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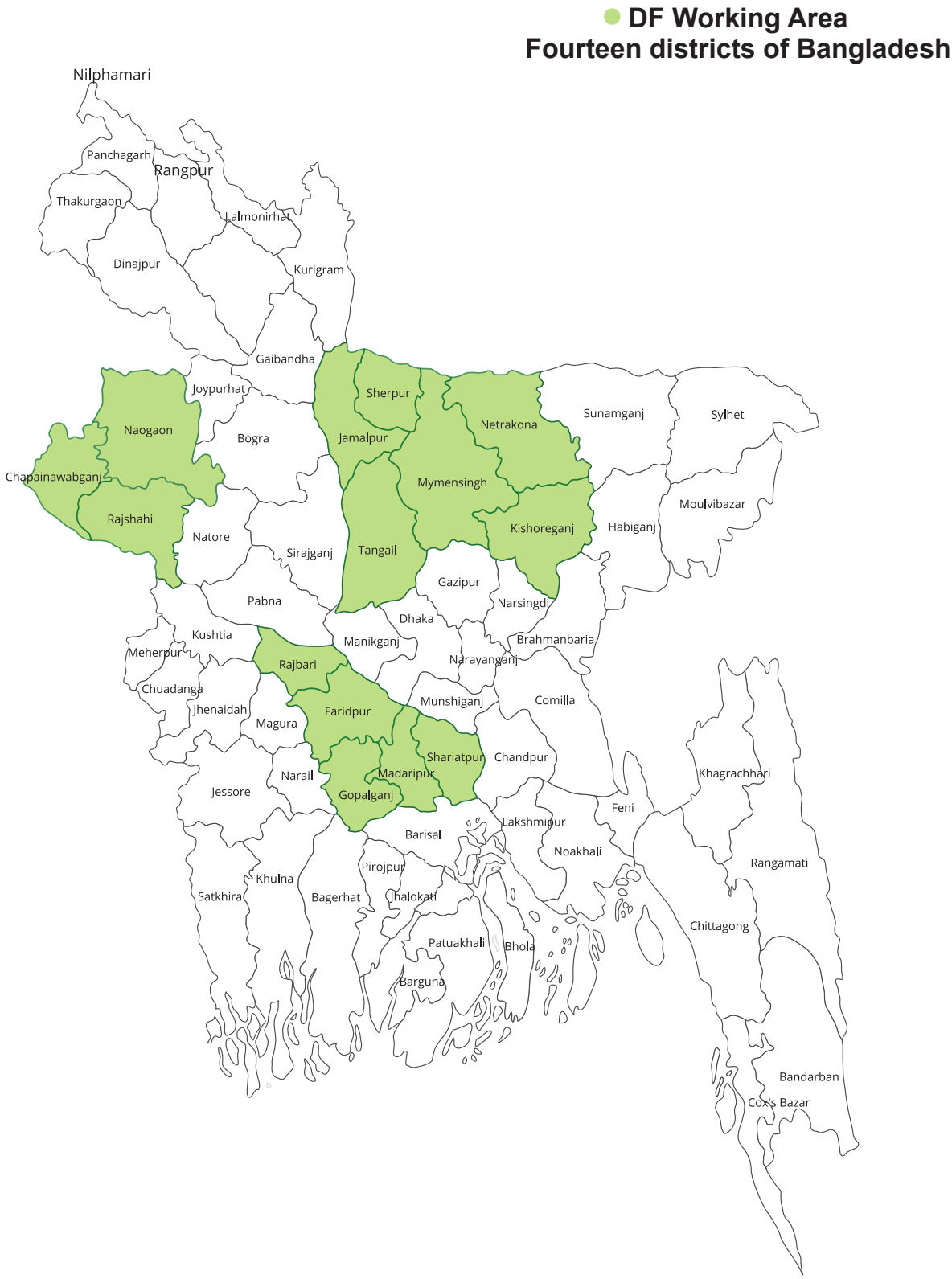
BANGLADESH

ANNUAL REPORT 2023

Damien Foundation-Bangladesh



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List of Abbreviations

ACSM	Advocacy, Communication & Social Mobilization
AFB	Acid - Fast Bacilli
AIDS	Acquired Immunodeficiency Syndrome
ALERT	All Africa Leprosy, Tuberculosis and Rehabilitation Training Centre
AO	Accounts Officer
BDQ	Bedaquiline
BRAC	Bangladesh Rural Advancement Committee
CC	Community Clinic
CCM	Country Coordinating Mechanism
CDC	Chest Disease Clinic / Communicable Disease Control
CDH	Chest Disease hospital
CDR	Case Detection Rate
CS	Civil Surgeon / Culture and Sensitivity
CT	Complete Treatment
CTB	Challenge TB
DBLM	Danish Bangladesh Leprosy Mission (The Leprosy Mission Bangladesh)
DEPZ	Dhaka Export Processing Zone
DF	Damien Foundation
DFB	Damien Foundation Belgium
DFBD	Damien Foundation Bangladesh
DFCO	Damien Foundation Coordinating Office
DGDC	Directorate General of Development Cooperation
DGHS	Directorate General of Health Services
DPM	Deputy Program Manager
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment, Short-course
DST	Drug Susceptibility Testing
EP	Extra-Pulmonary
EQA	External Quality Assurance
FC	Field Coordinator
FDA	Fluorescein Diacetate
FDP	Fixed DOT Provider
FHI	Family Health International
FTLCP	Faridpur TB & Leprosy Control Project
FWA	Family Welfare Assistant
FWC	Family Welfare Center
GF	The Global Fund
GFATM	Global Fund to Fight AIDS, Tuberculosis & Malaria
GLC	Green Light Committee
GNP	Gross National Product
GoB	Government of Bangladesh
GP	General Practitioner
HE	Health Education
HIV	Human Immunodeficiency Virus
HNPSP	Health, Nutrition and Population Sector Program
HR	Human Resource
ICDDR,B	International Center for Diarrheal Diseases Research, Bangladesh
IDU	Injecting Drug User
IEC	Information Education and Communication
ITM	Institute of Tropical Medicine
IUATLD	International Union against Tuberculosis & Lung Diseases
JMM	Joint Monitoring Mission
KNCV	Koninklijke Nederlandse Centrale Vereniging tot bestrijding der Tuberculose (Dutch Tuberculosis Foundation)
LCA	Leprosy Control Assistant
LED-FM	Light Emitting Diode – Florescent Microscope
LEPRA	Leprosy Relief Association (UK)
LFA	Local Fund Agent
LPA	Line Probe Assay
LJ	Lowenstein Jensen
LTCC	Leprosy & TB Coordinating Committee
MB	Multi- Bacillary
MBDC	Mycobacterial Disease Control
MCR	Micro Cellular Rubber
MC	Medical College
MDG	Millennium Development Goal
MDR-TB	Multi-Drug Resistant TB
MDT	Multiple Drug Therapy
M&EO	Monitoring & Evaluation Officer
MO	Medical Officer
MoH&FW	Ministry of Health & Family Welfare
MoU	Memorandum of Understanding
MSH	Management Science for Health
MTB	Mycobacterium Tuberculosis
MTLCP	Mymensingh TB & Leprosy Control Project
NGO	Non-Governmental Organization
NKLab	Netrakona Laboratory
NLP	National Leprosy Program
NTP	National Tuberculosis Control Program
NTLP	National TB Control & Leprosy Program
NTLCP	Netrakona TB & Leprosy Control Project
NTM	Non-Tubercular Mycobacterium
NTRL	National Tuberculosis Reference Laboratory
OPD	OutPatient Department
PAL	Practical Approach to Lung Health / People Affected by Leprosy
PB	Pauci-Bacillary
PBC	Pulmonary Bacteriologically Confirmed
PCD	Pulmonary Clinically Diagnosed
PD	Project Director
PM	Program Manager
POD	Prevention of Disabilities
PPM	Public Private Mix
PR	Principal Recipient
PRSP	Poverty Reduction Strategic Paper
PT	Physio-Technician
PTB	Pulmonary Tuberculosis
QA	Quality Assurance
QMT	Quick Muscle Tests
RTLCP	Rajshahi TB & Leprosy Control Project
RTRL	Regional Tuberculosis Reference Laboratory
SDG	Sustainable Development Goal
SH	Sadar Hospital
SR	Sub-Recipient
SRL	Supranational Reference Laboratory
ST	Sensory Tests
TB	Tuberculosis
TLCA	TB & Leprosy Control Assistant
TLCO	TB & Leprosy Control Officer
TLMIB	The Leprosy Mission International Bangladesh
TTLCP	Tangail TB & Leprosy Control Project
UHC	Upazila Health Complex
UH&FPO	Upazila Health & Family Planning Officer
USAID	United States Agency for International Development
USC	Union Sub-Centre
UT	Under Treatment
VD	Village Doctor
WHO	World Health Organization
XDR	Extensively drug-resistant (TB)
ZN	Ziel-Nielsen

Preface

In 2023, we reflect on a year of significant progress in the battle against Tuberculosis (TB) and Leprosy in Bangladesh. Despite numerous challenges, the Damien Foundation Bangladesh has continued to contribute towards these diseases, demonstrating resilience and unwavering commitment.

