REVISED STRATEGIC PLAN FOR NATIONAL TUBERCULOSIS CONTROL PROGRAMME 2012-2016

National TB Control Programme
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of the People's Republic of Bangladesh

World Health Organization
Country Office for Bangladesh

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Table of Content

Abbreviations

ACSM	Advocacy, communication and social mobilization
ARI	Acute respiratory infection
BGMEA	Bangladesh garments manufacturers and exporters association
BMA	Bangladesh medical association
BPMPA	Bangladesh private medical practitioners association
BRAC	Bangladesh rural advancement committee
CDC	Chest disease clinic
c-PMDT	Community based in programmatic management of drug resistant TB
CS	Civil surgeon
DFP	Directorate of Family Planning
DGHS	Directorate General of Health Services
DOTS	Directly-observed treatment short course, (internationally recommended strategy for control of tuberculosis)
DOTS-Plus	Programmatic management of multi-drug resistant TB
DST	Drug sensitivity testing
ESP	Essential service package
EQA	External quality assessment
FDC	Fixed dose combination
FIND	Foundation for innovative diagnostics
GDF	Global drug facility
GFATM	Global fund to fight against AIDS, TB and Malaria
GLC	Green light committee
GLI	Global laboratory initiative
GoB	Government of Bangladesh
HFWC	Health and Family Welfare Center
HPNSDP	Health, Population and Nutrition Sector Development Programme
HNPSP	Health, Nutrition and Population Sector Programme
HPSP	Health and Population Sector Programme
HRD	Human resources development
IC	Infection control
ICDDR,B	International center for diarrheal disease and research, Bangladesh
IDU	Injecting drug users
IEC	Information education and communication
LED	Light emiting diode
LED-FM	LED Fluorescent microscope
LPA	Line Probe Assay

LTCA	Leprosy and Tuberculosis Control Assistant
MBDC	Mycobacterial Disease Control
MCWC	Maternal and child welfare center
MCH	Maternal and child health
MDG	Millennium Development Goal
MDR-TB	Multidrug-resistant tuberculosis
MIFA	Managing information for action
MO-MCH	Medical Officer, Maternal and child health
MoU	Memorandum of understanding
NATAB	National Anti-TB Association of Bangladesh
NASP	National AIDS / STD Programme
NCIHD	Nuffield center for international health development
NGO	Nongovernmental organization
NIDCH	National Institute of Diseases of Chest and Hospital
NSP	National Strategic Plan
NTP	National Tuberculosis Control Programme
NTRL	National TB reference laboratory
PM	Programme Manager
PAL	Practical approach to lung health
PLWHA	People living with HIV / AIDS
PHC	Primary health care
PMDT	Programmatic management of drug resistant TB
PPM	Public private mix
PRSP	Poverty reduction strategy programme
RTRL	Regional TB reference laboratory
SOP	Standard operating procedure
SRL	Supranational TB reference laboratory
SSF	Single stream funding
TB	Tuberculosis
TBCAP	Tuberculosis Control Assistance Programme
TOT	Training of trainers
UHC	Upazila Health Complex
UH&FPO	Upazila Health and Family Planning Officer
UZ	Upazilla
VCT	Voluntary counseling and testing
WHO	World Health Organization

Dr. A.F.M. Ruhal Haque M P
Minister
Ministry of Health & Family Welfare
Govt. of the People's Republic of Bangladesh

Message

Tuberculosis (TB) still remains as a worldwide public health problem with an estimated 8.7 million new cases and 1.4 million deaths (due to TB) in 2011. With 2.2% of the total Global Population, Bangladesh is bearing 3.9% of the global TB burden and ranks 6th among the high TB burden countries. To combat this problem, Bangladesh has given high priority through National TB Control Programme (NTP). In order to focus the specific areas of intervention, "National Strategic Plan (NSP)" for the next 5 years has been developed by NTP. It aims to inform all the stakeholders on strategic directions to be taken into considerations while developing their implementation plan.

NTP has taken initiative to publish "REVISED STRATEGIC PLAN FOR NATIONAL TUBERCULOSIS CONTROAL PROGRAMME, 2012-2016" I Like to congratulate the NTP team of the Directorate General of Health Services for their intiative.

I am very happy to say that TB Control services under DOTS strategy are available free of cost throughout the country and NTP has achieved a commendable success in terms of treatment success and case notification. Still NTP has to address many challenges in combating TB and they need to prepare a well organized plan focusing on different areas of STOP TB Strategy. I hope this document will be very much helpful for NTP and its implementing partners to prepare work plan and formulate specific activities in relation to TB control including MDG.

Government is committed to provide all sorts of support to NTP for achieving its target.

I would like to express my thanks to all those who were involved in preparing this important document.

Joy Bangla, Joy Bangabandhu
Long live Bangladesh.

Prof. A.F.M. Ruhal Haque, MP

Dr. Capt. (Rtd.) Mozibur Rahman Fakir, M P
State Minister
Ministry of Health & Family Welfare
Govt. of the People's Republic of Bangladesh

Message

After the publication of "The Strategic Plan for TB Controal 2006-2010" NTP is going to publish this "REVISED STRATEGIC PLAN FOR NATIONAL TUBERCULOSIS CONTROL PROGRMME, 2012-2016" I do congratulate the National Tuberculosis Control Programme (NTP) of the Directorate General of Health Services for their initiative to publish it.

We all know that a strategic planning is very much necessary to plan the activities. This strategic plan has addressed the issues and challenges of the TB control programme and enumerated the important indicators. Also this strategic plan has highlighted the procurement and supply chain management in a broader context. NTP Bangladesh is working hard to achieve their objectives and reduce the TB related mortality and morbidity. NTP is maintaining a high treatment success rate and case notification rate. NTP has been expanding its activities to control the emergence of drug resistant TB (DR-TB). Government of Bangladesh is committed to combat TB by introducing newer diagnostic technique so that universal coverage in the area of TB control could be achieved.

The partners will be benefitted with this strategic plan and donors will get a clear idea about the TB control perspective of Ministry of Health & Family Welfare, Bangladesh.

I am confident that all stakeholders will find this strategic plan very useful and I thank all those who have contributed in preparing this valuable document.

Joy Bangla, Joy Bangabandhu
Long Live Sheikh Hasina
May Bangladesh Live Forever

Dt. Capt. (Retd.) Mozibur Rahman Fakir, MP

Secretary
Ministry of Health and Family Welfare
Govt. of the People's Republic of Bangladesh

Message

The Ministry of Health & Family Welfare under the guidance of Government is given high priority to TB control Programme. TB control programme is one of the successful programmes in the country. "Free of cost" TB drugs and diagnostics are made available to all over the country. National TB Control Programme (NTP) has expanded its services through its Headquarters to specialized hospitals. Medical College Hospitals, District Hospitals and all the Upazila health centers. Recently NTP has integrated its programme with the community clinics by providing training of community health care providers. All these became possible as NTP is following a sound strategic plan. NTP is going to publish its "REVISED STRATEGIC PLAN FOR NATIONAL TUBERCULOSIS CONTROL PROGRAMME 2012-2016" . On this occasion, I would like to congratulate NTP for his initiative.

TB is one of the major public health problems and its effects are worse in developing nations. Bangladesh is highly populated country and TB control is a major health intervention for the Government. TB should be controlled and it will help in achieving the targets of MDG.

I am very confident that this National strategic plan will help all the stakeholders in identifying their future actions and will support NTP in a more efficient and effective way.

I recommended this strategic plan for intensive use by all the stakeholders in implementing interventions in National TB Control Programme.

19.8.13

M. M. Neazuddin

Message

The Tuberculosis Control Programme has been in the list of high priority among the other disease control programme of the country and government is providing continuous support to the National Tuberculosis Control Programme (NTP). The NTP under the Directorate General of Health Services has achieved commendable success in TB control and reached the Global target of treating successfully 85% of detected cases in 2003 and diagnosing 70% of estimated new smear positive cases in 2006. This becomes possible by the joint effort of the Government, NGOs and development partners.

The challenge is to sustain the achievements and maintain the quality of services along with new threats of emergence of drug resistant cases of TB (DR-TB). At the same time new diagnostic tools become available very recently. In order to manage all these issues NTP has developed it's "REVISED STRATEGIC PLAN FOR NATIONAL TUBERCULOSIS CONTROL PROGRAMME, 2012-2016". This strategic plan has addressed all the challenges in the area of diagnosis, treatment, drug supply and procurement. I like to congratulate NTP for their effort.

A strategic planning is the pillar for indentifing specific activities, resource needs both human and financial and determining the tragets for all the stakeholders. This strategic plan will open the avenue to detail the technical assistance needs, budgetary needs and human resource needs of different players working in TB control fields.

I am very much hopeful that NTP will be successful in achieving the targets of MDG by 2015. I also hope that this strategic plan will provide guidance to the managers and health care providers in managing TB.

Prof. Dr. Khondhaker Md. Shefyet Ullah
Director General
Directorate General of Health Services
Ministry of Health & Family Welfare

World Health Organization
Country Office for Bangladesh

Message

The World Health Organization (WHO) congratulates the Government of Bangladesh and the National Tuberculosis Control Programme (NTP) for coming up with the new National Strategic Plan (NSP) for TB Control Programme for 2012-2016. And WHO is happy to be a part of it.

WHO is well acclaimed for its supports to the urgent national efforts to promote universal access to TB prevention, treatment and care. It serves the people in need to meet the Millennium Development Goal targeting to halt and reverse the TB incidence as well as halving its prevalence and mortality against the1990 levels.

Tuberculosis (TB) is still a major cause of death worldwide with an estimated 8.7 million new cases and 1.4 million deaths in 2011, including 0.43 million deaths from TB among HIV-positive people. Bangladesh still ranks sixth among the 22 high burden countries which together account for 80 percent of all TB cases worldwide.

It is good to say that TB control programme in Bangladesh continues to improve and the Government is highly committed to control the disease through its Directorate General of Health Services (DGHS). Over the years, the sincere effort of the GoB has enabled the NTP to gain a commendable success in the field of TB control.

Like in the past, WHO reiterates its commitment to provide technical assistance to NTP in order to achieve the MDG related TB target by 2015. I hope that this "Revised Strategic Plan for National Tuberculosis Control Programme, 2012-2016" will add new stimuli to achieve TB goals.

We believe that together we can bring a difference to the lives of millions of people vulnerable to TB, an old disease persists with new vigor.

Dr Thushara Fernando
WHO Representative to Bangladesh

Foreword

Since 1965 TB services in Bangladesh were mainly curative and based in TB clinics, TB hospitals. During the Second Health and Population Plan (1980-86) TB services were expanded to 124 Upazila health complexes (UHC) and were operationally integrated with leprosy during the Third Health and Population Plan (1986-91) under the "Mycobacterial Disease Control" (MBDC) Directorate.

The NTP adopted the DOTS strategy in1993 during the Fourth Population and Health Plan (1992-98) and progressively expanded to cover all 460 Upazilas by June 1998. Since July 1998 the health and population sector was reformed and services were available through sector wide approach named Health and Population Sector Programme (HPSP). NTP formulated a strategic plan within the context of HPSP. HPSP tried to horizontally integrate the NTP management into an Essential Services Package (ESP). The stated goals of the strategic plan of NTP therefore were "to improve health and family welfare among the most vulnerable women, children and poor of the country".

Within the broader context of the Bangladesh National Strategy for Economic Growth. Poverty Reduction and Social Development (Bangladesh Interim Poverty Reduction Strategy Paper (IPRSP, March 2003), the Government of Bangladesh revised its strategic approach and renamed HPSP as Health, Nutrition and Population Sector Programme (HNPSP). Since 2003, NTP continues its activities under the MBDC directorate which functions under the DGHS of the Ministry of Health and Family Welfare. Priority objectives of HNPSP were reducing the maternal mortality rate, the total fertility rate, malnutrition, infant and under-five mortality and the burden of TB and other diseases.

In 2011, the Government of Bangladesh further revised its strategic approach and renamed HPNSP as Health Population and Nutrition Sector Development Programme (HPNSDP): July 2011-June 2016 prioritizing TB control under communicable diseases, NTP continues its activities under the directorate MBDC of DGHS of the Ministry of Health and Family Welfare.

The overall vision of NTP is "to eliminate Tuberculosis as a public health problem from Bangladesh". To achieve the vision, the programme has now adopted the new objectives of **"Universal Access"** for quality diagnosis and treatment for all TB patients in the community thus, reaching the target of halving TB death and prevalence under Millennium Development Goals set by 2015 and eliminate TB as a public health problem by 2050. The National TB Control Programme adopted WHO Global and Regional Stop TB Strategy and will continue in this revised strategic plan for National Tuberculosis Control Programme 2012-2016 plan.

I hope and believe that this document will be very much helpful for all stakeholders in proper planning and implementing TB control activities in future. I am very much grateful to all those who have contributed in preparing this important document.

Dr. Md. Ashaque Husain
Director MBDC and Line Director TB/Leprosy
Directorate General of Health Services

Acknowledgement

The objective of this "REVISED STRATEGIC PLAN FOR NATIONAL TUBERCULOSIS CONTROL PROGRAMME 2012-2016" is to make a framework for next five years to reach the goal of NTP Bangladesh and to meet the targets of MDG in TB.

This document has carefully analyzed the present TB control situation in Bangladesh and identified the gaps and challenges. Before finalization of this strategic plan, a stakeholders' workshop was held and regional advisor-TB from WHO SEARO has narrated the plan. After a day long discussion necessary corrections were included and the strategic plan was finalized. The facts and figures were being supplied by the NTP, and other partner NGOs.

I thank all the contributors, and staff and consultants of NTP. I would like to express my sincere thanks to WHO for technical and financial support for preparation of this strategic document.

I believe that this strategic document will facilitate the partners in identifying their needs and supporting the NTP in different areas of strategic objectives and thereby enhancing achievement of ultimate goal of NTP.

Dr. Md. Nuruzzaman Haque
Dy. Director MBDC and Program Manager-TB
National TB Control Programme
Directorate General of Health Services

Executive summary

Tuberculosis is a major public health problem in Bangladesh and currently ranks sixth among the high TB burden countries. According to WHO[1] the annual estimated incidence for all cases is 225 per 100 000 population per year. The prevalence of all cases is estimated to be 411 per 100000 population. The estimated TB mortality is 45 per 100000 population per year. The overall case notification rate for all cases was 99 per 100000 population and case notification rate for new smear positive cases was 65 per 100000 population in 2011 The treatment success rate was 92% for the cohort of patients registered in 2010[2] .

Though there is a separate line directorate for Mycobacterial Disease Control, TB services are integrated in the primary health care (PHC) system at the service delivery level. Bangladesh is an outstanding example of implementing TB control in partnership with NGOs. Some corporate health facilities (BGMEA), Prison and private hospitals are also formally linked to National Tuberculosis Control Program (NTP). An increasing number of private practitioners render services in line with the International Standards of TB Care (ISTC).

The overall vision of NTP is to eliminate Tuberculosis as a public health problem in Bangladesh. To achieve the vision, the programme has now adopted the new objectives of "Universal Access" for quality diagnosis and treatment for all TB patients in the community thus reaching the MDG related TB targets of halving TB death and prevalence by 2015 compared to 1990. The National TB Control Programme adopted WHO Global and Regional Stop TB Strategy and will continue in this revised 2012-2016 plan.

