain cleanliness of the screening centres	100%	6000	$75
Security Guard	Icddr,b	3	33	36	HSC	HSC	Ensure security of the screening centres	100%	10,000	$125

Staff Task Mix Workplace Model

		SERVICE DELIVERY TASKS																				PUBLIC HEALTH TASKS										
	Title/Type	Suspect Identification	Suspect Referral	Sputum Collection	Microscopy	Diagnose TB	Notify Cases	Inform patients about TB and TB treatment	Prescribe treatment	Provide treatment	DOTS provider selection	DOTS/supervise treatment	Follow up with patient	MDR TB treatment supervision	TB-HIV diagnostic and treatment linkages	Paediatric IPT	Referral for follow up microscopy	Contact Tracing	Defaulter Tracing	Recording and data entry	Reporting	Stewardship, financial management	Coordination with government/other stakeholders	Drugs and Supply Management	Monitoring and Evaluation	Laboratory Quality Assurance	Identification and supervision of treatment supporters	Supervision	Training, Orientation or Sensitization	ACSM	Mapping and Enrolment of Private Providers	Quarterly oversight
Provider	**BGMEA Doctor**	X	X			X	X		X			X				X	X												X			
	BGMEA Nurse	X						X																								
Suppo rt Staff	M & E officer																			X	X		X	X	X			X	X			
	Lab. Technician			X	X			X					X							X	X											
	Field Staff			X				X		X			X					X	X										X			
	Community Volunteer											X						X	X													

Human Resources Requirements Workplace Model

Staff	Employed by	Number			Level	Qualifications	Tasks	LOE	Monthly Salary	
		Existing	**Scale-up**	**Total**					**TK**	**USD**
Chairman Co-chairman	BGMEA	1	0	1	National	Master	Quarterly program review, FM, coordination	5%	80,000	$1,000
Coordinator	BGMEA (GF)	1	0	1	National	MBBS	Coordination, staff management, financial management, supervision, monitoring, reporting, orientation/ sensitization	100%	80,000	$1,000
M/E Officer	BGMEA (GF)	1	0	1	National	Masters	Supervision/monitoring, reporting, orientation/sensitization	100%	50,000	$625
Accounts Officer	BGMEA (GF)	1	0	1	National	Masters	Financial management/accounting, financial reporting	100%	50,000	$625
Doctor	BGMEA	20	4	24	BGMEA Clinic	MBBS	Suspect identification, diagnosis, treatment, reporting, referral, follow up	20%	50,000	$625
Nurse/ Paramedic	BGMEA	18	4	22	BGMEA Clinic	Diploma in Nursing or 18m Paramedics training	Suspect identification, inform on TB and treatment	20%	25,000	$313
Lab Tech	BGMEA (GF)	11	2	13	BGMEA Clinic	Diploma in Lab technology	Sputum microscopy, recording/reporting	100%	35,000	$438
Field Supervisor	BGMEA (GF)	14	5	19	Field	Graduate	Suspect identification, ACSM, medication supply, orientation, follow up test, coordination, supervision/monitoring	100%	25,000	$313
Volunteers	BGMEA	44	8	52	Field	Class 8	Supervise treatment, contact tracing, defaulter tracing	63%	4000	$50

Staff Task Mix Informal Healthcare Provider Model

		SERVICE DELIVERY TASKS																				PUBLIC HEALTH TASKS										
	Title/Type	Suspect Identification	Suspect Referral	Sputum Collection	Microscopy	Diagnose TB	Notify Cases	Inform patients about TB and TB treatment	Prescribe treatment	Provide treatment	DOT provider selection	DOT/supervise treatment	Follow up with patient	MDR TB treatment supervision	TB-HIV diagnostic and treatment linkages	Paediatric IPT	Referral for follow up microscopy	Contact Tracing	Defaulter Tracing	Recording and data entry	Reporting	Stewardship, financial management	Coordination with government/other stakeholders	Drugs and Supply Management	Monitoring and Evaluation	Laboratory Quality Assurance	Identification and supervision of treatment supporters	Supervision	Training, Orientation or Sensitization	ACSM	Mapping and Enrolment of Private Providers	Quarterly oversight
Provider	Village Doctors Drug sellers	X	X	+/-				X				X	+/-	X			X	+/-		+/-									X		
	Pharmacy owner	X	X	+/-				X				X	+/-	X			X			+/-									X		
Support Staff	TLCA/CA*	X	X	X	X			X		X	X	X	X	X		X	X	X	X	X	X		X			X	X	X	X	X	X	