In 2023, Damien Foundation reached 34.3 million people, driven by a commitment to quality healthcare. The year saw a 10.5% increase from 2022 in TB diagnoses, with 40,704 patients, including 18,996 bacteriologically confirmed cases, 11,738 pulmonary TB cases, and 9,970 extra-pulmonary cases. Additionally, 461 drug-resistant TB patients were treated, and 591,228 individuals with TB symptoms (a 15% rise from 2022) were tested using advanced technologies like GeneXpert and Truenat and microscopy. TB Preventive Therapy was given to 21,975 people in the same year. In 2023, 266 leprosy patients were detected, including 143 pauci-bacillary and 123 multi-bacillary cases, with the efforts of our staff and support from national and local health authorities.

Beyond patient-centric services, Damien Foundation has prioritized raising awareness about TB and Leprosy through health education activities in the community. The sustenance of newer technologies such as TrueNat for TB diagnosis with the support of NTP, after the completion of the IDDS project, has significantly contributed to the fight against TB. The relentless efforts in active case finding and the strategic use of molecular diagnostics have led to a noticeable increase in the TB presumptive. Additionally, Damien Foundation has also had its hands on a number of successful events including the adoption of technologies, and environment friendly efforts: Projects like Leprosy Research Initiative and Learning 360: Learning for Change and Resilience have helped identify new leprosy patients and empowered affected individuals. Key achievements include upgradation of the BSL-2+ laboratory at Shambhuganj, Mymensingh, the installation of 16 module GeneXpert in Mymensingh; the introduction of SMS alert calling service at Jalchatra Hospital to ensure digital appointment system; and installation of solar grids at three of our hospitals to save energy.

We are particularly grateful to Bangladesh NTP for their support in adopting the all-oral shorter treatment regimen (SOTR) for MDR/RR TB patients, launched in Damien Foundation hospitals in 2021. This regimen, modified from the original Bangladesh regimen developed by Damien Foundation, represents a significant advancement in treatment protocols. In 2024, NTP will also initiate the BPALM/BPAL regimen for MDR/RR patients in Mymensingh on a pilot basis.

As we approach our 2030 goals, shrinking funds pose a challenge, but Damien Foundation remains committed to eliminating TB and Leprosy. Nevertheless, Damien Foundation remains steadfast in its mission to eliminate TB and Leprosy, working in close collaboration with the government and other partners. Through close collaboration with the government and partners, we are proud to play a pivotal role in creating a TB and Leprosy-free Bangladesh.

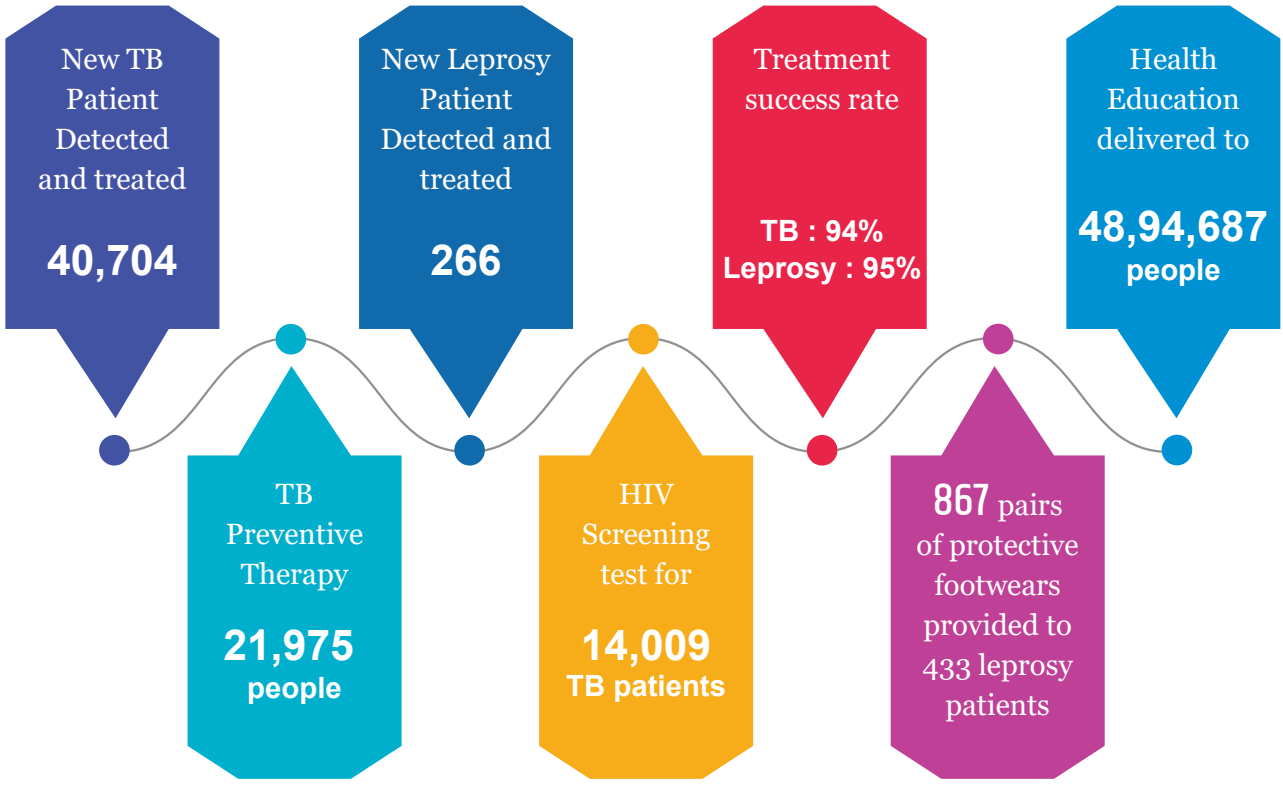
Dr. Mahfuza Rifat
Country Representative
Damien Foundation Bangladesh

1. Damien Foundation TB Services and Facilities

1.1 Coverage and Service Facilities

Damien Foundation (DF), a Belgian International NGO formed in 1964, is dedicated to the fight against Leprosy, Tuberculosis and Leishmaniasis until these are no longer a threat to public health. DF has been implementing Leprosy, Tuberculosis and Leishmaniasis programmes in 14 countries of the world. The organization started work in Bangladesh in 1972 with leprosy and added tuberculosis in 1991. DF started its work in Bangladesh according to the request from the Bangladesh government and has been implementing the programme in close collaboration with the National Tuberculosis Control and National Leprosy Programme (NTP & NLP). In 2023, the organization covered about 34 million population in 114 upazilas (sub-districts) of 14 districts by tuberculosis and leprosy programme with comprehensive services through 150 combined TB-Leprosy clinics, 11 leprosy clinics and 3 TB-Leprosy hospitals with 255 beds.

1.2 Achievement Highlights in 2023



2. Damien Foundation: Background

Damien Foundation (DF), a Belgian non-denominational and pluralistic NGO founded in 1964, is dedicated to the fight against Leprosy and Tuberculosis until these are no longer a threat to public health. The foundation is active in 14 countries of **Asia** (Bangladesh, India & Nepal), **Africa** (DR of Congo, Burundi, Nigeria, Niger, Guinea, Comoros & Senegal), **America** (Nicaragua, Guatemala & Bolivia) and **Europe** (Belgium).

Damien Foundation takes its name from Father Damien, a Belgian missionary who worked in the Hawaiian archipelago in the second half of the nineteenth century. He sacrificed his life caring for leprosy-affected people abandoned on the island of Molokai.

Damien Foundation is a member of the International Federation of Anti-Leprosy Associations (ILEP) which coordinates the activities of organizations active in the field of leprosy control and care worldwide. Damien Foundation also conducts operational and epidemiological research projects, the scientific publications generated from these research projects contribute in national and international policy recommendations in leprosy and TB.