As of 2011, over 1050 laboratories were performing smear microscopy in the country and more than 95% were covered under the EQA network. A National Tuberculosis Reference Laboratory was established in 2007 in National Institute of Diseases of Chest and Hospital (NIDCH) in Dhaka. In August 2008, NTP started enrollment of MDR TB patients under Green Light Committee (GLC) approved 24 months regimen in NIDCH with the support of GFATM. As a part of Programmatic management of Drug resistant TB (PMDT) plan, NTP established regional TB reference laboratory (RTRL) at Chest Disease Hospital (CDH), Chittagong in 2011. As of 2011 a total of 722 MDR patients have been enrolled for management under GLC approved 24 months regimen. NTP has plan to expand PMDT in other divisions of the country. The MDR TB patients are also managed in teh CDH, Rajshahi with a shorter regimen of 9 months and supported by Damien foundation, Bangladesh. From May 2005- December 2011 a total of 848 MDR TB patients have been enrolled in this hospital for management with 9 months regimen. A RTRL has also been established in CDH Rajshahi in May 2008. A National Forum for TB/HIV has been formed. TB/HIV operational guidelines were developed. The latest available data showed a consistently low HIV prevalence level in TB patients. Initiatives by NGOs for HIV awareness and voluntary counseling and testing were available at city corporation areas and in some districts. Ongoing collaboration between NTP and the National AIDS/STD Programme (NASP) will be strengthened. A national HIV prevalence survey among TB patients will be carried out in every 2- 3 yearly interval.

Human Resource Development (HRD) Plan 2011-2015 was recently developed and was endorsed by the MoH&FW. NTP is scaling up public and private partnership in the corporate sector and involvement of civil society and community. A strategic plan and operational guidelines for advocacy, communication and social mobilization (ACSM) have been developed and under review. NTP established computerized data management system at central level and computerized data entry at sub-national level and reporting through email. The e-TB manager software is in expansion phase after completion of piloting phase.

[1]Source : Global Tuberculosis Control 2012

[2]Source : NTP Annual Report 2012

The NTP will strengthen capacity for increasing diagnosis of smear-negative, extra-pulmonary and childhood TB. Adequate services for chest X-ray examination at upazila and district level, including training of doctors in X-ray reading will be established. Syndromic management of respiratory cases through Practical Approach to Lung Health (PAL) project will also strengthen the capacity of different levels of health workers. The quality of the National Tuberculosis Reference Laboratory (NTRL) needs improvement and will be sustained up to international standards with support from the Antwerp, Belgium-Supranational Reference Laboratory (SRL). Three additional culture and drug susceptibility testing facilities (Khulna, Sylhet and Barisal) are proposed to be established and will be made functional by NTP. Further development of MDR-TB should be prevented by correct categorization of patients, regular adherence to treatment, strengthening follow-up sputum microscopy services to detect and by sensitizing different private health care providers on issues related to development of drug resistance. Laboratory capacity needs to be built to support MDR-TB management and the national drug-resistance survey is expected to be completed in early 2012. Capacity should be built for the programmatic management of MDR-TB including new initiative for community based management of MDR-TB TB (cPMDT).

All relevant staff will be trained in drug supply management. Adequate space for TB drugs will be ensured in the Government warehouse complex currently under construction.

Collaboration with industries and pharmacy holders through their respective associations will be expanded. A monitoring system to supervise and evaluate PPM activities by different partners will be established. Formal linkages between NGOs, NTP and public and private sector health care providers will be strengthened. A long-term TB ACSM strategy needs to be implemented to build ACSM capacity, mobilize support and achieve measurable and sustainable behavior change.

Strengthening of the health system for TB shall focus on ensuring basic infrastructure for TB control services, particularly X-ray facilities and transport and PAL initiatives.

Introduction

1.1 Geographic, demographic and socio-economic features

Bangladesh is situated in the north-eastern part of South Asia. It has an area of 147 570 sq. km and a population of over 150 million. The country's population is almost evenly distributed throughout its 64 districts except for the three Hill Tracts districts which are rather sparsely inhabited. Regionally, the eastern districts have a slightly higher density than the western ones. Administratively the country is divided in seven divisions, 64 districts, 488 upazilas and 4,466 unions. The average population for each administrative unit is about: 22 million (division), 2.3 million (district), over 300 000 (upazilas), 33 600 (union) and 2200 (village). The number of households is about 30 million. On average, a household consists of 4.7 persons. The tribal people, who lead a simple life, are generally self-reliant, producing their own food and drinks and weaving their own clothes.

There are six city corporations and 309 municipalities in the country. The level of urbanization is low at 20%. This leaves 80% of the country's total population of about 120 million to live in the rural areas which primarily depend on a poorly developed agriculture for livelihood. Thirty five percent of the population is younger than 15 years old. The capital city of Dhaka has an estimated population of over 12 million. The annual growth rate of the population has come down to 1.4% (2008) with the acceptance of family planning practices rising to 48.7%. The crude birth rate per 1000 is 20.1 and the death rate is 6.1. Life expectancy at birth is 66.9 years. The rate of infant mortality per 1000 has come down to 41 and that of maternal mortality to 3.35. About 96.3% families in the country have now access to safe drinking water. The sex ratio is 104.8 males for every 100 females. The density of population per square kilometer is 993. The adult literacy rate is about 50%. It is a low income country with a gross national income per capita of around 751 US$ per year. [3]

1.2 Overall health system structure

The Government of Bangladesh (GoB) is committed to ensure that its citizens are provided with opportunities to realize their fullest potential. Reducing poverty and improving health is central to this objective. Better health is a direct outcome of economic development. At the same time, stronger economic growth is an important consequence of better health. Improvements in health translate into higher incomes, higher economic growth, and reduced levels of poverty. Among the priority objectives of HPNSDP, Tuberculosis has been identified as a major public health problem in Bangladesh and the efforts to be continued to reduce morbidity, mortality and decrease transmission of infection until it is no longer a public health problem.

The MoH&FW health system is structured as a hierarchical pyramid with five layers: three at the primary, one at the secondary and one at the tertiary level. At the base are ward-level DGHS Health Assistants and DFP Family Welfare Assistants, serving a population of about 6,000 to 7,000 people, performing home visits and working from a Community Clinic (where operational), tasked with family planning, maternal and child health, including immunizations, communicable disease control, symptomatic curative care for common complaints, and upward referrals. The next level is the Union Health and Family Welfare Centre (HFWC), staffed by three paramedical, Sub-Assistant Community Medical Officer, Family Welfare Visitor, and Pharmacist, providing family planning, maternal and child health services and some curative care. On the

[3]Source : SPBP 2010

family planning side, 250 posts of union-level Medical Officer (Family Welfare) have been created to provide care for MCH referral cases and to supervise and perform clinical contraceptive services. On the health side, a Medical Officer is posted to each of 1275-upgraded HFWCs under the Health Directorate (formerly called Union Sub-centers). At the next level is the Upazila Health Complex, which are the first-level referral centre for the population in the Upazila and the administrative centre for Upazila health and family planning services. Staffing norms foresee, on the health side, nine doctors, two Medical Assistants, a pharmacist, radiographer and an EPI technician and staff nurses, joined on the family planning side by an Upazila Family Planning Officer, Medical Officer (MO-MCH), Assistant Family Planning Officer, Senior Family Welfare Visitor and two Family Welfare Visitors. The UHC is responsible for inpatient and outpatient care, family planning and MCH services, including clinical contraception, and for disease control. On the health side, the fourth layer is the district hospital, which is a 50 to 250-bed facility. Heads of health and family planning services at Upazila as well as district level both have technical as well as administrative responsibilities and combine responsibilities for clinical care with community and public health responsibilities. In 55 of 64 districts, Maternal and Child Welfare Centres (MCWCs) of the Family Planning Directorate are staffed and equipped to provide Comprehensive Emergency Obstetric Care and other clinical reproductive health services. The fifth tier of the public-sector health system is comprised of the medical college and other specialized hospitals, providing tertiary-level referral care.

The Health and Family Planning Management Structure in Bangladesh

- **The Secretariat.** The Honorable Minister is the Chief Executive of the Ministry of Health and Family Welfare. The senior Secretary, who heads the Secretariat, is also the Principal Accounting Officer of the Ministry. The Secretariat is staffed by civil servants from within the Civil Service system

- **Directorates:**

  The Directorate General of Health Services: Supervises all health implementation activities

  The Directorate of Family Planning: Supervises, besides family planning, a significant part of maternal and child health services

  The Directorate of Drug Administration: Supervises national drug regulation and manufacture

  The Directorate of Nursing Services: This directorate oversees nurses as a profession

  The Directorates are (almost entirely) staffed by professionals and technicians. The Directorates are based in Dhaka and are housed separately from the Secretariat and from each other

- **Seven Regions (Divisions):** with Divisional Directors from both Health and Family Planning Directorates but without direct line-management role in service provision. Responsible for some support and HRD functions

- **64 Districts:** Consist of separate management structures for Health and FP. District health management (Civil Surgeon) reports to the Health Directorate and is responsible for general health services and the district referral hospital. Family planning management (Deputy Director FP) reports to FP Directorate and is responsible for FP and related MCH and reproductive health services

- **488 Rural Upazilas:** Upazila Health Complexes (with 31/50 hospital beds) serve as the first-level referral level facility and provide outpatient general health and MCH services plus inpatient care, with six beds reserved for family planning and MCH. While usually under the same roof, Upazila Health and Family Planning staff works under separate lines of command

- **Unions and Wards:** Union-level Health and Family Welfare Centres (HFWCs) are established based on administrative sub-divisions, regardless of population sizes, while Community Clinics are intended to serve a population of about 6,000. Services provided at this level are mainly EPI, MCH & FP and limited curative care. Some HFWCs are staffed and equipped for normal deliveries and obstetric first aid and offer adolescent health services

Bangladesh has made significant progress in recent years in several health indicators. Infant, maternal and under-five mortality rates have all decreased while the life expectancy has substantially increased. Immunization coverage was sustained at over 90% through the expanded programme of immunization and national immunization days. Some of this progress, however, is uneven and there still exists inequalities between different groups and geographical regions. A major constraint identified towards reaching the Millennium Development Goals and other national health goals is the issue of shortages in the health workforce and the uneven skill mix.

The public sector is largely used for in-patient and preventive care while the private sector is used mainly for outpatient curative care, particularly in urban areas. The growth of NGOs in the health sector underscores the importance of effective regulation by the government to ensure standardized and transparent recruitment and promotion system for the health workforce and establish good governance of all health institutions and facilities. The PHC approach has been chosen by the Government as the main strategy to achieve the goals of "Health for All". This is now being branded as "Revitalized PHC".

1.3 History of tuberculosis control

Since 1965 TB services in Bangladesh were mainly curative and based in 44 TB clinics, 8 segregation hospitals and 4 TB hospitals. During the Second Health and Population Plan (1980-86) TB services were expanded to 124 Upazila health complexes (UHC) under the "Strengthening TB/Leprosy Control Services" project and were operationally integrated with leprosy during the Third Health and Population Plan (1986-91) under the "Mycobacterial Disease Control" (MBDC) Directorate.

The NTP adopted the Directly Observed Treatment, Short course (DOTS) strategy, from November 1993 during the Fourth Population and Health Plan (1992-98) under the project "Further Development of TB and Leprosy Control Services" considering low case detection and cure rates at 10% and 40% respectively as reported by a study conducted by The World Bank in 1990. NTP started its field implementation in November 1993 in four pilot Thanas (later renamed upazilas) and progressively expanded to cover all 460 Upazilas by June 1998.

Since July 1998 the health and population sector was reformed and services were available through sector wide approach named Health and Population Sector Programme (HPSP). NTP formulated a strategic plan within the context of HPSP. HPSP tried to horizontally integrate the NTP management into an Essential Services Package (ESP). The stated goals of the strategic plan of NTP therefore were "to improve health and family welfare among the most vulnerable women, children and poor of the country".

Within the broader context of the Bangladesh National Strategy for Economic Growth, Poverty Reduction and Social Development (Bangladesh Interim Poverty Reduction Strategy Paper (IPRSP, March 2003), the Government of Bangladesh revised its strategic approach and renamed HPSP as Health, Nutrition and Population Sector Programme (HNPSP). Since 2003, NTP continues its activities under the directorate "Mycobacterial Disease Control", which functions under the Directorate-General of Health Services (DGHS) of the Ministry of Health and Family Welfare. Priority objectives of HNPSP are reducing the maternal mortality rate, the total fertility rate, malnutrition, infant and under-five mortality and the burden of TB and other diseases.

In 2011, the Government of Bangladesh further revised its strategic approach and renamed HPNSP as Health Population and Nutrition Sector Development Programme (HNPSDP) (July 2011-June 2016) prioritizing TB control under communicable diseases, NTP continues its activities under the directorate "Mycobacterial Disease Control", which functions under DGHS of the Ministry of Health and Family Welfare. The table 1 below shows summary of achievements of NTP from 1965 to 2011.

Table 1: ***Summary of achievements of NTP from 1965 to 2011***

Year	Achievements in TB control
1965	TB services through district based TB clinics and divisional based TB hospitals
1980-86	TB services were expanded to 124 Upazila health complexes (UHC) under the "Strengthening TB/Leprosy Control Services" project
1986-91	TB services were operationally integrated with leprosy under the "Mycobacterial Disease Control" (MBDC) directorate
1992-98	The NTP adopted the (DOTS) strategy, from November 1993 under the project "Further Development of TB and Leprosy Control Services". NTP started its field implementation in November 1993 in four pilot thanas (later renamed Upazilas) and progressively expanded to cover all 460 Upazilas by June 1998. Memorandum of Understanding signed between NTP and NGOs in 1994. First external review conducted by government and WHO in 1997 and recognized DOTS as model in the Region
1998-2003	NTP to sector-wide approach under Health and Population Sector Programme (HPSP). Following the international Call for Action (Amsterdam Declaration 2000) Bangladesh organized a second programme review in July 2001 and formulated a strategic plan within the context of HPSP. HPSP tried to horizontally integrate the NTP management into an Essential Services Package (ESP). The stated goals of the strategic plan of NTP therefore were "to improve health and family welfare among the most vulnerable women, children and poor of the country". TB service expanded to metropolitan cities
2003	The Government of Bangladesh revised its strategic approach and renamed HPSP as Health, Nutrition and Population Sector Programme (HNPSP). Since 2003, NTP continues its activities under the directorate "Mycobacterial Disease Control", which functions under the Directorate-General of Health Services (DGHS) of the Ministry of Health and Family Welfare. Priority objectives of HNPSP are reducing the maternal mortality rate, the total fertility rate, malnutrition, infant and under-five mortality and the burden of TB and other diseases. Secure CIDA grants. Involvement of private practitioners through pilot project
2004	Secure GFATM TB Round 3 grants. Scale up TB services in metropolitan cities as urban DOTS. DOTS in corporate sectors
2005	Initiate public-private mix project. TB services launched in prisons. The National Strategic Plan for 2006-2010 was developed

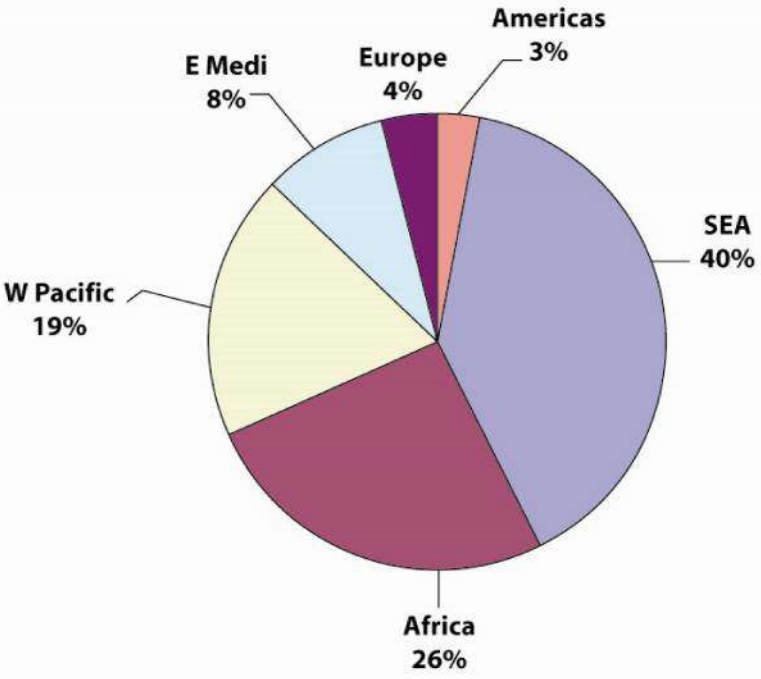
2006	2006 Secure GFATM TB Round 5 grants. Application to Green Light Committee (GLC) for approval of DOTS-Plus Project for treatment of 700 MDR-TB patients. GLC approved DOTS-Plus Project
2007	2007 The National TB Reference Laboratory was established and made functional. Scale up of DOTS in corporate sectors
2008	2008 Secure GFATM TB Round 8 grants. TB/HIV collaborative activities initiated. Initiated treatment of MDR-TB patients at NIDCH. Secure TB CAP funding
2009	2009 GLC review was conducted. Comprehensive HRD TB plan was developed. The National Strategic Plan for 2011-2015 was drafted
2010	2010 Secure GFATM TB Round 10 grants
2011	2011 Consolidation of GFATM Round 8 and 10 into Single Stream Funding (SSF). Secure TB CARE II funding. Revision of Programmatic Management of Drug-resistant TB (PMDT) guidelines. Development of SoP c-PMDT; Development of TB-Infection Control guidelines

1.4 Tuberculosis epidemiology

WHO estimated 8.7 (8.3-9.0) million incident cases of TB globally in 2011; among these, an estimated 0.5 million were children and 2.9 million occurred among women. In this year, 1-1.2 million (12-14%) TB cases were among people living with HIV. There were also 1.4 million deaths from TB (990,000 deaths among HIV-negative individuals and 430,000 among people who were HIV-positive). These deaths included 0.5 million among women, making TB one of the top killers of women worldwide. *(WHO Global Tuberculosis Report 2012,).*

Geographically the burden of TB is highest in Asia and Africa. Among all the WHO regions, South-East Asia region accounted for 40% and Africa region for 26%. It is 19% in the Western Pacific regions. The WHO Eastern Mediterranean region accounted for 8%, European Region 5% and the Region of Americas for 3% of the estimated incident TB cases in 2011. *(WHO Global Tuberculosis Report 2012,).*

Proportion of estimated incidence of all forms of TB by WHO Region -2011



(Ref. : WHO global TB Report-2012)

Bangladesh is one of the 22 TB high burden countries. Bangladesh notified a total of 150,899 new and relapse cases which is 82% of all TB cases in year 2011. Bangladesh is one of the 27 high MDR TB burden countries.