* TLCA = TB and Leprosy Control Assistant. CA= Clinic Assistant. (X) = yes, (+/-) = partly/sometimes

Human Resources Requirements Informal Healthcare Provider Model (Damien)

Staff	Employed by	Number			Level	Qualifications	Tasks	LOE	Monthly Salary	
		Existing	**Scale-up**	**TOTAL**					**TK**	**USD**
Medical Specialist (MS)	DF	1	0	**1**	National	MBBS, MPH	Preparation of 3-yer action plan, analyses reports and data	5%	ND	ND
Medical Coordinator (MC)	DF	1	0	**1**	National	MBBS, MPH	Program development, monitoring & supervision, preparing programme reports and guidelines, Training and IEC material development, Compilation, coordination of DF programme activities at national level and provide technical guidance to project level.	5%	ND	ND
Medical Officer/ Consultant	DF	8	0	**8**	District	MBBS, MPH	Train graduate providers; maintain liaison with graduate providers	12%	22,500	$281
M&E Officer / FC / Sr. TLCO	DF	5	0	**5**	District, Upazila	Paramedic	Train village doctors, maintain liaisons, collect data	15%	11,000	$138
TB Leprosy Control Officers (TLCOs)	DF	31	0	**31**	Upazila	Graduate with at least 2 year's field experience with DF	Mapping of private providers; planning for training; Training; follow-up with PPs and VDs,	20%	8,500	$106
Paramedics (TB & Leprosy Control Assistants - Sr. TLCA / TLCA)	DF	374	126	**500**	Upazila	Class 12	Field follow-up every 2 months; follow patients on DOT; Training/orientation for VDs; drug delivery to VDs; communicating via phone with VDs to verify and collect data/issues	20%	7,000	$88

Staff Task Mix Urban Private Provider Pilot

	Title/Type	Village doctor	Program Organizer	Shasthya Shebika
SERVICE DELIVERY TASKS	Suspect Identification	X	X	
	Suspect Referral	X	X	X
	Sputum Collection		X	X
	Microscopy			X
	Diagnose TB			
	Notify Cases		X	
	Inform patients about TB and TB treatment	X	X	
	Prescribe treatment			X
	Provide treatment		X	
	DOT provider selection		X	X
	DOT/supervise treatment		X	
	Follow up with patient		X	
	MDR TB treatment supervision		X	X
	TB-HIV diagnostic and treatment linkages			
	Paediatric IPT		X	X
	Referral for follow up microscopy		X	X
	Contact Tracing	X	X	X
	Defaulter Tracing		X	
	Recording and data entry		X	
	Reporting		X	
PUBLIC HEALTH TASKS	Stewardship, financial management			
	Coordination with government/other stakeholders			
	Drugs and Supply Management		X	
	Monitoring and Evaluation			
	Laboratory Quality Assurance			
	Identification and supervision of treatment supporters			
	Supervision			
	Training, Orientation or Sensitization			
	ACSM		X	
	Mapping and Enrolment of Private Providers		X	
	Quarterly oversight		X	

Human Resources Requirements Urban Private Provider Pilot

Staff	Employed by	Number			Level	Qualifications	Tasks	LOE	Monthly Salary	
		Existing	Scale-up	TOTAL					TK	USD
Senior Sector Specialist	BRAC	1	0	1	HO	MBBS/MBA/MA in social science	Technical support, coordination with NTP, supervision and monitoring	10%*	ND	ND
Divisional Manager	BRAC	60	0	60	District	Promoted from UM level	Supervision & monitoring of PO/UM activities, coordination with government staff, drug requisition, logistic requisition, ensuring quality of TB program	7%*	ND	ND
Upazila Manager	BRAC	35	0	35	Upazila	Masters	Supervise activities of PO, follow-up patients, ensure drugs & logistic and reagents, recording and reporting	15%*	ND	ND
Program Organizer	BRAC	0	0	35	Upazila	BA (PASS)	Mapping providers, suspect identification and referral, sputum collection, case notification, providing patients information on TB, selecting a DOTS provider and supervising treatment, MDR-TB treatment supervision, referral for follow microscopy, contact tracing, reporting and recording and drug supply management.	100%	25,556	$319
Shasthya Shebika	BRAC	ND	ND	ND	Community	Class 8	Suspect Identification; Suspect referral; DOT, TB awareness message dissemination	5%	NA	NA