The Damien Foundation started its journey to serve leprosy patients in 6 districts of Bangladesh in 1972 and thus it has been almost five decades since the start of its journey in reaching the people affected by Leprosy in Bangladesh. In the beginning, Damien Foundation fully concentrated on the elimination of Leprosy, and later on, since 1991 Tuberculosis (TB) Control has been included as the other major component considering the size of TB burden in Bangladesh. The organization is now involved in the control of Tuberculosis and further management of Leprosy in close collaboration with the National TB Control Program (NTP) & National Leprosy Program (NLP), Ministry of Health & Family Welfare (MoH&FW), Government of the People's Republic of Bangladesh. This collaboration is based on the Memorandum of Understanding (MoU) signed between National TB Control Program on behalf of the Government of Bangladesh (GoB) and LTCC (Leprosy & Tuberculosis Coordinating Committee). LTCC is a consortium of 10 Non-Governmental Organizations or NGOs (Damien Foundation, The Leprosy Mission International, LEPRA Bangladesh, HEED Bangladesh, RDRS, LAMB, Salvation Army, Dhanjuri Leprosy Center, PIME Sister and the Christian Leprosy Centre, Chandraghona).

According to the MoU, each NGO partner is allocated to implement the Program in defined geographical areas in order to avoid duplication of services and GoB agreed to ensure the supply of essential drugs, equipment (e.g. microscopes), laboratory reagents, other consumables, recording and reporting forms, registers etc. Besides 6 existing districts, 3 new districts from the Rajshahi division were included in this collaborative agreement and daily centre from the sub-district level were started gradually since 1995. Full geographical coverage from each upazila was achieved by mid- 1998 in these 9 districts. Expansion to a new area consisting of 5 districts (27 sub-districts) in the greater Faridpur region was started in October 2001 upon request of the government and full geographical coverage in this new area was achieved by mid–2003. Thus, the organization covers 14 districts (114 sub-districts) and serves about 34 million people (20% of the total country's population). The organization operates through five projects, namely Tangail, Mymensingh, Netrakona, Rajshahi & Faridpur projects. The Damien Foundation Bangladesh works as a non– political organization duly registered with the NGO Affairs Bureau, Government of Bangladesh, under the Foreign Donations (Voluntary Activities) Regulations Ordinance 1978.

A total of 150 daily combined (TB & Leprosy) clinics including in 7 medical college hospitals and one workplace-Dhaka Export Processing Zone and 11 leprosy (9 intermittent and 2 daily) clinics are functional in 114 upazilas (sub-districts). Additional second microscopy centers have been running since 2005-2006 in larger upazilas or in upazilas with higher populations to ensure better geographical coverage and to improve access.

The project has also established a network of patient friendly directly observed treatment TB treatment supporter (DOTs provider) services at the community level through voluntary involvement of village doctors, cured patients, religious leaders, school teachers etc. At present around 26,000 Fixed DOT Providers (FDPs) are involved in providing DOT in the area covered by Damien Foundation.

The Damien Foundation program provides specialized hospital care for complicated TB and Leprosy patients including MDR and XDR-TB patients by its own three referral hospitals with a total of 255 beds situated in Tangail Jalchatra hospital-95 beds, Mymensingh hospital-100 beds & Netrakona hospital-60 beds.

Shortening the duration of the treatment regimen for MDR TB was a dream. The Damien Foundation developed a 9-month shorter regimen for MDR-TB treatment was finally endorsed by the WHO in May 2016 observing the excellent results of this regimen from different countries. Many countries, including Bangladesh, started implementing this shorter regimen. Based on this concept and example, different shorter regimens are now being tried by different research organizations. The latest WHO-recommended Shorter Oral Treatment Regimen (SOTR) for MDR- TB treatment is also based on the Damien Foundation-developed shorter regimen where only the injectable drug has been replaced by the new drug, Bedaquiline.

3. Major Donors

The Damien Foundation-Bangladesh is mainly co-financed by the Belgian Government (Directorate General for Development-DGD) through the Damien Foundation-Belgium. Since August 2004, Damien Foundation Bangladesh is also financially supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM).

In 2023, a total amount of Taka 129,074,216.00 (Euro 1,099,920.00) was received as a grant from Damien Foundation Belgium to cover the expenses of DGD-supported projects. The total fund received from GFATM in local currency was Taka 128,017,802.00 (equivalent to 1,091,410.87 Euro).

In addition, a considerable contribution was received from the Government of Bangladesh equivalent to Taka 393,737,106 (equivalent to 3,356,790.62 euros) which was realized in kind as TB drugs, MDR TB drugs, lab Equipment, Lab materials, logistic supplies, and so on. Besides, an estimated clinic rent for 161 clinics was Taka 5,023,200.00 (equivalent to 42,825.10 Euro). The total government contribution was Taka 3,98,760,306 (equivalent to 3,399615.73 euros) in 2023.

It is noted that for the year 2023, the major Government contributions were mainly for GeneXpert machine and cartridges (124,550 pieces) which were installed within the Government premises for upgradation of laboratory network. The total aggregating amount was Taka 185,406,205.00 (equivalent to 1,580,673.50 euros)

4. Tuberculosis (TB)

Tuberculosis (TB) is a major public health problem in Bangladesh where about 379,000 people fell ill with TB in 2022 (estimated incidence according to WHO Global TB report 2023). Bangladesh belongs to the list of top 20 high TB and MDR-TB burden countries in the world. There were 221 new patients (all forms of TB) per 100,000 population in Bangladesh according to WHO Global Report 2023, and the estimated mortality rate was 25 per 100,000 population. MDR/RR TB incidence was 2.9 per 100,000 population, estimated total 4500 in 2022. Estimated proportion of MDR/RR TB patients among new was 1.1% and among previously treated patients was 5.5% .

The overall TB burden in Bangladesh was identified through a national prevalence survey in 2015-16 but geographical variation of prevalence was not addressed. This survey of 98,710 participants following WHO guidelines found that the prevalence of pulmonary bacteriologically confirmed (PBC) TB among adults (aged 15 and above) was 278 per 100,000. The survey utilized advanced diagnostic tools like GeneXpert, LED FM microscopy, digital chest X-rays, and culture. Only 19% of PBC cases were detected through microscopy among symptomatic individuals, while 20% were detected through screening asymptomatic individuals with X-rays and GeneXpert. Additionally, 90% of PBC cases were X-ray positive, with 62% diagnosed from non-symptomatic individuals. The implementing organizations have to follow the national target for all geographical areas. As a result, the achievement of case finding varies in different geographical areas.

The country adopted the WHO recommended DOTS strategy in 1993. The country achieved expansion of the DOTS strategy throughout the country by 1998. Since August 2004, the NTP and its partner NGOs

expanded and strengthened the overall TB control Program in the country. NTP continued expansion of new GeneXpert sites and a total of 622 GeneXpert machines were installed by the end of the year 2023 out of which there were 73 GeneXpert machines in Damien Foundation area (in 13 TB districts where there are 150 TB clinics with labs). Moreover, there were 18 Truenat machines in 18 remote sites in Damien Foundation working area. Although about 61% of the total peripheral laboratories had molecular testing machines (Gene Xpert & Truenat) these could not be optimally utilized due to shortage of cartridges & chips for certain period as well as due to module problem and delay in repairing-maintenance.

The NTP national strategic plan covering the period 2024–2030 contains strategies and interventions based on the principles outlined in the WHO's "End TB Strategy" that would enable the NTP to achieve the End TB Strategy's Milestones for 2025 (75% reduction in tuberculosis deaths and 50% reduction in tuberculosis incidence rate) and targets for 2035 (95% reduction in tuberculosis deaths and 90% reduction in tuberculosis incidence rate) compared with 2015.

4.1 Progress towards case detection and treatment outcome targets

A total of 40,703 TB patients were registered during 2023 which is about 12% more than in 2022. Out of these total TB patients, 47% were pulmonary bacteriologically confirmed TB patients, 29% were pulmonary clinically diagnosed TB and 24% Extra-Pulmonary TB patients. The PBC and PCD increased by a percent each compared to last year. However, there was a slight reduction in the EP patients. There has been an overall steady increasing trend in TB case finding in the last eight years. The Table-1 below presents the numbers of the different forms of TB that were diagnosed annually during the period 2001-2023 in all project areas combined.