The latest TB estimates and notification rates for 2011, Bangladesh are summarized in Table 2.

Table 2 ***TB estimates and notification rates (2010)***

Estimates and notification rates for 2010, Bangladesh	
Population*	150 million
Incidence of all forms of TB*	340.000 (280.000-400.000)
Incidence rate of all forms of TB (per 100 000 population per year)*	225 (185-258)
Prevalence of all forms of TB*	620.000 (300.000-1100.000)
Prevalence rate of all forms of TB (per 100 000 population per year)*	411 (199-698)
TB death rate (of all forms of TB, excluding HIV per 100 000 population per year)*	45 (19-82)
Notification rate of all forms of TB (per 100 000 population for the year 2011)**	101
Notification rate of new smear-positive cases (per 100 000 population for the year 2011)**	65
Case detection rate (all forms of TB)	45 (37-54)
Treatment success rate (%) of new smear-positive cases for 2010 cohort**	92

**Source: Global Tuberculosis Control, WHO, 2012*
*** Source: NTP MIS/Annual Report*

DOTS coverage and case detection

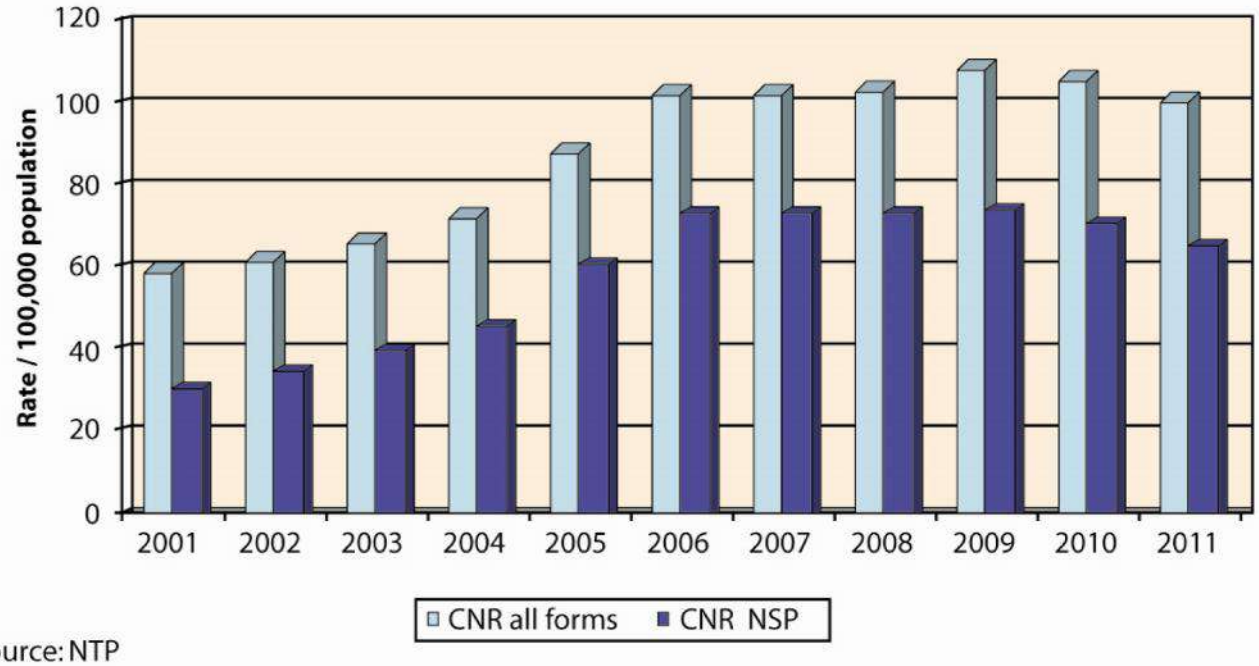
After the introduction of the DOTS strategy in 1993, the case-detection rate for new smear-positive cases increased gradually and reached 28% in 1998. Until 2001 only marginal progress was achieved in terms of further increasing the case-detection rate. This may be explained by the health sector reforms with virtually disappearance of TB as a separate national programme as well as uncertainties in funding. From 2001 onwards, case detection accelerated to reach 46% in 2004 and further increased to 61% in 2005 and 71% in 2006, thereby reaching the global target. DOTS coverage was reported 100% since 2007; it refers to the population living in areas where DOTS services are available. This does not exactly reflect that all people have equal access to diagnostic and or treatment facilities.

Case notification

At present the case detection rate indicator is not used for new smear positive cases as WHO do not provide any estimates. In place of case detection rate, case notification rate is used. Figure 2 shows the trends in notifications of new smear-positive and all forms of TB. The new smear-positive notifications increased gradually until 2004, with a sharper increase thereafter until 2006, since whence it appears to be a leveling off, suggesting that much more effort is now needed to further increase TB case detection.

Notification of all forms of TB showed a rather unstable profile till 2001, followed by a steady increase from 2004 onwards. This is probably attributable to the increasing involvement of medical colleges and private practitioners, through whom increasing numbers of smear negative and extra-pulmonary cases are notified.

Figure 2: ***Notification rate (per 100,000 population/year), 2001-2011***

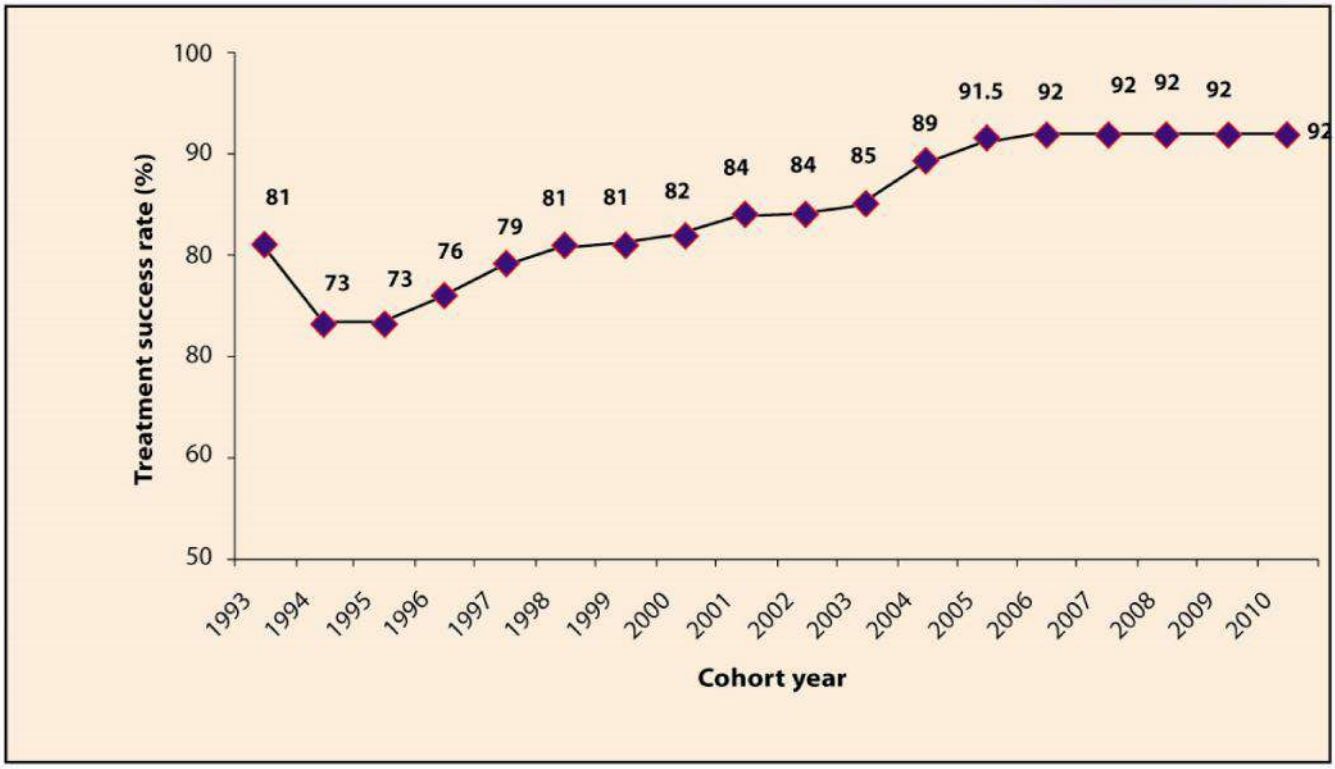


Source: NTP

Treatment outcomes

Figure 3 shows an increased trend in treatment success among new smear-positive cases enrolled for treatment. The treatment success rate reached the global target in 2003 and sustaining high rates onwards and reached to 92% in 2007. The NTP is maintaining this high (92%) treatment success rate since then.

Figure 3: ***Trends in treatment success rates, 1993-2010 cohorts***



Source: NTP

1.5 Current status of TB control in Bangladesh

With a population of about 150 million, Bangladesh ranks sixth among countries with the highest burdens of TB. The estimated prevalence and incidence rates of all forms of tuberculosis were respectively 411 and 225 per 100 000 population, in 2011. Bangladesh completed the National TB Prevalence Survey in 2009; a reassessment of the epidemiological burden of TB, using data from the survey combined with an in-depth analysis of surveillance and programmatic data, was undertaken in 2011. The number of peripheral laboratories performing smear microscopy was increased to extend greater access to TB diagnostic services, being 1050 in 2010, else 0.7 per 100 000 population. The number of laboratories performing culture increased from one to three, two of which also performing DST for first line drugs. In 2010 the notification rate of all forms of TB and new smear-positive cases were respectively 103 and 71, showing an increase compared to previous years but small decrease compared to 2009. This decreasing trend continued in 2011 with case notification rate of 101/10000 population for all cases and 65/100000 population for new smear positive cases. Treatment success rate among new smear positive cases is steadily 92% for the cohort of patients registered since 2006.

The National TB Guidelines were updated in line with more recent international recommendations in 2008. The e-TB Manager pilot site has been established in six sites and it is now in expansion phase. The previous data collection system from the field planned to be collected both in hard and soft copies to expedite the process.

The Childhood TB guidelines have been finalized and TOT has been conducted. The TB Infection Control Operational Guidelines have been developed in 2011. The operational guidelines for drug resistance TB

Data from previous drug resistance surveys indicate low levels of MDR-TB. Isolated surveys have indicated that MDR-TB rates among newly diagnosed cases range between 0.4% and 3% and among previously treated cases, between 3% and 15.4%. A limited survey of drug susceptibility among patients failing re-treatment regimens showed that 88% had MDR-TB. A nationally representative population-based survey has been initiated in 2010, supposed to be completed by early 2012 to better assess the magnitude of drug resistance nationwide. The National Tuberculosis Reference Laboratory was accredited for culture and DST by the Supranational Reference Laboratory Antwerp, Belgium in 2010, though linked since 2007. Upgrading and renovation of National TB reference laboratory (NTRL) at National Institute of Diseases of the Chest and Hospital (NIDCH) in Dhaka have been conducted in 2010. One regional TB reference laboratory for culture and DST has been established in chittagong in 2011 and Establishment of two additional regional reference laboratories for culture and DST in a phase-wise manner is ongoing. In a GLC-approved project for the management of MDR-TB cases at the NIDCH, Dhaka, started in August 2008; By end of 2011 a total of 722 MDR TB patients have been enrolled for treatment in NIDCH. Thre treatment success rate of patients enrolled in 2008 and 2009 were 63% and 64% respectively. The Damien Foundation extended its support for MDR-TB case management to an additional 30 million population: in 2010, 155 confirmed MDR-TB cases were enrolled on treatment with 9 months regimen. From May 2005 to December 2011 a total of 848 MDR TB patients have been enrolled under this 9 months regiment and have shown our 80% treatment success rate.

HIV prevalence in the adult population (15-49 years) has been estimated to be low at 0.02%. A recent survey revealed an HIV prevalence of 7% among injecting drug users. This has raised concerns regarding the potential for transmission of HIV to other population groups. National TB/HIV operational guidelines have been developed in 2009. While a national TB/HIV committee is now functional, collaboration between National AIDS and STI programme and National TB Programme for TB/HIV activities needs to be strengthened. A limited number of NGOs provide HIV counseling, prevention and care for TB-HIV co-infected individuals. Capacity building for wider implementation of TB/HIV interventions started in 2009 and is ongoing.

In 2010, for the first time Bangladesh reported case notification for age groups 0-4 and 5-14 years, showing commitment towards addressing childhood TB.

TB services are part of an essential services package under the health, nutrition and population sector programme (HNPSP), presently known as health, population and nutrition sector development programme (HPNSDP) which is implemented through the primary health care system of the country. Bangladesh is an outstanding example of implementing TB control in partnership with NGOs. Community-based DOTS through health workers, village doctors and the network of shasthya shebikas (community health volunteers) is the most common mechanism for supervising drug intake. Collaboration with garments' manufacturers, which account three million employees and one of the largest industrial sectors, was formalized and plans developed for providing TB services in these companies. Several private and corporate sectors are involved in TB control and in rendering services in line with international standards for TB care. Totally 110 non-NTP public providers (including public hospitals, medical college hospitals, and military hospitals) and 81 private providers have been involved so far. Services have also been established in the prison system. The data management software has been upgraded and financial management software has been installed. The international standard of TB care (ISTC) has been formally endorsed by professional associations. An HRD plan has been developed and a focal point for HR designated at the central level. NTP guidelines have been included in the curricula for basic training of different categories of health staff and curriculum for under graduate/post graduate medical, paramedical and nursing students on DOTS, TB/HIV, MDR-TB will be developed.