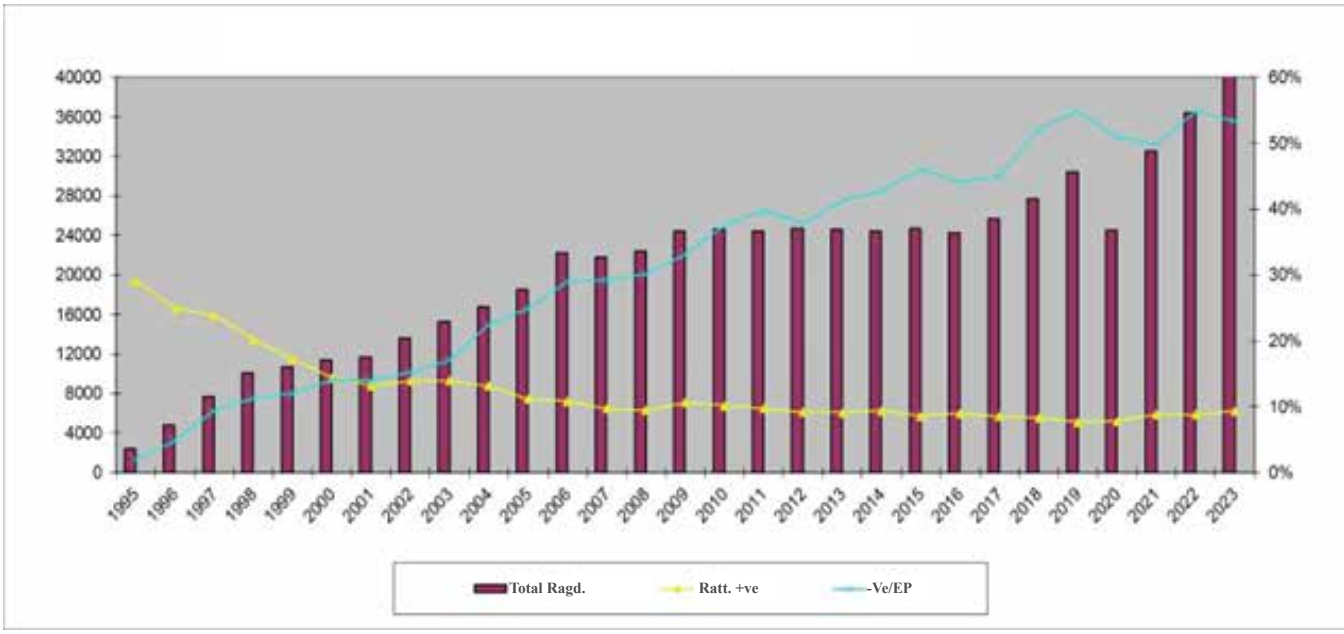
Table 1: Tuberculosis patients (different types) registered since 2001

Year	New smear positive / PBC	Re-treatment	Smear negative/ PCD & EP	Total
2001	8677	1327	1637	11641
2002	9895	1607	2078	13580
2003	10912	1744	2619	15275
2004	11298	1714	3772	16784
2005	12350	1552	4616	18518
2006	14084	1717	6455	22256
2007	13899	1501	6366	21791
2008	14150	1475	6752	22377
2009	14611	1746	8096	24453
2010	13805	1566	9233	24604
2011	13268	1435	9722	24425
2012	13966	1418	9348	24732
2013	13115	1314	10145	24574
2014	12683	1321	10476	24480
2015	12194	1148	11396	24738
2016	12328	1185	10787	24300
2017	12900	1204	11529	25633
2018	12149	1102	14424	27675
2019	12665	1055	16715	30435
2020	11094	942	12479	24515
2021	14858	1452	16217	32527
2022	14992	1447	19977	36416
2023	17215	1780	21708	40703

[1] Global TB Report WHO 2023: TB profile TB profile (shinyapps.io)

TB patient registration has increased over time, likely due to improved case detection efforts. In 2023, 4,288 more TB patients were identified compared to 2022, largely due to the expansion of Gene Xpert, outreach activities to find missing patients, and the identification of more clinically diagnosed cases based on a recent prevalence survey. The proportion of re-treatment patients remained steady at 9%, as shown in graph-1. The rise in TB detection is driven by the increase in pulmonary clinically diagnosed (PCD) and extra-pulmonary (EP) cases, supported by active case-finding and enhanced collaboration with Chest Disease Clinics, medical colleges, and specialists. Training for doctors on x-ray interpretation and financial support for diagnostic tests like X-rays and biopsies, funded by GFATM, also contributed to the detection surge since 2017, except for 2020 when the COVID-19 pandemic led to a significant drop in case notifications. The Case Notification Rate (CNR) fell from 103 in 2019 to 82 in 2020, with 5,920 fewer patients detected that year. However, case-finding efforts rebounded, and the CNR rose to 134 by 2023. (Graph 1 & 2).

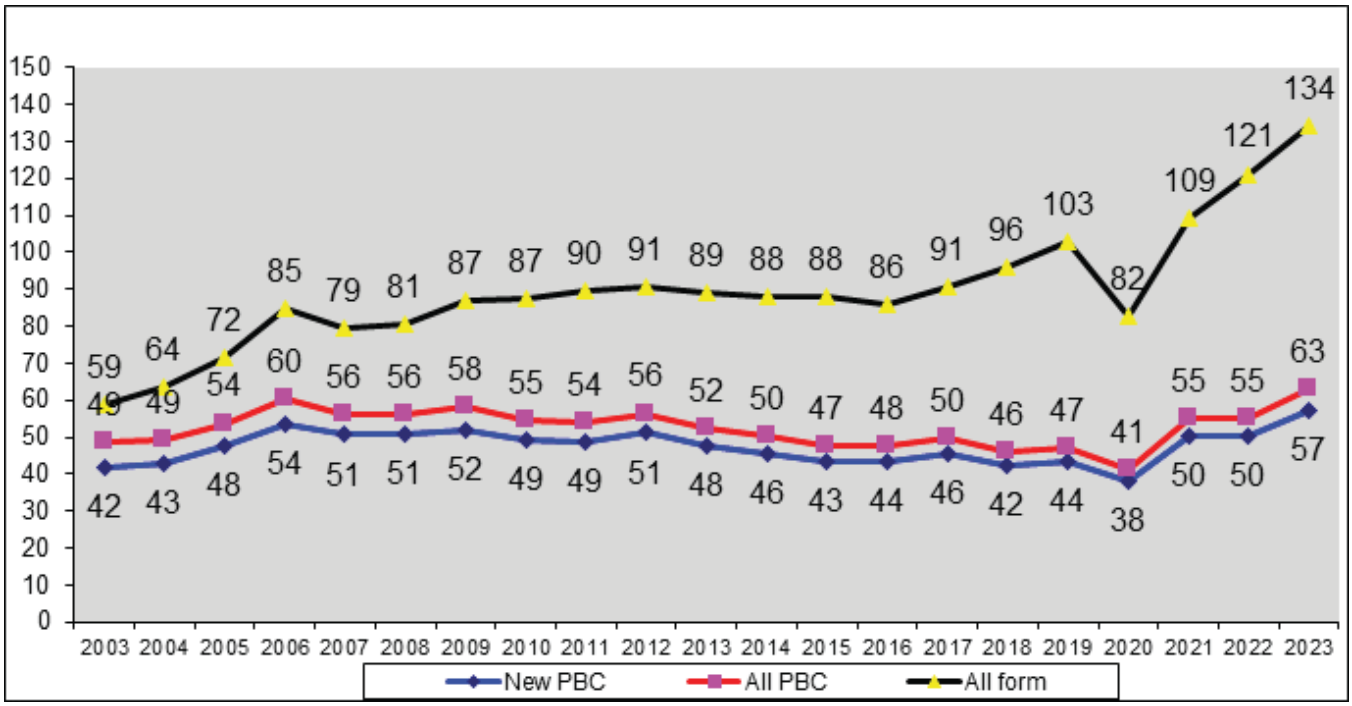
Graph 1: Trends in TB case registration, Retreatment PBC and Smear -ve (PCD/EP) proportion



In 1995, most re-treatment patients registered by the project had previously been treated outside the NTP by private providers, making up 29% of all smear-positive cases. Over the years, this proportion dropped to around 8-9%, reflecting improved referral links with the private sector and better accessibility and acceptability of NTP services. Nearly all re-treatment cases were due to NTP regimen failures, relapses, or patients returning after being lost to follow-up.

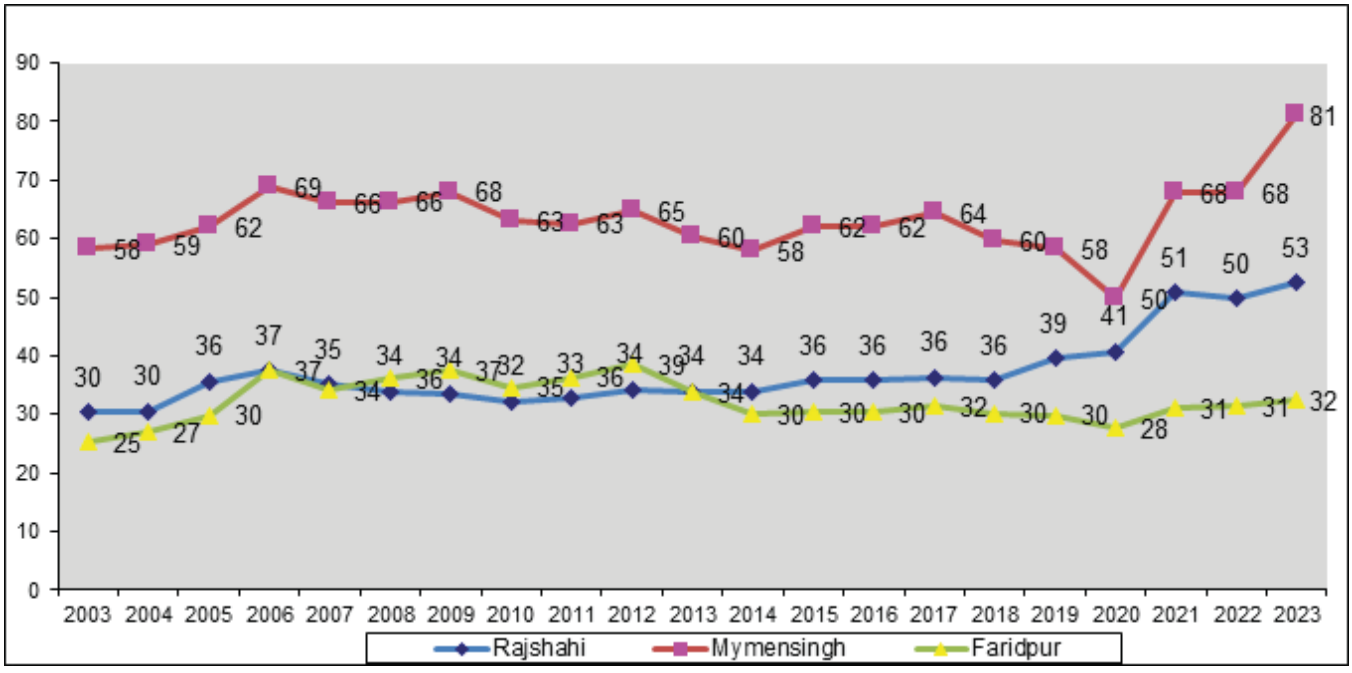
There was an increase in the trend of all forms notification rate from 90 per 100,000 population in 2017 to 135 per 100,000 in 2023. There was almost no change in CNR of Bacteriologically Confirmed TB Patients from 2020 until 2021, from when it started increasing with the highest in 2023 which could be due to expansion of GeneXpert facilities.

Graph 2: Trends in PBC & All Form TB CNR per 100,000 population in the DF area



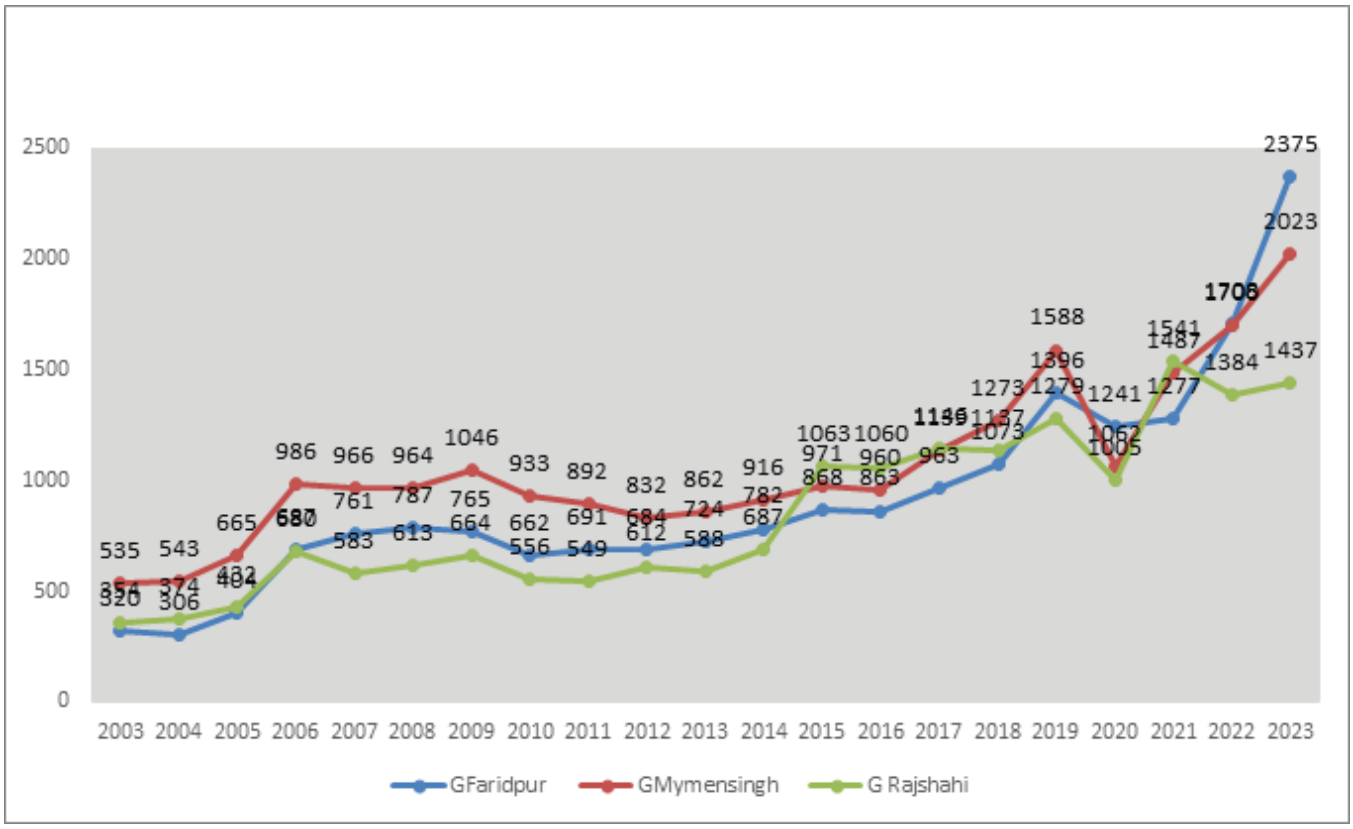
New Pulmonary Bacteriologically Confirmed (PBC) TB case notification varies significantly among the different regions. In the Northern region (greater Mymensingh) the notification rate of new PBC patients has always been higher (81 per 100,000 population) than in the other two (greater Rajshahi around 53 and greater Faridpur around 32 per 100,000 pop) regions. The same variation in notification rates for pulmonary clinically diagnosed and extra-pulmonary TB patients has been observed between these regions which might indicate low level TB prevalence in these (greater Rajshahi & Faridpur) regions.

Graph 3: Damien Foundation region wise new smear +ve (PBC) TB notification rate per 100,000 populations