The TB programme benefits from Global Fund support through Rounds 3, 5, 8 and 10. This support is channeled through two principal recipients: the External Resource Division (ERD) of the Ministry of Finance (MoF) for NTP (Government) and BRAC for NGO consortium. WHO provides strong technical and operational support to the programme. In addition, USAID TBCARE II, MSH (SIAPS), ICDDR'B provides support to NTP directly by contributing to immediate and short-term targets while building capacity to ensure long-term sustainability of TB control in Bangladesh, while several other donors are funding TB activities through NGOs. Support for TB control is also made available through the HPNSDP.

1.6 Collaboration with NGOs and technical agencies

The NTP collaborates with approximately fifty national international health and development agencies to implement the Stop TB Strategy. To ensure best use of comparative advantages and to avoid fragmentation and duplication of efforts, regular coordination meetings are held under the NGO Steering Committee for TB. The role of the Steering Committee for TB is to assist in the overall TB programme implementation and in the monitoring and evaluation of the national strategic plan. Specific technical working groups have also been set up under NTP to coordinate strategies and activities on PPM and TB/HIV. In addition, a national MDR-TB management coordination committee has been established. Coordination is also ensured through the Country Coordination Mechanism set up for Global Fund collaboration. WHO provides technical assistance to NTP in the area of strengthening national laboratory network, capacity building, information exchange, resource mobilization, regular supplies of drugs and improving procurement and supply management, operational research, coordination, collaboration and partnerships, ACSM and monitoring and evaluation.

The table below shows operational aspects of TB services delivered by the government in collaboration with NGOs.

Table 3: ***Areas of GO-NGO collaboration in TB DOTS in Bangladesh***

Area of collaboration	Government	NGOs
Implementation	• National guidelines • Overall coordinatio	• Specific areas
Case finding and Case holding	• Equipment/supplies • Referral centres	• Diagnosis, Treatment and Follow-up
Training	• Training materials • Training of Trainers (TOT) • Central Level Training	• Local training
Drug supply	• Central procurement • Distribution	• Local storage • Supply indent
Monitoring and Supervision	• Registers/forms • Overall monitoring and supervision	• Registration/reporting • Local monitoring and supervision
Advocacy, Communication and Social Mobilization (ACSM)	• National campaigns	• Local campaigns

1.7 Major challenges and opportunities for tuberculosis control

Major Challenges

There are insufficient functional facilities and capacity to diagnose smear-negative and extra-pulmonary TB. Of the patients reported since 2003 only 25-30% was diagnosed with smear-negative or extra-pulmonary TB, as compared to 50-55% expected to occur. Major reasons for this include: during DOTS expansion (2003-2007), major priority was given to detection and treatment of smear-positive patients; functional X-ray facilities were available in only a few CDCs and UHCs. Another reason is that in the rural areas sputum collection and processing is largely done through community-based services while for the diagnosis of smear-negative or extra-pulmonary TB patients had to be referred to medical officers of CDCs, medical college hospitals and UHCs. Further, many patients diagnosed with smear-negative and extra-pulmonary TB at hospitals and also by private practitioners were not reported to NTP. As only about 3% of the reported TB cases are children, there is also substantial under-reporting of childhood TB.

Family planning field staff of the community health services have so far not been systematically involved in the identification of TB suspects, referral for sputum examination or provision of DOT. As their work relates predominantly to women, their involvement in the DOTS services may have a positive effect on identification of female TB suspects and management of confirmed female TB patients.

The current capacity for hospitalization of patients on second-line treatment is limited. Laboratory capacity for culture and drug-susceptibility testing (DST) is still limited to the NIDCH, Dhaka and Rajshahi Chest Disease Hospital. Insufficient administrative and environmental measures are in place to mitigate transmission of airborne infections.

Several pilot projects on involvement of graduate private practitioners in urban settings have been implemented since 2003 and have been monitored and evaluated. Scaling up, involving a gradual increasing number of them planned since 2006. As Bangladesh has over 25 000 graduate private practitioners, this is potentially a very important source of patients. There is insufficient collaboration in urban settings especially private hospitals and clinics, private practitioners, drug sellers and private laboratories. There are recognized gaps in necessary skills for planning, implementation and monitoring the delivery of TB services among health care providers outside the National TB Control Programme.

Inadequate human resource at different levels and capacity building is a challenge of the public health sector. Recruitment, retention and continuous capacity building and follow up of skills are required. Expansion of services and simultaneous human resource system strengthening is crucial.

The drug management systems are inadequate at the central and peripheral levels. Currently first and second-line anti-TB drugs are procured through Global Drug Facility (GDF) and Green Light Committee (GLC), through grants from Global Fund. An interruption in the first-line anti-TB drug supply will be devastating for the TB patients and will lead to increased suffering of patients, an increase in the number of avoidable deaths and an increase in MDR-TB cases.

ACSM activities are limited between different partners. The current national ACSM guideline is not well conversant to the culture of continuous programming rather than periodic activities.

Comprehensive chest disease management, including the PAL initiative, is still to be implemented as well as linkages with different providers in public and private sectors, including pathologists, surgeons and pediatricians.

Supervision by Government staff was hampered due to transport and resource constraints. There are also concerns about the quality of supervision as feedback forms are not standardized and also reports on actions not taken. There is limited coordination between government and NGOs in supervision of the programme.

Opportunities

TB is integrated in the primary health care component of the National Health Service. The health efforts are led by HNPSP initiated in 2003, which also has a role for the not-for-profit and private sector in health provision and finance. TB is also included in HNPSP and the Poverty Reduction Strategy Programme (PRSP) and currently re-named as HPNSDP. The NTP activities under the Mycobacterial Disease Control (MBDC) directorate are reflected in HPNSDP along with the requirements. Since the government's priority to TB control in HPNSDP is high, securing adequate resources may mitigate risks in long term. National Guidelines and training modules are available for priority areas of the Stop TB Strategy. Country Coordination Mechanism composed of members from MoH&FW, DGHS, NTP, other ministries, technical and developing agencies working in the country has unique opportunities to oversee strategies and activities of TB control.

There are opportunities for substantial strengthening of programmatic as well as financial management. The health infra structure and committed staff is an opportunity to strengthen health systems and foster TB control in more effective way. Diagnostic facilities and X-ray equipment at UHC level are inadequate in terms of quality and quantity. These facilities are used for TB and non-TB cases. During 2007 MoH&FW has provided X-ray equipment to CDCs and UHCs. About one third of these are not functional.

Efforts to mobilize external and internal resources for TB control, and most importantly for a sustainable supply of anti-TB drugs and laboratory equipment and consumables, should be undertaken continuously.

The government has endorsed the MDGs related to TB and has adapted the Stop TB Strategy. In addition, the government supports the WHA resolutions on TB and the Beijing Call for Action for the 27 high MDR-TB burden countries. This could bridge adequate management of MDR-TB in the country.

While there is a large involvement of NGOs in strengthening the health service system, the involvement of the private sectors is much less. Many patients attend the private health care providers and linkage with this sector needs strengthening. Building upon the significant progress made to involve all care providers in TB control, opportunities exist to further expand and strengthen the several PPM models. The International Standards of Tuberculosis Care is a big step in the right direction to ensure adequate TB control measures by various health care providers.

Overall procurement and supply management at public facilities could be intensified using SOP involving district stores.

To raise awareness on TB, mass events and community level activities have been undertaken. In spite of delays in implementation of ACSM activities at the community level could be made sustainable involving community leaders, cured TB patients, village doctors and voluntary organization.

2. Organization, role and function of staff involved in TB Control

The MBDC directorate consists of two wings: National TB Control Programme and the National Leprosy Elimination Programme. The posts of Director, two Deputy Directors, two Assistant Directors and one Medical Officer (Epidemiology) are permanent while all other positions are functional. Only the permanent positions are funded from the revenue budget. The Director MBDC is also Line Director (TB-Leprosy), the latter project function is linked to HPNSDP and non-permanent. The NTP is headed by the NTP Manager, who reports directly to the Line Director (TB-Leprosy). The NTP is responsible for policy, planning, management, training, supply, supervision and monitoring and implementation of TB services. The Director MBDC reports to the Director-General of Health Services. NTP coordinates all activities through the Directorate General of Health Services with the Ministry of Health and Family Welfare.

There are four positions for Deputy Programme Manager. They report to the Line Director but their activities are coordinated by the Programme Manager, NTP. The four Deputy Programme Managers are responsible for administration and finance; training; procurement and logistics; and coordination. Furthermore, there are currently five medical officers reporting to the Programme Manager and designated as focal points for laboratory, drug-resistance surveillance and management of MDR-TB; ACSM; TB/HIV; PPM and training; and procurement and logistics.

The central staffs are formally in charge of the central functions of NTP. The majority of them attended multiple international courses and meetings. There is, however, a significant turnover of senior staff and medical officers in recent years. There are few support staff at the central level.

At the sub-national level, NTP is integrated into the general health services, under the Director (Health), the Civil Surgeon and the Upazila Health and Family Planning Officer (UH&FPO) responsible at divisional, district and upazila level, respectively. Their responsibilities include coordination and supervision of the NTP services. There are no TB-specific posts at divisional level.

At the district level, the Civil Surgeon is assisted by a Medical Officer (Disease Control) and in some districts by a Medical Officer full-time designated for TB (and leprosy) and/or a Programme Organizer (TB/leprosy). In general, the full-time programme staff appear more competent in TB control than those officers who have multiple responsibilities. Programme Organizers assist in conducting mid-level training courses at district level. Forty four CDCs, located in district capitals and metropolitan cities, support NTP in two ways: they render diagnostic and treatment services for the immediate surroundings and serve as referral center for the entire district. They also serve as resource base for providing technical advice according to NTP guidelines. Junior Consultants in CDCs are qualified chest specialists; their expertise is being utilized for further strengthening NTP activities, particularly for training, supervision and monitoring. A significant number of them participated to national and international trainings courses, congresses or meetings on TB Control. These consultants often take the lead in all the training activities at district level and support NGOs in implementation of TB services. They spent 20-30% of their time in administrative activities.

NGOs provide NTP services at upazila level in collaboration with the government. Some have their own hospital infrastructure.

The UH&FPO oversees the NTP activities within the upazila. One UHC-based medical officer is designated for disease control including TB. The Leprosy and TB Control Assistant (LTCA) assists the Medical Officer (Disease Control) in implementing the programme at the upazila. These LTCAs were centrally trained for three months;

they have been frequently oriented by NTP. They assist in field-level courses in the upazila. Not all upazilas have established LTCA posts. Recently government has taken initiative to revitalized 18,000 community clinic and training for community health care providers (CHCP) has been planned under GFATM Round 10 phase 2 SSF proposal.

NTP activities have been boosted enormously following the involvement of NGOs, for over a decade in rural areas and for a few years also in metropolitan cities.

The metropolitan city corporations have also a limited number of health staff. They have not been systematically involved in TB control activities.

Additional support is provided through a network of one international finance consultants, one national programme consultant with 20 other GFATM national and divisional consultants. Technical support is also provided by 3 national professional offices (NPO) of WHO the national and divisional consultants play a significant role in directly implementing the programme.

Table 4 summarizes the core staff at different levels and their role in TB control.

Table 4: ***Core function of staff at various levels***

Facility/level	**Staff**	**Main rele/task**
District	Civil Surgeon	Coordination, planning and supervision
	Junior Consultant	Training, coordination, supervision, diagnosis and management of complicated cases and referral
	Medical Officer	Monitoring and evaluation
	Programme Organizer	Coordination, quarterly meetings
	NGO staff	Coordination, Reporting
Upazila	UH&FPO	Coordination, planning and supervision
	Medical Officer (Disease Control)	Diagnosis and treatment
	Medical Technologist (Laboratory)	Microscopy
	LTCA	Registration, treatment card initiation, recording and reporting
	NGO staff	Implementation, referral, DOT, link with community
Community	Health Assistant	TB support Identification and Referral, DOT
	Community Health Worker/Volunteer	DO
City Corporation	Medical Officer	Diagnosis and treatment
	Medical Technologist (Laboratory)	Microscopy
	Paramedic staff/ Counselor	Recording and reporting, referral

3. Goals, objectives and targets for tuberculosis control

VISION STATEMENT OF NATIONAL TB CONTROL PROGRAM

Elimination of Tuberculosis as a public health problem from Bangladesh.

MISSION STATEMENT OF NTP

National Tuberculosis Program (NTP) aims to strengthen the effort of TB Control through effective partnerships, mobilizing resources and ensuring quality diagnostic and treatment services under Stop TB Strategy. NTP strives to make services equally available to all people in Bangladesh irrespective of age, sex, religion, ethnicity, social status and race.

The overall goal of TB control is to reduce morbidity, mortality and transmission of TB until it is no longer a public health problem.

OBJECTIVES OF NATIONAL TB CONTROL PROGRAM

To achieve the vision, the programme has adopted the "Universal Access" for quality diagnosis and treatment for all TB patients in the community thus,

- Reaching the target of halving TB death and prevalence and thereby achieving the Millennium Development Goals set by 2015 and sustain beyond
- Eliminate TB as a public health problem by 2050

The National TB Control Programme adopted WHO Global and Regional Stop TB Strategy and will continue in the current 2012-2016 plan.

The key strategies are-

- Pursue quality DOTS expansion and enhancement;
- Establishing Interventions to Address HIV-Associate TB (TB/HIV) and Drug-Resistant TB;
- Contributing to health system strengthening;
- Forging Partnership to Ensure Equitable Access to an International Standard of Care to all TB Patients;
- Engage people with TB, and affected communities;
- Promote Operational Research.

4. Strategies and interventions by the six key components of the Stop TB Strategy

STRATEGIC APPROACH # 1: Pursue high-quality DOTS expansion and enhancement

4.1 CASE FINDING

Objective: To increase the case notification of all forms of TB and improve diagnosis of new smear negative, extra-pulmonary cases and children TB by 2016

Key Messages

- The first step for effective TB control is timely identification of all TB cases
- NTP has consistently achieved the WHO recommended targets of case finding, but incidence of TB is not showing decreasing trend
- Early and timely identification of all TB cases including drug resistance is pre-requisite for stopping the transmission of TB and effective TB control
- To achieve universal access to early and improved diagnosis of TB cases and accelerate the reduction of TB incidence, there is a need for improved demand generation, integration of public and private health systems and introduction of newer diagnostic technologies

While the TB diagnostic network extends to over 1050 centers by the end of 2011, microscopy services are not equally accessible in all parts of the country. For the upazilas with a population of over 250 000 additional peripheral laboratories have been established in government or NGO facilities. However, there are still hard-to-reach and remote areas, urban centers and in private sectors which need additional laboratory for AFB microscopy for better accessibility. As per policy of the NTP sputum smear microscopy remains the key tool for diagnosis of infectious tuberculosis. It is recommended to perform two smears prior to diagnosis. NTP operates a network of laboratories with External Quality Assessment (EQA) system. The laboratory network is fully integrated with the Government health care including UHC, district hospitals, medical colleges, chest disease clinics, and other hospitals. Slides from microscopy centers are cross checked monthly at EQA centers and reported quarterly. NTP developed Standard Operating Procedures (SOP), for TB smear microscopy, as a part of WHO Global Initiatives in 2008.

About 70% of patients diagnosed under NTP are new-smear positive patients, 3% are relapses and 27% are smear-negative pulmonary and extra-pulmonary patients (as compared to 50-55% expected to occur in case of smear-negative and extra-pulmonary). Only 3% of the patients are children. These figures indicate a substantial under-diagnosis of smear-negative and extra-pulmonary patients as well as TB in children. Other categories of retreatment cases, though not routinely reported, appear also under-diagnosed. (Source: NTP Bangladesh)

There is inadequate functional facilities and capacity to diagnose smear-negative and extra-pulmonary TB. During DOTS expansion (2003-2007), major priority was given to detection and treatment of smear-positive patients. Functional X-ray facilities were available in only a few CDCs and UHCs. In the rural areas sputum collection and processing is largely done through community-based services while for the diagnosis of smear-negative or extra-pulmonary TB patients had to be referred to medical officers of CDCs, medical college hospitals and UHCs. Further, many patients diagnosed with smear-negative and extra-pulmonary TB at hospitals and also by private practitioners were not reported to NTP. As only about 3% of the reported TB cases are children, there is also substantial under-reporting of childhood TB.