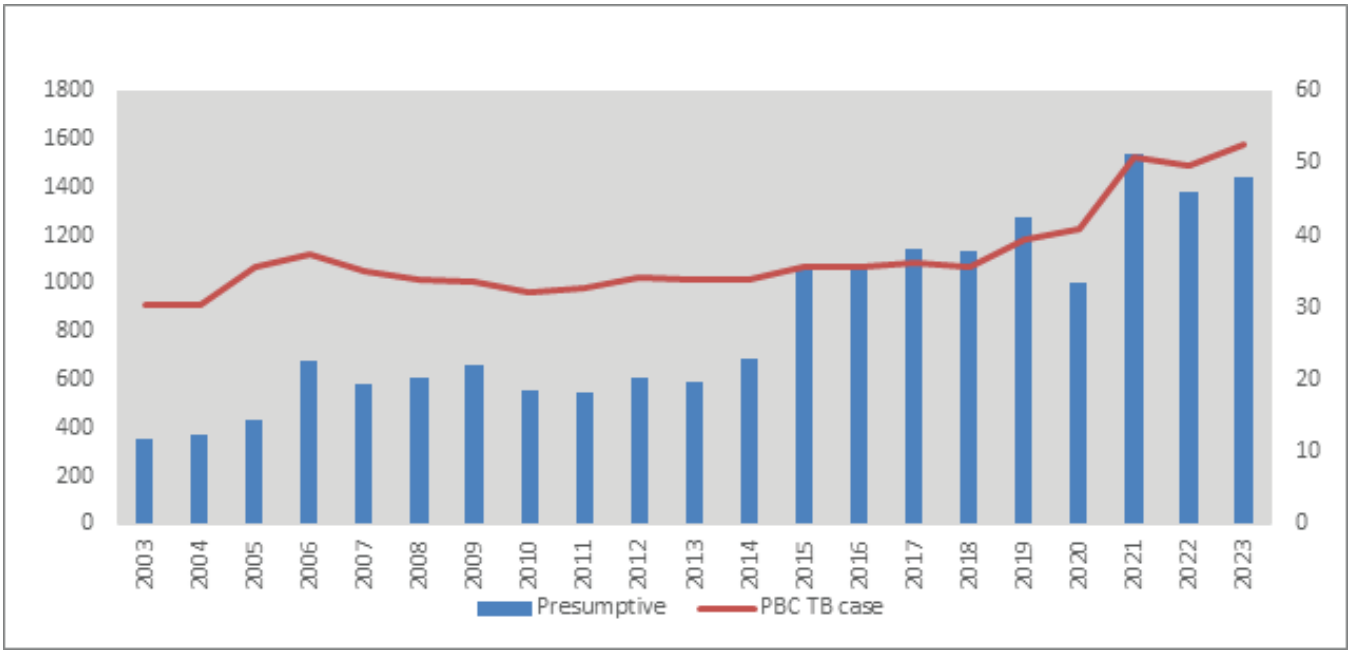


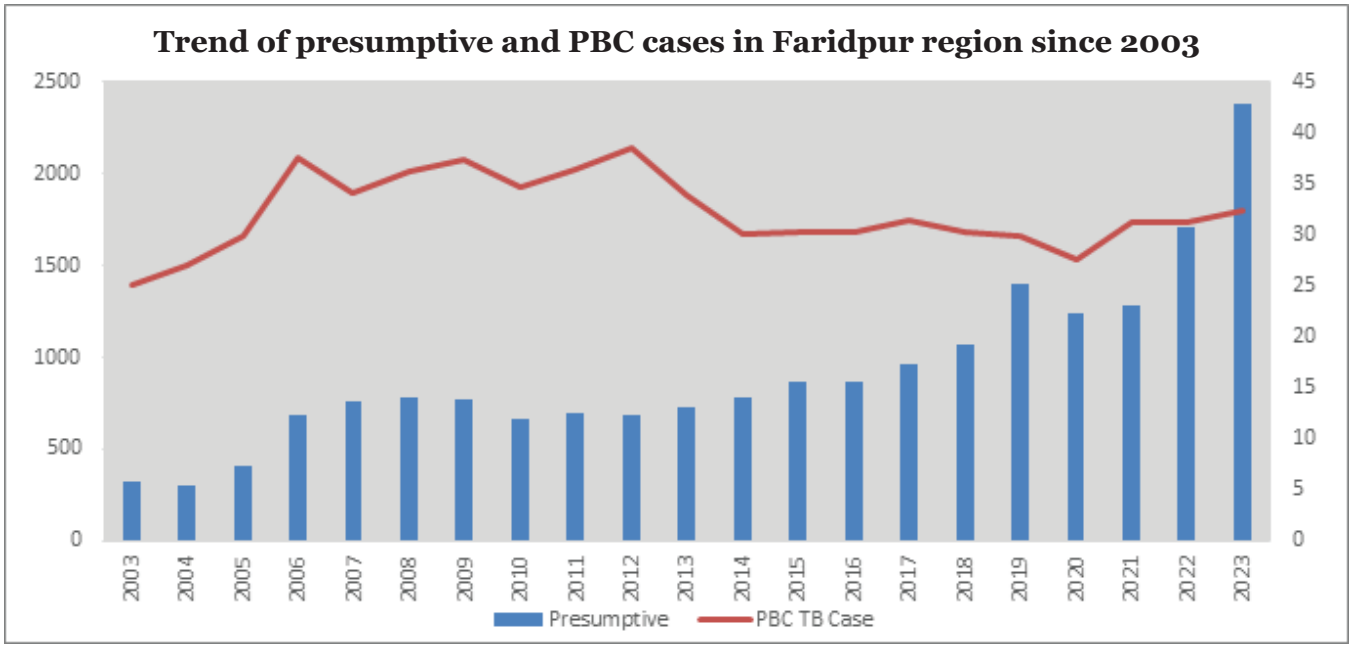
A special emphasis was provided in the year 2023, especially in the regions of Faridpur and Rajshahi. Following this, a significant rise in TB presumptive patients was observed in the Greater Faridpur and Mymensingh regions, while the increase in the Rajshahi region was more modest as shown in graphs 4 and 5-7.

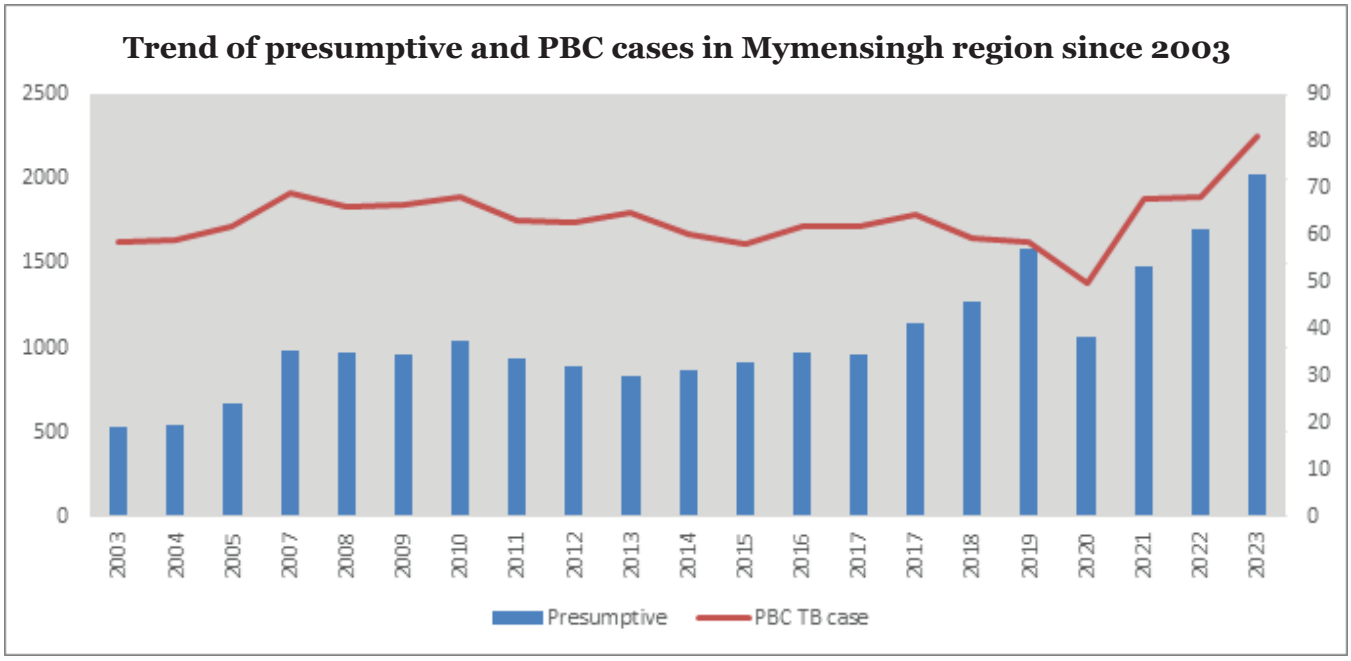
Graph 4: DF region-wise trends in TB presumptive per 100,000 populations



Graph 5 - 7: Trends in presumptive and new PBC TB patients per 100,000 populations in 3 different DF regions







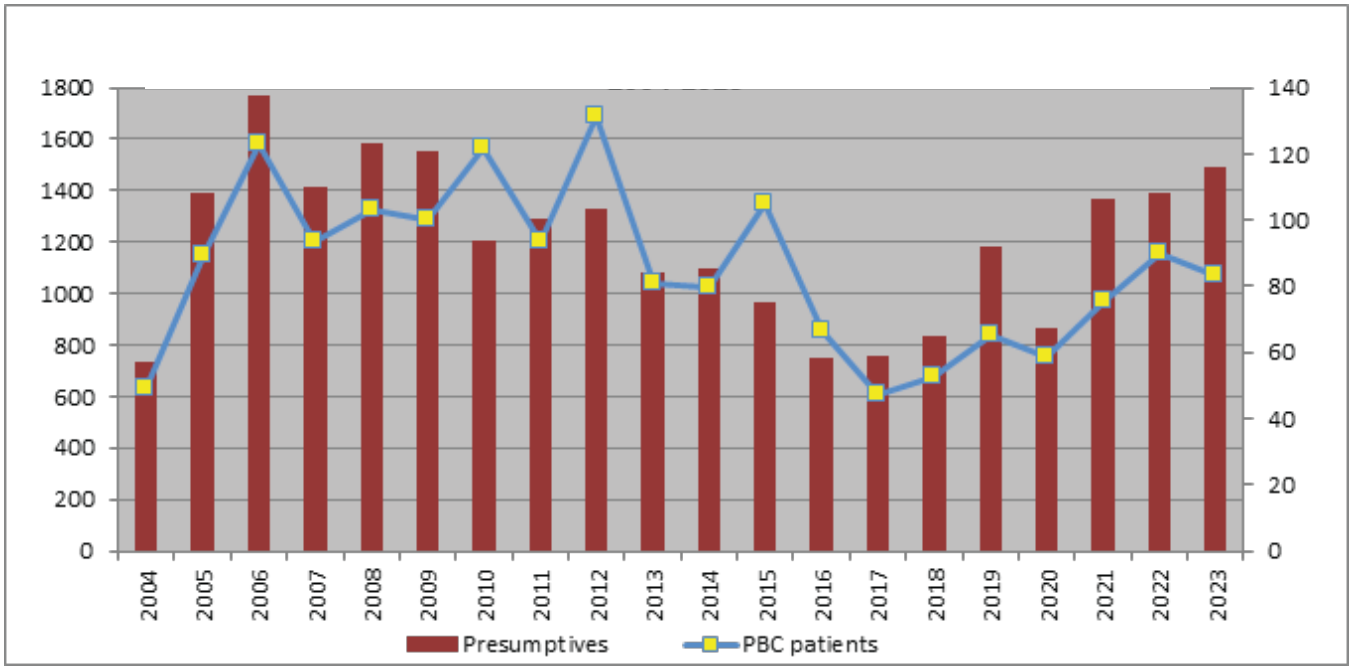
Although the number of presumptive and testing had increased in Faridpur region, increase in TB notifications was minimal. Taking into account the good quality of microscopy services along with the expansion of GeneXpert machines up to upazila levels in the project area and the standardized screening system of presumptive, it has been observed that TB is not equally distributed all over the country. The WHO thus recommends the use of notification trends to assess the performances of TB control Programs and does no longer recommend using national estimates for the sub-national level.

4.2 TB control activities in the workplace (Dhaka Export Processing Zone)

There has been a rapid urbanization trend in Bangladesh leading to the development of several factories in urban and peri-urban areas both in organized and non-organized ways. People with low income from rural areas migrate to work in those factories where the working conditions are often unhealthy with overcrowding and poor ventilation. These poor workers are often paid low and several workers also share a small room for their living. Such living and working conditions are the most favorable environment for easy transmission of highly communicable tuberculosis disease. Considering the situation DF started TB control activities in 2004 in Dhaka Export Processing Zone (DEPZ), a government-controlled workplace, located near Dhaka where more than 100,000 workers are engaged in processing export goods and most

of them are young female workers. However, DF has access to the garments where there are around 76,000 workers. Since the start of the Program in DEPZ, DF has observed a higher TB incidence among the workers compared to the general population. In 2023, 1495 presumptive were collected from the DEPZ zones, out of which 83 PBC patients were detected. The female ratio among detected TB patients in this workplace is almost double compared of the general population. The graphs below show the trends in presumptive and TB patients per 100,000 workers:

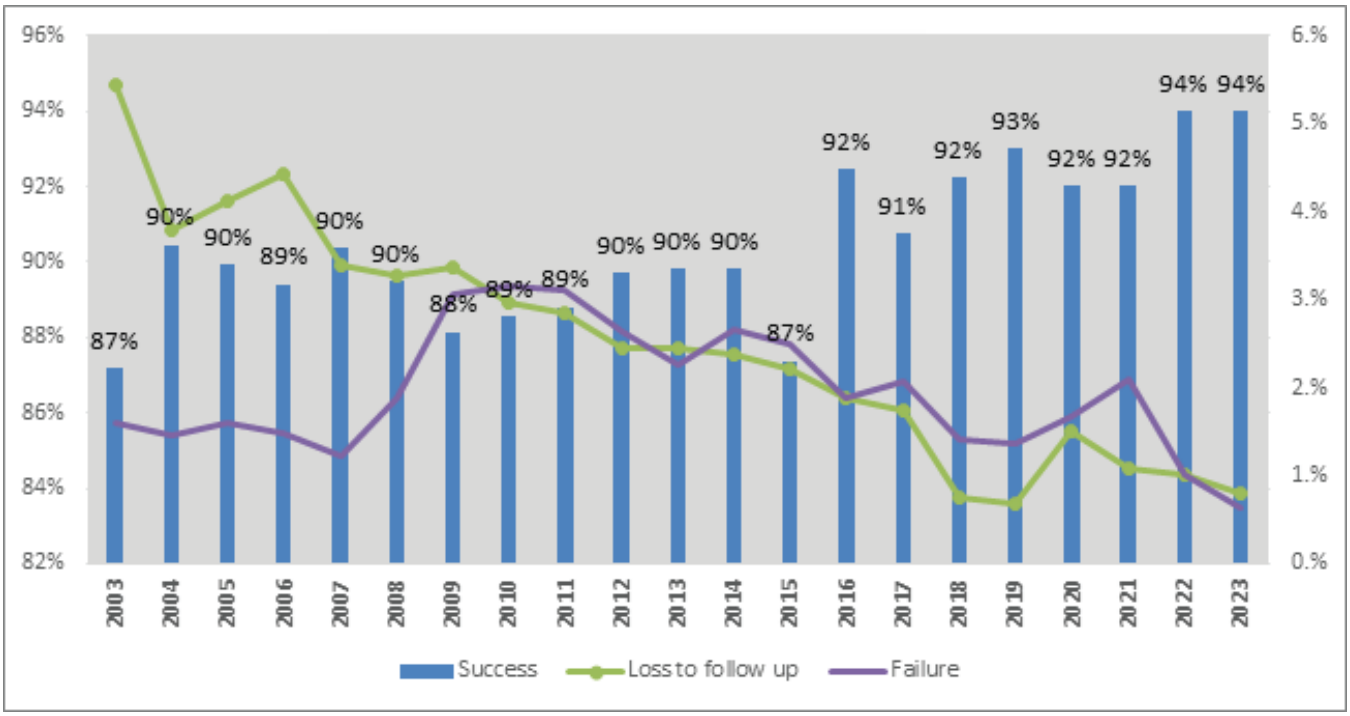
Graph 8: Trends in presumptive TB patients and new PBC TB patients per 100,000 population in DEPZ



Considering the growing expansion of industrial factories, DF planned to strengthen TB activities in newly industrialized DF border districts involving the private sector. Situation analysis involving the workers who were admitted to DF hospitals indicated their unawareness of the availability of TB services near their workplaces. As a result, they first seek care from private pharmacies and return home when they do not improve. To increase awareness of TB among factory workers and the factory owners and managers, DF organized orientation and advocacy sessions. Moreover, DF also organized outreach sputum collection centres near the factories and improved the record keeping and reporting at existing TB clinics in industrial areas for the factory workers. As a result, in 2023 a total of 1078 TB patients were diagnosed among workers of different factories in the DF area (including 182 from DEPZ) and put on treatment.

The TB treatment success rate has been maintained above 85% since 1995 and 90% or above since 2012 with a low rate of unfavorable outcomes (death at around 3.7%, 0.81% lost to follow up and failure at around 0.64%). The treatment success rate for PBC patients reported in 2023 (registered in 2022) was 94% and for all patients, it was 94%. The graph below shows the trends in TB treatment success, loss to follow up and failure rates for PBC TB patients since 2003.