Major emphasis is given by NTP to substantial increase in the detection and treatment of smear-negative and extra-pulmonary patients and child TB. The X-ray facilities at the CDCs and upazila health complexes (UHCs) will be strengthened and supplies will be provided. Collaboration with pediatricians will be intensified and linkages with graduate private practitioners strengthened. It is expected that the number of diagnosed smear-negative and extra-pulmonary patients will increase from about 40 000 in 2006 to 75 000 in 2016 and child TB from about 3300 during 2006 to 12000 in 2016.

Proposed activities and interventions:

4.1.1 Maintain and expand NTP laboratory network for sputum microscopy

- The NTP plans to further expand the diagnostic and treatment facilities in hard-to-reach and remote areas, urban centers, private sectors, work places, at all prisons, private hospitals, among specific at risk population groups including PLWHA, refugee, slum dwellers. A further increase in the detection of new smear-positive patients, about 1% per year, is envisaged, while maintaining treatment success at 92% or above;
- 15 additional laboratories are planned to be established by NGO partners within the next 5 years. Additional laboratory staff will be recruited by NGOs;
- The sensitivity of the current sputum-smear microscopy diagnosis is low compared to the other improved newer diagnostics. New diagnostics are required to achieve the programme's Universal Access targets. The past few years have seen the development of rapid molecular tests for TB that perform nearly as well as cultures, the time-consuming bacteriologic techniques used for many decades. The validation of rapid deployment of these improved TB diagnostics to all levels of the health system is a key programme priority. The LED Fluorescent Microscope (LED-FM) is WHO recommended. This incremental improvement on current microscopes offers the major advantages of slightly higher (5-10%) sensitivity than conventional microscopes, lead time required per slide, lower maintenance (long life LED bulbs), and battery capable operation. The microscope is therefore highly suitable for settings with either high TB suspect workloads and/or inconsistent power supply. Training for introduction of LED-FM has been completed and further planned according to the expansion plan. The LED-FM microscope is being introduced by NTP in TB high burden districts. It is planned that NTP will expand microscopy services by LED-FM gradually through out the country by 2016.

4.1.2 Strengthen External Quality Assessment System

- Implementing EQA system and developing institutional capacity of microscopy centers is the primary focus of this intervention. Currently 35 EQA centers are operating in the country and is expected 10 more EQA centers will be functional by NTP to cover newly and previously established laboratories by 2016.

4.1.3 Enhance the quality of microscopy by training, supervision and monitoring

- NTP will continue providing training on sputum microscopy for AFB to the medical technologist (laboratory)/laboratory technician for one week followed by refresher training;
- Training on EQA and SOP will continue for the staff of EQA and microscopy centers respectively;
- Supervision and monitoring will be carried out by NTP and NGOs at all levels.
- NTP will require technical assistance from international agency for review and improvements once every two years.

4.1.4 Improving diagnosis of smear-negative, extra-pulmonary and children TB

- The X-ray facilities at the CDCs and upazila health complexes (UHCs) will be functionalized and supplies will be provided. Medical Officers will be trained in reading X-ray films. Complicated case will be referred to specialized facilities.
- Collaboration with pediatricians will be intensified and linkages with graduate private practitioners strengthened;
- NTP shall establish linkages with pathologists and surgeons of the district hospitals to strengthen FNAC and biopsy services;
- Medical officers and pediatricians at all levels will be oriented on newly developed national guidelines on child TB to refer child TB cases to NTP designated centers for treatment. Training modules on child TB will be developed. NTP plans for procurement of reagents kits for diagnosis of child TB by Mantaux method;
- Active screenings of children TB and contact tracing will be undertaken. NTP plans to introduce Isoniazid Preventive Therapy (IPT) up to 5 years of age.

4.2 CASE HOLDING

Objective: To maintain treatment success rate to over 92% till 2016

Key Messages

- Making DOTS more patient friendly will increase access and improve outcomes
- Prompt and appropriate treatment of TB, increasingly guided by drug susceptibility testing, will save lives and interrupt transmission
- Improving partnerships between the public and private sectors is critical to expanding treatment services
- Research and mechanism to fast track evidence to policy and practice are essential to guide improvements in regimens and delivery systems

Standardized treatment with FDCs, free of charge to the patients, will continue to be provided to all TB patients on an ambulatory basis. DOT should be provided in a patient-friendly manner by a variety of treatment providers suitable to the local conditions. The NTP will further expand the use of cured and treatment completed patient and peer support groups to promote adherence to treatment. To sustain and further increase the treatment success rates, the NTP will continue to work with NGOs. These NGOs will also support the NTP with the provision of appropriate patient education, including information regarding the regimen duration and possible treatment outcomes, provided repeatedly by well trained and considerate staff. Patient's compliance is monitored by health workers and community health volunteers.

All DOTS implementation sites use nationally approved treatment regimens. Specific treatment categories are based on type of TB, bacteriological status and history of previous treatment.

Table 5: ***Nationallyapproved treatment regimen***

Diagnostic Category	Treatment Regimen	Patient Diagnostic Criteria
Cat. I	2 (RHZE)/ 4 (RH)	New sputum smear-positive, smear-negative and extra-pulmonary TB with or without concomitant HIV related disease
Cat. II	2 S (RHZE)/ 1 (RHZE))/ 5 (RHE)	Retreatment TB cases including relapse, treatment after default, treatment after failure

For the purpose of categorization, HIV testing should not be done

To ensure quality of drugs NTP procures all anti TB drugs from Global Drug Facility which has built- in and documented safeguards for drug quality. In case of scarcity or any other unforeseen emergency of drugs NTP could procure drug from other than GDF with the prior approval of National Competent Regulatory Authority if required.

In order to avoid inadequate treatment and facilitate compliance, NTP uses fixed dose combinations drugs. Similarly, NTP will use blister packed drugs for better handling and inventory control. Buffer stocks of medicines are maintained at central, districts and upazila levels.

NTP maintains a standardized system for procurement, storage, distribution, monitoring and quality control of anti-tuberculosis drugs. For procurement of other supplies (laboratory reagents and equipments) NTP follows a mechanism of tendering as per under PPR 2008.

To obtain information on TB/HIV collaborative activities and PPM activities, new indicators have been incorporated in the NTP recording and reporting system. NTP data and quarterly reports are sent from the peripheral levels through upazila and district authorities to the central level where they are analyzed. After adapting and incorporating the new concept of management information for action (MIFA) in MIS, data entry and analysis has been initiated at district level. All 64 districts have been provided with a computer and software; district level statistical assistant have been trained in data entry.

Periodic internal and external reviews are being conducted by NTP, WHO and NGO partners. Particularly external reviews offer opportunities for analysis of the programme.

The NTP has a long standing history of partnership with several national and international partners. These partners have supported NTP in key programme areas including supervision, training, community participation, advocacy, logistic support for drug distribution, microscopy quality assurance and research.

Proposed activities and interventions:

4.2.1 Expand and sustain treatment centers

- In order to further improve access NTP aims to expand DOT centers in hard-to-reach and remote areas, urban centers, private sectors, work places, at all prisons, private hospitals, among specific at risk population groups including PLWHA, refugee, slum dwellers. NTP plans to add 30 DOT centers during the five year period. Special focus will be given to DOTS service availability in the urban areas and medical colleges. In addition NTP will identify effective and sustainable alternatives to health worker supervision for patients living in difficult to access areas, including community and family based treatment observation and support.

4.2.2 Procurement and supply of first line anti-TB drugs and laboratory consumables

- NTP will ensure continuous availability of adequate amounts of good quality drugs of all DOTS implementing public and private sites. The NTP is responsible for preparing estimates of anti-TB drug requirements, and determining technical specifications of drugs and procures all TB drugs from Global Drug Facility (GDF) through direct procurement. Procurement of all drugs, diagnostics and consumables is under the responsibility of NTP to ensure availability of uniform drug formulations across the country;

- National Drug Regulatory Authority in Bangladesh is known as the Directorate General of Drug Administration (DGDA) which is responsible for licensing and approval of all the drug products and vaccines manufactured and imported in the country. Both First Line Drug (FLD) and Second Line Anti-TB drugs (SLD) are procured through Global Drug Facility (GDF) with the funding support from the Global Fund grants. Import of FLD and SLD for the programme requires consignment basis "No objection" from DGDA and it is being regularly issued by the DGDA. GDF ensures the quality of the drugs during procurement and drug tested from a WHO recognized laboratory before shipment. The status of drugs quality during storage within the country at central and peripheral level storage facilities needs to be confirmed.

  At present, there is substantial anti-TB drug manufacturing capacity in the public and private sectors in Bangladesh. Prior to the financial support available from the Global Fund and GDF system, the procurement of anti-TB drugs was done by using government and other donor funds coming in the sectors programme.

  Consequent to financial and technical support available from the GFATM and GDF, the MOH &FW drastically reduced its own financing for the procurement of anti-TB drugs. The impact of this has been that procurement of anti-TB drugs from the local producers has been minimized and therefore some of the local companies stopped production thus reducing national capacity.

  The proposal in this strategic plan is to further strengthen public-private collaboration by using funding available regardless of the source to stimulate local production capacity of quality assured anti-TB drugs to help meet the countries need and ensure a sustainable and affordable supply of anti-TB drugs in the future.

  As part of this plan, support should also be provided to strengthen the regulatory capacity of the DGDA without being over-reliant only on external sources of fund.

- During 2012- 2016 approximately over 700 000 TB patients will be treated. In order to ensure uninterrupted availability of anti TB drugs buffer stocks will be maintained at central (100%), and upazila (treatment centre and sub-centre) (25%) levels based on case load at upazilla level. Estimates for drug requirements are based on the annual risk of infection, the number of patients treated during previous years and targets sets for each year (estimates of TB burden annex I). Using this mechanism NTP will review and adjust drug requirements annually on the basis of actual case finding, epidemiological estimates and targets set. Estimated drug costs are based on prices obtained from Global Drug Facility website. In order to accommodate price increases in the future, this plan includes an inflation of 5% from year 2 onwards. Based on past experience 15-20% of the estimated drug cost is added for transportation, handling, insurance, quality control testing. The estimated drug needs and the costs are presented in annex II.

- To strengthen the pharmaceutical management systems for TB, NTP has decided to undertake the following activities:

1. In order to develop the TB commodity management plan for the NTP, a technical review of the TB commodity management system will be conducted.

2. Develop user-friendly guidelines/frameworks for implementation and utilization of e-TB manager at all levels; accompanied by simple step-by-step standard operating procedures focusing on data quality and validation.

3. Support existing sites using e-TB manager to make it functional and plan for rollout.

4. Develop web-based TB-LMIS linking with e-TB manager based on the experience of Directorate General of Family Planning (DGFP).

5. Review and update existing SOP for drugs and supply management developed by National TB Program (NTP).

6. Develop the comprehensive training plan on logistics management systems for relevant staff of NTP and provide TOT.

7. Establish a coordinated mechanism to introduce national level forecasting, quantification and supply planning for TB commodities.

8. Introduce pipeline monitoring system using appropriate tools.

9. Initiate the process of streamlining the vertical procurement process followed by GFATM in to the national procurement mechanism of CMSD/DGHS under current health sector program.

10. Embed TB pharmaceutical management specialists in the TB Control Program to facilitate development and implementation of institutional and individual capacity building activities while providing on the job training, mentoring and technology transfer to local counterparts.

4.2.3 Human resource development

- NTP will maintain and improve the knowledge and skills of health workers through continuous training and supervision, in collaboration with NGOs;
- Basic TB management, laboratory course on AFB microscopy, mid and field level supervision, PPM, data management, store management, orientation on specific areas and refresher training will be conducted regularly to update the knowledge and skills of all health workers by NTP. NGOs will continue training and retraining for DOTS providers, NGO staff and community health workers. Existing training materials for different levels of health workers will be periodically revised in line with the changing NTP policies and WHO recommendations. Similarly new materials will be developed as per programme needs;
- NTP will be responsible for new training activities that include diagnosis of smear-negative, extra-pulmonary and childhood TB for medical officers of UHCs, district hospitals, urban health centers and designated NGO facilities. PAL for medical officers of UHCs and CDCs; infection control for staff of DOTS centers; planning and budgeting, and strategic leadership for medical officers of DOTS centers; intensified training for doctors and paramedic staff under PPM network; TB/HIV for staff of CDCs and NGOs involved in TB/HIV collaborative activities; patient management, recording/reporting for LTCAs and financial management for central-level staff. Also as new activity workshop are included for establishing linkages with surgeons and pathologists of district hospitals level for FNAC/biopsy;
- NTP will engage Bangladesh Medical and Dental Council and Center for Medical Education (CME) to include Stop TB Strategy components in the medical curricula. This will also require development of curricula, orientation and consensus of concerned authorities;
- International training and study tours will continue for NTP and partners.

4.2.4 Supervision and monitoring

- NTP will continue quarterly monitoring meetings and workshops in all districts and city corporations. Supervision of all implementing facilities and areas to be continued by national, district and UHC staff. Chest disease clinic will continue to supervise and monitor TB control activities within the district. The quarterly coordination meetings with all implementing authorities at central/divisional level will be continued;

- Intensification of involvement of private practitioners, village doctors and shastho shebikas will need a close follow up in order to institutionalize this approach. In addition new activities, such as PAL, MDR-TB, computerized data entry and analysis, intensified implementation of TB/HIV require increased frequency of supervision. Key programme staff at district level will continue to be trained on data analysis and information management;
- NTP will continue to collaborate with these partners in the next five year and seek their assistance in pre-determined areas for support.

STRATEGIC APPROACH # 2: Address TB/HIV, MDR-TB, and the needs of poor and vulnerable populations

4.3 TB/HIV

Objective: To decrease the burden of TB/HIV in the population affected by both diseases by ensuring effective collaboration between TB and HIV Programmes through effective coordination and delivery of collaborative services

Key Messages

- TB is the most common opportunistic infection and the most common cause of death for people living with HIV
- There has been progress in scale-up of collaboration between TB and HIV programs; challenges however, remain
- Earlier diagnosis of HIV-associated TB and linkage to care through intensified screening for TB and MDR-TB among PLHIV using newer, rapid diagnostics and further decentralization of HIV diagnosis and treatment

Bangladesh is a low HIV prevalence country. Due to several risk factors present in the country (IDU, cross-border traffic) HIV may increase to epidemic levels in the coming years. Although the proportion of HIV positives among TB patients is found as low as 0.1% in three (limited) surveys, the high prevalence of TB infection (approximately 50% of the adult population) and the increasing HIV prevalence among injecting drug users (IDUs) to 7% is crucial for strengthening TB/HIV collaboration and coordination.

National TB/ HIV Coordination Committee have been formed duly approved by the Ministry of Health and Family Welfare, with representation of the both programmes and other concerned stakeholders. NTP has initiated TB/HIV collaboration activities and has initiated joint planning for TB/HIV activities through the National TB/HIV Coordination Committee.

Proposed activities and interventions:

4.3.1 Strengthen the mechanism for collaboration and coordination

- National TB/HIV Coordination Committee will continue to be the key authority for policy, guideline updating and overall planning, monitoring and evaluation at the national level. National TB/HIV Coordination Committee will ensure coherence and coordination for implementation of TB/HIV activities;
- The coordination committee will meet quarterly to review progress, prepare plan of action, identify issues, review and approve programme reports and arrange workshop with the stakeholders;

4.3.2 Establish functional linkages between DOTS and VCT centers and capacity building

- Infectious disease hospital in Dhaka will function as a main center for management of TB/HIV co-infection;
- To decrease the burden of TB in People Living with HIV/AIDS, NTP in collaboration with National AIDS and STD Programme (NASP) will establish functional linkages between DOTS and VCT centers with NGOs. NTP plans to cover bordering districts, port cities and medical colleges during the five year period of this Strategic Plan. The collaborative activities will include referral and management of TB/HIV co infected cases, improve recording and reporting system and supervise and monitor activities. NTP with technical partners will review screening tools of sites providing ART to ensure patients are screened for TB;
- NTP will continue to build capacity of HIV counselors and other staff of VCT and DOTS centers for managing TB/HIV co-infection.

4.3.3 TB/HIV surveillance

- A nation-wide representative TB/HIV survey will be carried out within this Strategic Plan to explore real TB/HIV co infection and its trend.

MDR-TB Management

Established

- National TB Reference Lab (NTRL) at NIDCH, Dhaka
- Regional TB Reference Lab (RTRL) at Rajshahi, Chittagong

MDR-TB patients enrolled = 1098 (up to December 2012)

- Treatment success rate
- up to 2009 cohort = 64%
- 2010 cohort = 64%

Country's 1st nationwide drug resistance survey conducted-

- MDR = 1.4% & 28.5% among new and previously treated TB cases respectively.

Challenges

- Sustain already achieved Success and further move ahead
- Maintain & Improve Quality
- Smear negative, EP and Child TB
- Scaling up of PMDT/cPMDT
- TB/HIV
- Sustain & Scale up PPM
- Strengthening ACSM
- Health system strengthening including MIS

4.4 MDR-TB

Objective: To reduce mortality, morbidity and transmission of MDR-TB through effective management

Key Messages

- MDR-TB is deadly, difficult to diagnose and expensive to treat
- Early diagnosis of drug resistance is crucial to save lives and stop its spread
- Treatment can be successful if decentralized and well supervised
- The scale up of PMDT will require more laboratories, drugs and trained staff

There are no representative data on drug resistance in the country. The Global TB Report 2011 estimates that 2.1% of new and 28% of previous treated TB patients is MDR-TB cases. This implies that approximately 6,000 MDR-TB cases occur annually. With more in-patient facility becoming available, and NTRL being functional, NTP has planned to accelerate enrollment of MDR-TB cases. A National/Divisional PMDT Coordination Committee is functional, a clinical care and social support sub-committee is also in place. The country specific guideline for management of drug-resistant tuberculosis is available. The NTRL is supporting in diagnosing and monitoring of MDR-TB. The NIDCH reconfirmed their commitment through allocating more beds and space for MDR-TB patients and participates actively in the NTP. Under GF Round 5, funds to manage 700 MDR-TB cases were approved. It was planned to treat 50 MDR-TB patients in 2007 as per the Green Light Committee (GLC) approved project. Due to various delays, NTP could not start to enroll the patients in 2007. However, MDR TB management started in NIDCH in August 2008. Under GF Round 8 grant, 600, 750 and 1000 patients were planned to be enrolled during years 3, 4 and 5, respectively i.e. up to 2014 As of December 2011 NTP enrolled 722 MDR TB patients under the support of GFATM grant (..... 1 of Rounds & and ..... 10) Then NTP revised its plan to treat (360+480+600) 1440 danj ..... II of Round 10. that is as ..... two ..... by 2015. The number of patients to be enrolled in 2016 will be determined later. The partner Damien Foundation Bangladesh is supporting management of drug-resistant TB (operational research 9 month regimen) in North West part of the countries with its own fund. MDR-TB in-patient management is functional in Chittagong Chest Disease Hospital since March 2011. Regional TB Reference Laboratory (RTRL) is also functional in Chittagong since October 2010.The NTP also planned to decentralize management of MDR-TB stepwise, gradual extension of MDR-TB management to all the Chest Disease Hospitals in the country is planned. Accordingly NTP has plan for ..... DR-TB expansion plan, deeloping revised MDR-TB gude by ad also developing SOP for ..... order to enhance MDR-TB enrollment.

As soon as culture and DST is established with proficiency in a given laboratory, it is expected that the laboratory is ready to take up newer diagnostics. All new diagnostics need to be compared with the established solid culture (gold standard) for uptake into a given laboratory. Therefore establishment of solid culture will precede uptake of newer diagnostics in a given laboratory. NTP will adopt newer WHO recommended diagnostics (e.g. liquid culture, LPA, Xpert MTB/Rif etc. and other molecular modalities) gradually in the NTRL and RTRLs.

Table 6: ***Consumable's that will be supplied by Expand TB Project during 2012***

Consumable	TB Culture	1st Lin DST	2nd Lin DST	LPA
No of suspects can be tested				

Bangladesh is a year-3 country (2011) under the proposed UNITAID supported EXPAND-TB project of WHO GLI- FIND- GDF. Accordingly, new diagnostics will be provided to NTP by EXPAND-TB in early 2012. If NTP progresses rapidly in the establishment of solid culture and in establishing appropriate BSL-3 laboratory facilities as are required, NTP can request the EXPAND TB project to expedite uptake of liquid culture and line probe assay. EXPAND-TB will assess the country's lab facilities and then proceed with establishment of newer diagnostic methodologies. MOU was signed between EXPAND TB and GOB. The EXPAND TB project will supply the country with the following consumables, which is expected to cover 35% of the MDR-TB suspects in the country during 2012.

2012				
Consumpstion of suspect to by	**TB culture**	**1st line DST**	**2nd line DST**	**Line Probe Assay**
	112,236	11,224	2,245	1,459

All equipment for liquid culture systems and line probe assay for given labs will also be covered under UNITAID.

For subsequent years the NTP has to plan for the budgetary provision for liquid culture and line probe assay consumables. Establishment of BSL-3 or BSL-2 plus facilities and adequate manpower support for using and providing services with the new technologies will need to be done by NTP and the EXPAND TB project is an additional input for the country in assisting for uptake of rapid diagnostics. EXPAND TB project also will undertake training of staff and assistance in establishing new technologies in the lab in terms of establishing SOPs, trouble shooting advice and supervisory visits for corrective actions.

NTP offers the following standard treatment regimens for the treatment of MDR TB.

Table 7 : ***NTP treatment Regimens for MDR TB***

INTENSIVE PHASE (6-10 MONTHS)	**CONTINUATION PHASE (13-18 MONTHS)**
Kanamycin (KM) Pyrazinamide (Z) Ofloxacin (Ofx) Ethionamide (Eto) Cycloserine (Cs	Pyrazinamide (Z) Ofloxacin (Ofx) Ethionamide (Eto) Cycloserine (Cs

The intensive phase should be at least 8 months provided 4 months of continuous culture and smear negativity were reached within the period of time. More than 8 months in case of late culture conversion. In these cases intensive phase should be prolonged up to 4 months of consecutive culture and smear negative. The continuation phase will continue at least for 13 months and total treatment duration will be at least 18 months after 1st conversion (not followed by any positive culture). However in patients with past history of intake of second line drug, the total duration will be 24 month.

NTP will monitor fast-tracking of adaptation of e-TB Manager or any alternative on line data management system for PMDT case and drug management, its pilot implementation and scale up to all districts. The NTP will develop an electronic format of the PMDT register to facilitate better quality of the information as well as data analysis. The programme has plans for piloting and rolling out a system after the necessary development milestones and testing are achieved and found optimally feasible for implementation. NTP is under process of revision of the National operational guidelines on PMDT giving emphasize on community management. NTP has introduced management of XDR-TB in the the revised guidelines. It is expected that this revised guideline will be available in 2012. The provision of funding for treating XDR-TB is available under Global Fund Round 10.

Proposed activities and interventions:

4.4.1 Strengthen and expand capacity of National/Regional TB Reference Laboratories for diagnosis and follow up of DR-TB

- NTP plans to strengthen National/Regional TB Reference Laboratory by providing additional human resources;
- Regional TB Reference Laboratory for culture and DST will be established and made functional in other divisions of the country within the next five years and will provide all logistic support for all culture and DST Lab. NTP plans to enhance capacity to under take additional laboratory investigations (e.g. liver function test, kidney function test, thyroid function test etc.);
- NTP will adopt newer WHO recommended diagnostics (e.g. liquid culture, LPA, Xpert MTB/Rif etc.- and other molecular modalities) gradually in the NTRL and RTRLs and other selected laboratories;
- NTP has planned to develop guidelines and SOP for community based PMDT (cPMDT). Under this new strategy, hospital stay of MDR-TB patients will be shortened and more MDR-TB cases will be treated. The MDR-TB committee will closely monitor the progress of DOT for MDR TB cases.
- Standard operating procedures will be developed for newer tools. In addition, patient diagnostic algorithms will be developed;
- WHO, GLI, FIND, GDF and UNITAID will collaborate on the provision of diagnostic tests for rapid diagnostic tools till 2013. The source of funding for the cost of maintenance and sustainability of equipment and testing for USAID funded GeneXpert will have to be identified beyond 2013 by NTP.

- NTP plans to establish fast track sputum transportation from residence of the patients to the designated NTRL/RTRLs for diagnosis and follow up;
- NTP will mobilize fund for maintenance of equipment for NTRL/RTRL.
- NTP plans for obtaining ISO certification.

4.4.2 Human resource development

- NTP will organize international training courses on PMDT for staff at various levels to build capacity on management and monitoring ;
- NTP will organize international training courses to update the knowledge and skills for the staff of NTRL/RTRL;
- Two medical technologist (laboratory)/ laboratory technicians from each Regional/Divisional TB Reference Laboratory will be trained at NTRL. The training will happen during the year of implementation and refresher training will be organized. The duration of the basic culture training will be 2 weeks. The staff from the centers performing DST will undergo 1 week additional training for DST. The duration of the refresher training will be 7 days;
- Training for medical officers on MDR TB management, mid and field level staff will continue.

4.4.3 Supervision and monitoring of NTRL/RTRLs and PMDT implementation

- NTP will provide supervision and monitoring services to NTRL and all Regional TB Reference Laboratories when established. Monitoring visit will be arranged to each TB culture and drug susceptibility t esting laboratory quarterly and subsequently twice per year;
- SNRL will monitor NTRL and NTRL will in turn supervise and monitor RTRLs;
- NTP will require technical assistance from WHO/Union/SRL for review and improvements of NTRL/RTRLs once every two years; and PMDT implementation once in a year;
- NTP will supervise and provide feedback to the implementing centers on PMDT.

4.4.4 Socio economic support to DR TB patient

- NTP will identify MDR TB management sites with the NGOs and make plan for ambulatory treatment;
- NTP plans to provide transportation, food or Hygienic food package for patients and their families. NTP will continue to work with NGOs to provide financing of transport, incentives such as food or hygienic packages for patients. These NGOs will support with the provision of appropriate patient education, including information regarding the regimen, duration and possible treatment outcomes, provided repeatedly by well trained and considerate staff in increase case holding;

- NTP plans to provide incentives in terms of cash for DOT providers and patients;
- NTP with technical partner will pilot a community based model for treatment of MDR-TB cases at the community level after limited period of hospitalization. A district based action plan will be developed to initiate the community based pilots initially then scale-up. Training will be provided to appropriate personnel on ambulatory care including MDR-TB DOT, side effect management, monitoring and supervision.

4.4.5 Procurement of second line anti-TB drugs and drugs for management of adverse effects

- NTP will continue procuring second line anti-TB drugs through Green Light Committee (GLC) using direct procurement mechanism. Details of drug requirements and cost estimation are under annex III. Drugs for management of adverse effects will be purchased as per rules of the government.

Under GLC policy an annual monitoring mission will be carried out by international experts. An annual GLC fee is budgeted.

4.4.6 Drug resistance survey

- Nationwide drug resistance survey carried out 2010-2011 and the final report is expected in early 2013. According to DRS, among the new cases, 1.4% cases are found MDR-TB and among the re-treatment cases, it is 29%. It is planned to repeat DRS in 2014-2015 to continue to measure trends of MDR TB in the country.
- NTP plans to establish continuous surveillance system.

4.5 ADDRESSING NEEDS OF THE POOR

Objective: To prevent transmission of infection to disease by addressing needs of the poor

Key Messages

- Enhanced outreach by NTP to poor and disadvantaged populations is critical to universal access
- Increased coverage can be achieved by focusing on at risk and clinically, socially and occupationally vulnerable populations

Pulmonary TB patients have usually lost 5-10 kg at the time they commence anti-TB treatment. Yet, the health system neglects the poor nutritional status and the inadequacy of the diet among the patients, as well as non-infectious diseases such as diabetes mellitus, which may have played a role by causing flare-up of latent TB. Despite being a curable disease, TB continues to spread at an alarming rate in Bangladesh. A major reason for this is the high prevalence of compromised immune systems resulting from poor living conditions, poor standards of hygiene, poverty, malnutrition, stress and escalating HIV/AIDS pandemic.

Proposed activities and interventions:

4.5.1 Develop policies to address needs of the poor

- NTP will develop policies to link with National Nutrition Programme (NNP) and their linked partners under the Ministry of Health and Family Welfare. NNP will provide additional vitamins and food package to the under nutrient TB patients. Operational studies to be undertaken by NTP and NNP to see whether people who take vitamins along with the standard medicine for tuberculosis recover better and quicker than people who take only the standard medicine for TB; whether lowered immunity from nutrient deficiencies is enabling dormant TB to become active; whether lack of good nutrition is increasing drug side-effects, encouraging non-compliance;
- NTP will enhance advocacy for good nutrition to prevent transmission of infection to disease, assist in keeping TB infection in a dormant state;
- NTP will address non-infectious diseases such as diabetes mellitus which may play vital role in prevention of latent infection to active diseases. NTP will consider inclusion of tobacco users, geriatric population, malnourished children, occupational high-risk group, hard-to-reach population, unstable population during emergencies, special/tribal population, migrants and urban slums.

4.5.2 Implementation of policies to address needs of the poor

- NTP with NGO partners will implement policies in addressing the needs of the poor to prevent transmission of infection to disease.

STRATEGIC APPROACH # 3: Contributing to health system strengthening

4.6 PRACTICAL APPROACH TO LUNG HEALTH (PAL)

Objective: To improve the quality of diagnosis and treatment of common respiratory illnesses in health care settings and increase TB case detection through Practical Approach to Lung Health (PAL) initiative

Key Messages

- Integrating the NTP with the health system will increase effectiveness and efficiency of TB care and control
- Help improve health policies, human resource development, financing, supplies service delivery and information
- Strengthen infection control in health services, other congregate settings and households
- Upgrade laboratory networks, and adapt successful approaches from other fields and sectors, and foster action on social determinants of health

NTP recognize the need for health system strengthening in order to improve the health of the people, and in particular to control and reduce TB in Bangladesh. The "Practical Approach to Lung Health" (PAL) is an effective approach for strengthening health system. The Stop TB strategy emphasizes the need of strengthening the health system through innovative approach such as PAL. PAL, which is based on improving the quality of care of all respiratory patients above five years of age, focuses on the primary health care level. It is estimated that respiratory symptoms constitute about 50% of outpatients at the UHC level. ARIs rank third in hospital morbidity, pneumonia is the first reported cause of death, over 40% of male adults smoke and chronic obstructive pulmonary disease is frequent in females due to indoor air pollution (stove fumes). Improvements in diagnosis and treatment of acute and chronic respiratory illnesses will reduce morbidity and mortality from these diseases.

Proposed activities and interventions:

4.6.1 Development of PAL strategy and guideline

- NTP will initiate PAL working group at the national level. At the national level, NTP will designate a focal person among the staff to develop the strategy and guidelines, prepare training materials, develop monitoring and evaluation plan, supervise and monitor implementation, prepare plans for expansion and prepare plan for procurement of supplies. NTP shall be responsible for planning, implementation and monitoring of PAL.

4.6.2 Procurement and supplies

- Activity to pilot PAL already initiated and some equipment already procured and supplied. Basic equipment like peak flow meters, spirometers, nebulizers and oxygen cylinders are to be procured by NTP on the basis of expansion plan; other medicines are to be provided by the general health services. Procurement shall be done through government rules. Antibiotics, bronchodilators, etc, will be part of the essential drugs for respective health facility, and thus covered by the Essential Service Delivery of MoH&FW.

4.6.3 Implementation and expansion of PAL

- NTP plans gradual implementation of PAL activities, starting with a pilot in 16 primary health care centers of the country. After lessons learned, operational aspects may be revised, if required, and PAL will gradually be expanded, covering 176 upazilas at the end of the fifth year. It is planned that thereafter PAL will be extended to all upazilas and metropolitan areas beyond 2016. It is expected that PAL shall contribute to strengthening the overall healthcare system, as well as improve diagnosis and management of respiratory diseases, including TB, and particularly smear-negative TB. It is also expected that the widespread prescription of fluoroquinolones to respiratory patients, which make provoke resistance to quinolones in TB patients, will be reduced following implementation of PAL guidelines. Its implementation will be overseen by NTP.

4.6.4 Human resource development

NTP will be responsible for training of staff as per expansion plan. A tentative plan is given below:

Consultative meeting at national level	1 day meeting, 30 participants
Consultative meeting at district level	1 day meeting, 25 participants
Training of Trainers (Junior Consultant CDC, Medical Officer designated TB Civil Surgeon Office, NGO staff)	5 days training at national level
Training of UH&FPO and Medical Officer UHC	5 days training at district level
Mid level staff of UHC	2 days training at district level
Field level staff of UHC/Community Clinic health care providers	1 day training/orientation at upazila level

4.7 INFECTION CONTROL

Objective: To decrease transmission of TB including Drug Resistance TB in congregate and health care settings through implementation of Infection Control policy

Key Messages

- Identification of infectious cases and separation (administrative controls)
- Reduction of the concentration of infectious respiratory aerosols (i.e. droplet nuclei) in the air through ventilation systems complemented by ultraviolet germicidal irradiation (UVGI) where optimal natural ventilation cannot be achieved (engineering controls)
- Use of personal protective equipment (including respirators) by health workers

Infection control strategy was limited to laboratory waste disposal. The infection control and safety standards of TB laboratories are also poor. There are no data or estimates of occupational TB risk for staff of TB services and primary health care. As a result infection control practices are not uniform nor stringently followed in TB laboratories, hospitals, microscopy centers and TB treatment centers. This increases the risk of transmission of infection among patients, health workers and general population. As drug- resistant TB and TB/HIV are growing concerns, infection control needs to be properly addressed.

NTP developed operational guidelines and 5-year national infection control strategic plan. During 2012-2016 NTP plans to implement comprehensive national infection control strategy for TB program which will be in place in DOTS treatment centers, chest disease clinics and hospitals, MDR TB management sites and all laboratories involved in TB smear microscopy. Introduction of infection control measure in NTP will directly benefit overall primary health care as all of these institutions are integral part of health system.

Proposed activities and interventions:

4.7.1 Implementation of national infection control strategy and guidelines

- IC strategy will focus on all health care settings where TB patients, their sputum or culture materials are handled or kept. Such settings include chest disease clinics and hospitals, microscopy centers and TB culture and DST laboratories;
- The IC strategy will be widely disseminated to all concerned sites, institutions and personnel. Similarly, training guidelines, orientation, advocacy material and job aids will also be developed during year one. NTP and its partners will launch a advocacy campaign for promotion and introduction of TB Infection Control strategy;
- A situational analysis of the current risk level and implementation of TB IC will be done in order to contribute to the further revision and or development of the national IC strategy. Facility level assessments will take place in order to develop specific infection plans and SOPs relevant to the facility when required.

4.7.2 Human resource development

- NTP will develop standardized training curricula for training on infection control. A core group of staff from NTP and chest disease clinic will be developed as master trainers during year one (duration 5 days). Basic IC training will be organized for DOTS centers, chest disease clinics, chest hospitals and MDR TB management site staff (duration 3 days) during year two and a refresher training (2 days) in year five. WHO generic materials will be adapted for such trainings. Adherence to infection control strategy will be monitored during routine supervision by NTP. Check list will be revised and updated.

4.7.3 Implementation of infection control measures at TB culture and DST laboratories and sputum microscopy centers

- This is required to ensure compliance with national infection control strategy. Waste management and disposal system of NIDCH, Chest Disease Hospitals will be renovated/upgraded as per WHO recommendations. This will include ensuring sorting of waste and sterilization of waste before disposal. Similarly waste management and disposal system at smear microscopy centers at the peripheral level will be ensured through provision of guidelines, training, supervision and provision of required equipment such as incinerators and waste collection containers;

- To ensure compliance with national infection control strategy and provision of N95 or FFP2 respirators for staff who work in high risk areas or who perform high risk procedures such as bronchoscopy, sputum induction, laboratory staff who perform culture and DST is essential; For waste management and disposal, involvement of public and private sectors will be ensured.

- NTP will gradually upgrade sputum microscopy sites and will undergo comprehensive upgrading including renovation of patients' waiting area (separate space for general and TB sputum positive patients), ensure optimum sputum collection area, as well as safe disposal of sputum containers and other laboratory waste;

- NTP will ensure triage of TB suspects, separation of symptomatic patients from other patients in the waiting area, and prompt treatment. Patient education programme and educational posters and pamphlets will be available to patients and their families to encourage cough hygiene, and bring an understanding of TB transmission, importance of natural ventilation in transmission prevention, and adherence to TB treatment. Policies will be in place to ensure natural ventilation with training to ensure compliance by the staff.

4.7.4 Procurement and supplies

- NTP will procure necessary logistics and supplies for infection control strategy. This will include respirators, fit test kits for the MDR treatment centers and necessary measurement device (vaneometers, anemometers, smoke tube kits) for staff of MDR centers and masks for MDR TB patients, autoclaves, disinfectants, gloves and other supplies for laboratories and sputum microscopy centers. Supplies will be procured centrally and will be distributed to respective site on a quarterly basis as per government rules;

- NTP will ensure provision of UV boxes, respirators for staff at NIDCH, 44 chest clinics and 4 chest disease hospitals and other MDR-TB treating facilities. MDR TB sputum positive patients will be provided with masks. NTP will also ensure that all TB sputum positive patients are trained on cough hygiene and proper use of masks as necessary. IC measures and advice will be provided to community and house-hold level on MDR-TB community management.

4.7.5 MDR TB Infection Control and staff policy

- NTP will ensure all staffs involved in MDR TB management work are under strict infection control environment, best possible training and regularly supervised and monitored-periodic health check-up and assessment to rule out MDR TB;

- NTP will ensure prioritized provision of personal respirator (particulate respirators) to all staff involved in MDR TB management and to laboratory staff who work with TB culture and DST, and for those who do smear microscopy where the workload is high;

- NTP will ensure training of staff on infection control and personal protection, including the proper use of respirators, fit testing, and monitoring usage.

STRATEGIC APPROACH # 4: Engage all care providers

4.8 PUBLIC PRIVATE PARTNERSHIP

Objective: To engage public and private health care providers to ensure provision of quality TB services as per policy of NTP and international standard of TB care

Key Messages

- Partnership between the public and private sector is essential for universal access maintaining quality diagnosis and treatment
- The NTP needs to set norms and conduct surveillance maintaining flexibility
- UHCs, Districts and City Corporations need to experiment with innovation and scale-up initiatives that have been a success, explicitly include labs and pharmacists to detect patients at an earliest point of care

NTP has unique partnership with different NGOs. Currently 44 partners are working with NTP in different areas. NTP implemented and scaled up various pilot projects in urban cities in collaboration with Nuffield Center for International Health and Development (NCIHD) under the University of LEEDS UK since 2003-2004. A major priority is expansion and sustaining of participation and linkage with graduate private practitioners. Enhanced linkages, intensified supervision and monitoring are the key strategies for Public-Private-Mix component of NTP.

NTP has already established formal linkages with the largest association of the corporate sector, the Bangladesh Garments Manufacturers and Exporters Association (BGMEA) which employs 2.4 million workers through about 3000 factories. To ensure effective engagement of and access to the workplaces, NTP has established collaboration with BGMEA for implementation and expansion of DOTS. In addition, NTP and NGOs will expand the DOTS activities in other work places like Bangladesh Knit Manufacturers and Exporters Association (BKMEA).

NTP established PPM coordination committee at central and divisional level in 2008 and will continue to function within this strategic plan. The implementation of PPM activities are guided by national operational guidelines developed by NTP in 2005. NTP has plan to revise this guidelines.

Proposed activities and interventions:

4.8.1 Strengthen coordination for PPM at different level

- Revise/update PPM coordination committee with terms of reference at different level;
- NTP in collaboration with NGOs will conduct sensitization meeting through PPM coordination committee at various levels twice in a year to assess situation, map diverse health care providers and identify their potentials to be involved in PPM;
- NTP will gradually involve professional bodies Bangladesh Medical Association (BMA), Bangladesh Private Medical Practitioners Association (BPMPA), Bangladesh Lung Foundation, Chest and Heart Association, Asthma Association of Bangladesh and other bodies by 2016.

4.8.2 Expansion, scaling and establishment of referral system between NTP and partners for PPM

- NTP plans to expand PPM in all cities (urban DOTS) including hospitals, while NGOs in consultation with NTP will expand in the district (including municipality)/upazila and at community levels. NTP plans to scale up in cities and municipalities within this strategic plan period;
- NTP will establish/scale up collaboration with graduate private practitioners, private hospitals, public hospitals, medical colleges under the MoH&FW and under other ministries within this period;
- NTP in collaboration with NGOs will either establish DOT centers and organize periodic orientation for increased access to vulnerable and marginalized populations including slum dwellers, factory workers;
- Local volunteer organization will be involved in tracing of absentees and defaulters and referral of TB suspect from communities to the nearest diagnostic centers for case detection;
- A patient referral system between private sector and DOTS centers will be established by NTP. A standardized Memorandum of Understanding (MoU)/ Letter of Agreement will be established between NTP and private sector for management of TB suspects and patients according to national guidelines.

4.8.3 Human resource development

- NTP and NGOs will be responsible for orientation/training to public and private providers at all levels;
- In addition, in-country and outside the country visits will be organized for the members of PPM coordination committee for learning and experience sharing on urban TB control.

4.8.4 Supervision and monitoring

- NTP in collaboration with the partners will enhance linkages through effective and intensified supervision and monitoring during the period of the plan;
- NTP will ensure recording and reporting system and measure contribution of case notification and treatment outcome from PPM sector and feedback mechanism from center to periphery.

STRATEGIC APPROACH # 5: Empowering people with TB and communities through partnership

4.9 ADVOCACY, COMMUNICATION AND SOCIAL MOBILIZATION (ACSM)

Objective: To increase awareness at all levels in order to achieve universal access through enhanced community involvement and support

Key Messages

- Advocacy and communication initiatives can generate demand leading to earlier diagnosis, correct treatment and compliance
- Community ownership, participation and involvement are essential to achieve universal access
- Enhancing the ACSM capacity of service providers will improve the quality of service delivery
- ACSM can reduce stigma which is critical for universal access

This component of the Stop TB Strategy seeks to increase advocacy, communication and social mobilization and the involvement of communities and patients in TB care and prevention to promote and enable health-seeking behavior among all people living in Bangladesh. NTP relies on support from decision- and policy-makers, opinion leaders, NGOs, the media, the private sector, communities and individuals.

NTP requires long term planning to enhance advocacy, communication and social mobilization. This will improve case detection and treatment adherence, combat stigma and discrimination, empower people affected by TB, mobilize resources and institutionalize social change and reduce poverty. The NTP has been successful in ensuring political commitment to TB control forging partnerships with health and development agencies (NGOs) working in the country. While these activities will continue to be strengthened, particular emphasis will be put to foster inclusion of patients and communities in the fight against TB, since this area of the component to empower people and communities with TB has been lagging behind.

An evidence-based and focused communication strategy will be adopted with an aim to increase the demand for TB control services through synchronized communication at the mass media, mid-media and the inter personal communication levels. The underlying strategic approach of the NTP will lead to changes based on audience segmentation. The periodic review of the ACSM strategy will identify areas that require strengthening. The strategy will also be result oriented and support the programme in achieving its goal of universal access.

Proposed activities and interventions:

Advocacy

4.9.1 Implementation of ACSM policy and guideline

- During the next five years NTP will implement ACSM as per policies and guidelines with different stake holders. There will be mid-term review of the guidelines to include new strategies and interventions arising from various studies and reports.

4.9.2 Advocacy to maintain political commitment

- The activities on advocacy with high-level policy makers, round table meetings, TV talk show, billboard display, media involvement, TV and radio spot airing and folk song, people's theatre, DOTS committee meetings at district and upazila levels will continue by NTP and partners;

World TB Day is observed to create awareness, inform and empower people to have access to TB care. This event will be continued by NTP and NGOs to gain political commitment;

- Currently NTP and other partners are conducting advocacy workshop with civil society at district level and Upazilla level. This advocacy needs to be strengthened advocacy meetings with civil society at all level. NATAB will continue to organize annual national conference to raise and sustain awareness on TB under the guidance of NTP every year.

Communication

4.9.3 Conduct community awareness activities

- NGOs will conduct orientation on TB among the folk team, involve women group, support ultra poor to seek care for TB, micro credit workers to disseminate TB knowledge and information among the rural and urban population. This will have positive impact on disease burden more specific to case notification.

4.9.4 Behavioral Change Communication

- NTP will develop BCC materials, TB related messages, messages for newspapers;
- NTP will organize press conference and/or workshop for journalists at central and district levels in collaboration with NGOs

Social Mobilization

4.9.5 Develop capacity of community health workers/ leaders/volunteers

- Community Orientation program with different target groups e.g. cured TB patients, opinion and religious leaders, community health care providers (CHCP) and other NGO workers etc. will continue during the five year plan by NGOs under the guidance of ACSM steering committee. This will increase awareness among the individual and the community ensuring that overall early case detection and sustaining high cure rates;
- Foster community participation in TB care, prevention and health promotion and promote use of the Patient's Charter for TB care by effective partnerships between health services and the community.

STRATEGIC APPROACH # 6: Enable and promote operational research

4.10 OPERATIONAL RESEARCH

Objective: To further improve implementation, performance and effectiveness of NTP approaches and services

Key Messages

- Operation research is essential to optimize TB control
- Programme needs to prioritize research agenda
- Conduct or commission priority research
- Rapidly translate lessons into innovative policy and practice

NTP carried out several operational researches since implementation of DOTS in 1993. The Research Institute of TB, Japan carried out operational research on development of urban DOTS through participatory methods in collaboration with NTP for several years. This has improved management capacity and strengthened linkages within NTP partners in big cities. Nuffield Center for International Health and Development (NCIHD) supports NTP in operational research and establishment of collaboration with private sectors for implementation of DOTS since 2003. Research covered include causes of stigma and discrimination associated with TB; management and technical lessons learnt from a successful Public Private Partnership for TB control; and linking private and public sectors in diagnosis and treatment of TB.

Recently the directorate of Mycobacterial Disease Control carried out several researches under HNPSP, the results were disseminated.

Proposed activities and interventions:

4.10.1 Conduct programme-based operational research

- NTP plans to conduct repeat national TB prevalence survey in 2014;
- National drug resistance surveys is on going and the results are expected early 2012;
- TB/HIV sentinel surveys will be conducted;
- NTP plans to conduct operational research on the following areas: healthcare seeking behavior, quality of sputum in urban laboratories, quality of sputum collection, TB/HIV collaboration, drug resistant TB, socio-economic condition of TB patients, TB in prisons, evaluation of EQA and TB in diabetics.

The NTP will conduct research in collaboration with WHO, ICDDR'B, NGOs, USAID, medical colleges and other research organization by direct collaboration or contracting out. Rationality of OR are improving accessibility, facilitate in valid diagnosis and ensure quality care and strengthen the service delivery system.

5. Monitoring and Evaluation

Key Messages

- Each level of the programme and the overall health system requires relevant, timely and accurate data collection. Analysis of data is critical for ensuring continual programmatic improvement
- Analysis of the report to be provided to all responsible for monitoring TB control including national leaders, donors and international bodies

Monitoring and evaluation is an integral component of NTP. Recording and reporting one of the major elements in the DOTS strategy. It facilitate to follow the patient once diagnosed, to monitor the progress of treatment and also helps in cohort analysis to assess case detection and treatment outcome against set targets at different implementation levels -upazila, district and national. NTP has introduced standardized recording and reporting system through out the country since inception of DOTS.

The data management system of NTP is computerized at central level. NTP analysis data at central level and provide regular feedback to the implementing units. However there is lack of skilled human resources at district and upazila levels. NTP plans to computerize data management at the district level within the next five year plan. There is insufficient capacity to analyze data more specifically at the district level.

As mentioned previously, the e-TB Manager pilot site has been established in six sites and planned to expand in additional seven sites by 2012. "e-TB Manager integrates all relevant aspects required for national TB program management functions at different levels (e.g., cases, medicines, and other TB commodities) into a web-based tool and provides key information consolidated for rapid decision making and epidemiological surveillance where interventions are needed."

5.1 NTP data flow

The reporting system is unified in line with the global reporting system. The reporting units submit reports quarterly to the UH&FPO at the upazila level from where the reports are forwarded to the district level and then to the MIS of the NTP at central level. The data are analyzed and reports are prepared quarterly and annually by NTP HQ. Feedbacks are given as and when required.

NTP has initiated the process of computerized data management at district level. The NTP MIS needs to be linked up with MIS of Directorate General of the Health Services (DGHS) within this five year plan.

Urban area should be included in data flow diagram (DR EMDAD will provide)

program. These shortcomings are expected to be overcome with the use of a computerized package within this strategic period. The IT supplies provided for this purpose by the NTP can be made available to other health programs. In this way the TB program can be an entry point for reinforcing data entry and analysis of other programs, and thus NTP contributes in strengthening the overall health system.

Periodic internal and external reviews are being conducted. Particularly the external reviews offer opportunities for analysis of the program by including outside TB specialists as well as crosscutting experts. NTP plans to continue external review once in two years.

6. Indicators and targets

Table 7 indicate the impact related targets according to the overall goal and targets set forth for the planning period to reach the MDGs and Stop TB Partnership target.

Table 7: ***TB impact targets with baseline value and target for the year 2015***

Impact indicators	Baseline			Year 5 target
	Value	Year	Source	
Reduce TB prevalence per 100,000 population/year	501	1990	WHO Global Report 2012	250
Reduce TB incidence (smear-positive) per 100,000 population/year	225	1990	WHO Global Report 2012	Reverse
Reduce TB mortality (all forms of TB) per 100, 000 population/year	61	1990	WHO Global Report 2012	29
Outcome indicators				
Case notification rate: new smear positive TB cases	65/100,000 populations	2011	MIS NTP	80/100,000 Populations
Treatment success rate: new smear positive TB cases	92%	2010 (cohort)	MIS NTP	94%
Treatment success rate among MDR TB cases	64%	N/A	N/A	70%

Table 8 illustrates the monitoring and evaluation of programmatic targets or outcome targets for the planning period 2012-2016.

Table 8: ***Process Indicators***

Indicators	Baseline			Year 1	Year 2	Year 3	Year 4	Year 5
	Value	Year	Source					
Number of smear-negative and extra-pulmonary TB cases reported	49249	2011	MIS NTP	60000	65000	72000	73000	75000
Number of smear-positive cases reported	98942	2011	MIS NTP	112000	115000	117000	120000	122000
Number of children diagnosed with TB	2584	2011	MIS NTP	8000	9000	10000	11000	12000
Number of health facilities giving indents timely	850	2011	MIS NTP	400	650	850	850	850
Number of quarterly monitoring meetings at district level	256	2011	MIS NTP	300	300	300	300	300
Number of medical officers trained on X-ray	0	2011	MIS NTP	100	150	175	200	250

Indicators	Baseline			Year 1	Year 2	Year 3	Year 4	Year 5
	Value	Year	Source					
Number of government field staff (health and family welfare) trained	17494	2011	MIS NTP	16000	16000	16000	16000	16000
Number of NGO health workers trained	1528	2011	MIS BRAC	375	375	375	375	375
Number of PLWHAs referred for TB screening	0	2011	MIS NTP	200	300	400	500	500
Number of MDR TB patients enrolled in treatment	428	2011	MIS NTP	500	1000	1400	1900	2300
Number of health facilities implementing PAL	0	2011	MIS NTP	16	24	24	56	56
Number of patients referred by private practitioners	41083	2011	MIS NTP	38000	39000	39000	40000	40000
Number of patients registered in corporate sector health facilities	469	2010	NTP MIS	750	1000	1200	1500	1800
Number of community health volunteer oriented	1487	2010	MIS BRAC	1639	1721	1806	1897	1992

ANNEXES

Annex I: Estimates of TB burden

Category	2012	2013	2014	2015	2016
Number of new smear-positive TB cases	112000	115000	117000	120000	122000
Number of new smear-negative and Extra pulmonary TB cases	60000	65000	72000	73000	75000
Number of children diagnosed with TB	8000	9000	10000	11000	12000
Case notification rate: new smear positive TB cases	76%	77%	78%	79%	80%
Number of patients to be treated and treatment success rate	103 040 (92%)	105 800 (92%)	108 640 (92%)	110 400 (92%)	112 240 (92%)
Number of MDR TB cases	600	4108a7503	1000	1200	1500
Number of MDR TB cases to be treated and treatment success rat	390 (65%)	488 (65%)	700 (70%)	840 (70%)	1050 (70%)

Source: Global TB Report

Caculation FLD for strategic Plan 2012-16

Drug	Pack Size	# of pack required in 2012	#of units required in					unit price (USD)	Total Drug (units)	Total Cost (USD)
			2012	2013	2014	2015	2016			
4FDC	672	45,804	30,780,000	32.319,000	33,934,950	35,631,950	35,413,282	0.06	170,078,930	10204736
2FDC	672	83,571	56,160,000	58,968,000	61,916,400	65,012,200	68,262,831	0.03	310,319,451	9309584
3FDC	672	6,696	4,500,000	4,725,000	4,961,250	5,209,313	5,469,778	0.04	24,865,451	994614
Streptomycin 1g	100	6,000	600,000	630,000	661,500	694,575	729,304	0.68	3,315,379	2254458
Solvent 5ml	100	6,000	600,000	630,000	661,500	694,575	729,304	0.11	3,315,379	364692
AD Syringe	100	6,000	600,000	630,000	661,500	694,575	729,304	0.06	3,315,379	198923
Pyrazinamide 400mg	672	1,671	1,123,200	1,179,360	1,238,328	1,300,244	1,365,257	0.02	6,206,389	124128
Total										**23451133**

Annex III: Second line TB drug estimate and cost

Drug Calculation for SLD for Strategic Plan

Drug	Units/ Day	Units/ Patient	Required in 2012		Required in 2013		Required in 2014		Required in 2015		Required in 2016		Unit Price/Ampul/Tab/Pc(USD)	Total Drugs	Total Cost (USD)
			# of Patient	required units	# of Patient	required units	# of Patient	required units	# of Patient	required units	# of Patient	required units			
Kanamycin 1.0	1.0	240	600	144,000	750	180,000	1,000	240,000	1,200	288,000	1,500	360,000	3,36	1,212,000	4,072,320
Levofloxacin 250mg	3.0	2,160	600	1,296,000	750	1,620,000	1,000	2,160,000	1,200	2,592,000	1,500	3,240,000	0.05	10,908,000	545,400
Ethionamide 250mg tabs	2.5	1,800	600	1,080,000	750	1,350,000	1,000	1,800,000	12,00	2,160,000	1,500	2,700,000	0.13	9,090,000	1,818,700
Pyrazinamide 500mg	3.5	2,520	600	1,512,000	750	1,890,000	1,000	2,520,000	1,200	3,024,000	1,500	3,780,000	0.01	12,726,000	127,260
Cycloserin 250mg tabs	2.5	1,800	600	1,080,000	750	1,350,000	1,000	1,800,000	1,200	2,160,000	1,500	2,700,000	0.79	9,090,000	7,181,100
PASER 4 gr. Sachet	2.0	1,440	6	8,640	7	10,080	10	14,400	12	17,280	15	21,600	1.23	72,000	88,560
Syringe 5ml + needle	1.0	240	600	144,000	750	180,000	1,000	240,000	1,200	288,000	1,500	360,000	0.05	1,212,000	60,600
Water for injection 5ml	1.0	240	600	144,000	750	180,000	1,000	240,000	1,200	288,000	1,500	360,000	0.59	1,212,000	715,080
Total Cost for 5 years															**13,972,020**

Annex IV: Budget summary

Operational Plan

Tuberculosis and Leprosy (TB and Lep) Control

Health Population and Nutrition Sector Development Program (HPNSDP)
July 2011 - June 2016

Estimated Allocation (According to Financing Pattern)

(BDT In Lacs)

Financing Pattern		*Individual year wise Allocation (2011-2016)*				*Total*	*Source of fund*
		FY: 2011-2012	*FY: 2012-2013*	*FY: 2013-2014*	*FY: 2014-2016*		
GOB	GOB Taka	610.98	586.53	563.36	1,263.59	3,024.46	GOB Revenue Fund, Non-Pool Fund
	GOB Other	-	-	-	-	-	
	CD VAT	50.00	52.50	55.13	118.66	276.28	
	Sub Total of GOB	**660.98**	**639.03**	**618.48**	**1,382.25**	**3,300.74**	
PA	RPA (GOB)	1,538.70	576.64	804.67	1,715.13	4,635.14	GOB Revenue Fund, Non-Pool Fund
	Other than RPA/DPA	4,775.76	6,217.36	4,416.55	8,838.34	24,248.01	
	Sub Total of PA	**6,314.46**	**6,794.00**	**5,221.22**	**10,553.47**	**28,883.15**	
TOTAL (Tk. In Lakh)		6,974.44	7,433.03	5,839.70	11,935.72	32,183.89	Both GOB & PA sources

Estimated summary of development budget (July 2011- June 2016):

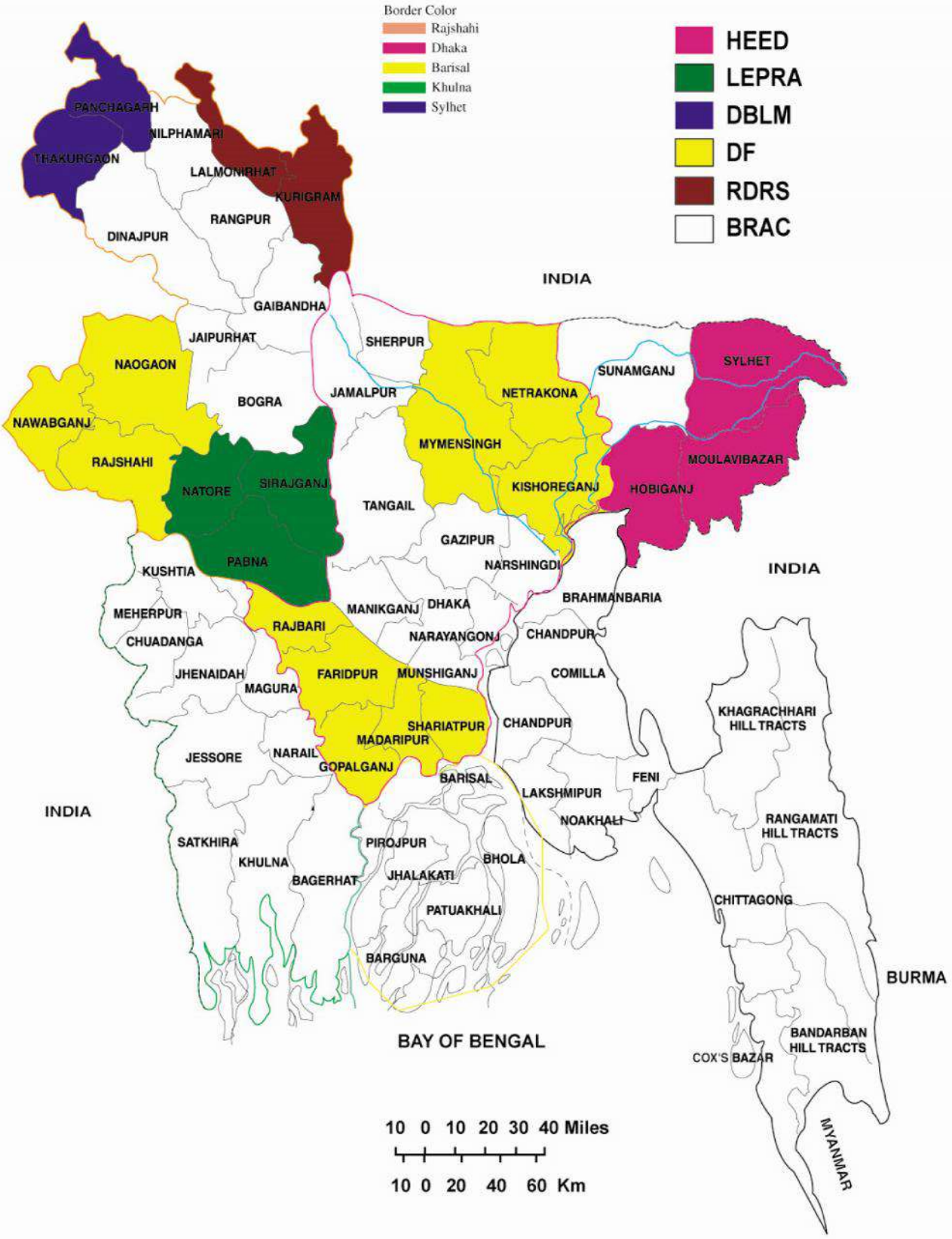
(BDT In Lacs)

Name of the Components	Economic Code	*Total (2011-2016)*				
			PA			Total
			RPA	Other than RPA	Sub-Total	
			(GOB)	(DPA)		
A. Revenue Component						
Pay of Officers	**4500**	-	-	-	-	-
Pay of Establishment	**4600**	-	-	1,445.62	1,445.62	1,445.62
Allowances	**4700**	-	-	-	-	-
Supplies and Services	**4800**	2,528.82	4,585.14	21,049.18	25,634.31	28,163.13
Repairs & Maintenance	**4900**	179.60	-	175.00	175.00	354.60
Grants in Aids	**5900**	-	-	-	-	-
Sub-total (Revenue Component)		**2,708.42**	**4,585.14**	**22,669.79**	**27,254.93**	**29,963.35**
B. Capital Component						
Acquisition of Assets	**6800**	116.04	50.00	1,578.22	1,628.22	1,744.26
Construction & Works	**7000**	-	-	-	-	200.00
CD/VAT	**7900**	276.28	-	-	-	276.28
Sub-total (Capital Component)		**592.32**	**50.00**	**1,578.22**	**1,628.22**	**2,220.54**
Grand Total (A+B)		***3,300.74***	***4,635.14***	***24,248.01***	***28,883.15***	***32,183.89***

Annex V: List of GoB, NGOs and Developing partners contributed in preparation of NSP

1. Ministry of Health and Family Welfare
2. Directorate General of Health Services
3. National Tuberculosis Control Program
4. National Institute of Diseases of Chest and Hospital
5. National AIDS and STI Programme
6. Infectious Disease Hospital
7. BRAC
8. Damien Foundation, Bangladesh
9. Urban Primary Health Care Project (UPHCP)
10. Smiling Sun Franchise Programme
11. Bangladesh Garments and Exporters Association
12. National Anti-TB Association of Bangladesh
13. University Research Co. LLC (USAID TBCARE II)
14. Japan International Cooperation Agency
15. ICDDR,B
16. World Health Organization

Annex VI: Working areas of NTP-NGOs



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