Graph 9: Treatment outcome in new PBC patients since 2003



4.3 Tuberculosis in children

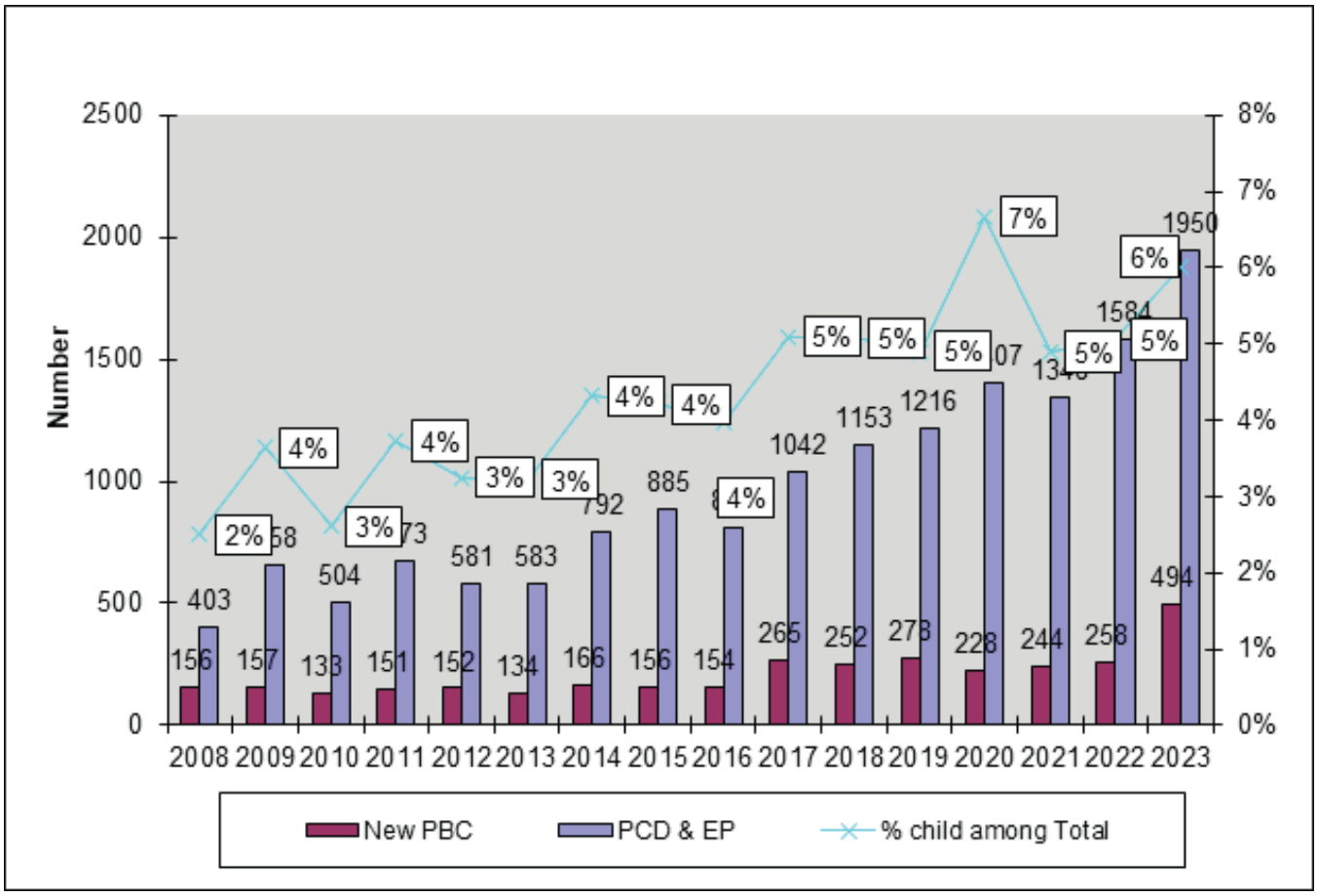
Child TB diagnosis is a global concern due to under-detection, with children being highly vulnerable to contracting TB from adults. In Bangladesh, limited diagnostic facilities and specialists make detection particularly challenging. Symptoms in children differ from adults, and young children struggle to produce quality sputum, making it harder to detect bacilli through microscopy due to fewer bacilli load in the sputum.

Estimating the incidence of TB among children is difficult and the published estimates vary , . The study conducted in one DF upazila in 2009 in collaboration with ICDDR, B showed a child TB prevalence of 52 per 100,000 children. This study seems to have provided important evidence on the under-detection of child TB patients in Bangladesh which helped the NTP Bangladesh to adopt strategies to increase child TB patients throughout the country. In order to improve child TB case detection, the Damien Foundation in collaboration with the Centre for Women and Child Health (CWCH) conducted a study to evaluate the effectiveness of the algorithm for the detection of child TB and the effectiveness of community awareness in enhancing the diagnosis of child TB which also support the above findings . An increase in child TB detection in the study clinics was also observed.

Efforts at improving the diagnosis of TB among children were continued in 2023 through coordinating with government doctors on the diagnosis of childhood TB. A total of 242 doctors were oriented through 12 sessions in 2023. The proportion of child TB detection has remained more in the DF area for the last few years compared to the national average. In 2023 around 6% of the total TB patients in the DF area were children which is more than last year and in absolute number 2444 children TB patients were detected in 2023. An overall increasing trend in absolute number of child TB patients has been observed since 2008. The graph below shows the year-wise child TB patient detection in the DF project area since 2008.

[2] Epidemiology and disease burden of tuberculosis in children: a global perspective. Infect Drug Resist, 7:153–65, null 2014.
[3] World Health Organization. Global tuberculosis report 2014. World Health Organization, Geneva; 2014. (WHO/HTM/TB/2014.08).
[4] Intervention to increase detection of childhood tuberculosis in Bangladesh; INT J TUBERC LUNG DIS 16(1):70–7

Graph 10: Child TB detection from 2008 to 2023 in DF working areas



This year, TB Preventive Therapy (TPT) has been introduced for all age groups by the National Tuberculosis Control Programme stopping IPT (Isoniazid Preventive Therapy) for children only. 3HR (Isoniazid + Rifampicin) combination tablets daily dose and 3HP (Isoniazid + Rifapentine weekly dose for 3 months) weekly dose are used for three months under TPT activities. In 2023, a total of 43,882 eligible clients for TPT (contact of PBC TB patients who did not have active TB) were identified through contact tracing and among them, 21,975 (58%) were enrolled under TPT in 2023. Among the total enrolled clients, 58% were female and 33% were children. The outcome /completion rate of the enrollment of TPT in 2023 will be available in 2024.

4.4 TB in prison

It was found from several surveys that the prevalence of TB is higher in prison compared to the general population. The reason of this higher prevalence is due to the fast spread of TB in poorly ventilated, densely crowded living conditions in the prisons. Inmates often have limited access to health care services and the health care service providers also have limited access to the prisons as the prisons are restricted places. For this reason, very little is known about the severity of TB in the prisons of Bangladesh. The foundation in collaboration with the NTP Bangladesh organized a survey in the 4 jails of Rajshahi, Naogaon, Nawabganj and Tangail districts in 2003. The findings were that the TB prevalence in the surveyed jails is 152/100,000 population compared to 79.4/100,000 population among the general population. Since then, DF has established a referral linkage with the local jail authorities and health personnel. DF staff are informed if TB presumptive are identified among the prisoners and sputum samples are collected by prison health staff. In 2023, out of a total of 12 prisons in the DF working area only 08 prisons reported 32 TB patients from 655 presumptive. The prison health staff are engaged in providing DOT inside the prison and DF staff is informed when a prisoner is released for further arrangement of treatment engaging a DOT provider from the resident upazila. However, this arrangement had to face administrative challenges especially during covid and post-covid period.

4.5 TB HIV co-infection

TB remains the most common opportunistic infection among HIV-infected people in TB high-burden countries like Bangladesh. TB-HIV co-infection leads to rapid progression to TB disease and earlier deaths. HIV prevalence among the Bangladeshi adult population and TB patients is still low (<0.1%) but there are risk factors existing in the society for which HIV can spread and increase at any time. The prevalence is higher in high-risk groups such as intravenous drug users located in some hot spots (in 23 districts). Up to 2021, HIV testing services were limited to those district spots only and DF has been referring TB patients with high-risk behavior (if any) to the available nearest HIV Counseling and testing centres. In 2023, it was decided to test HIV status of all types of diagnosed TB patients in all areas and till December 2023 a total of 14,009 HIV screening tests were done through Determine test kits in DF area.

4.6 Drug Resistant/Rifampicin Resistant – TB

Since 1997 DF started to treat MDR-TB patients using a succession of standardized regimens under operational research conditions, which led to the identification of a highly effective, safe, short and relatively cheap regimen initially resulting in close to 90% cure with minimal bacteriological failure or relapse, and without amplification of second-line drug resistance. This regimen was known as “Bangladesh Regimen” worldwide. Treatment success of this regimen has been maintained at above 85% during recent years because of earlier detection of fluoroquinolones resistance through slide DST and enrolling them on appropriate treatment though the potent fluoroquinolone (gatifloxacin) had to be replaced by a weaker one (levofloxacin) because of its unavailability in the market.

DF has developed locally appropriate, low-cost, simple and safe laboratory screening and drug susceptibility testing methods (FDA vital staining; slide DST) which has led to an increasingly early screening, diagnosis and treatment of such patients. Currently, GeneXpert technology is used in detecting RR TB patients and 2nd line LPA (Line Probe Assay) for 2nd line drug resistance or slide DST for detecting levofloxacin resistance among RR TB patients.

This year, NTP has initiated the introduction and expansion of Gene-Xpert XDR (10-color machine) in TB diagnostic centers at Upazila Health Complexes and other TB hospitals, significantly improving early detection of second-line drug resistance at all levels.

The DF innovated “Bangladesh MDR shorter regimen” was tested by The Union through a clinical trial named STREAM (Standardized Treatment Regimen of anti-Tuberculosis Drugs for patients with MDR TB), a randomized controlled clinical trial, in South Africa, Vietnam, Mongolia and Ethiopia. This regimen was also formally evaluated in two trials, one in 9 francophone African countries. In the Union STREAM stage 2, two new regimens were included with stage 1: one of them is a 40-week regimen with bedaquiline, clofazimine, ethambutol, levofloxacin & pyrazinamide supplemented by isoniazid and prothionamide for the first 16 weeks and the other is 28-week regimen with bedaquiline, clofazimine, levofloxacin & pyrazinamide supplemented by isoniazid & kanamycin for the first 8 weeks . Following an expert review of available observational study findings on shorter regimens, the WHO updated its guidelines in 2019 including the shorter regimen for use under certain programmatic conditions.

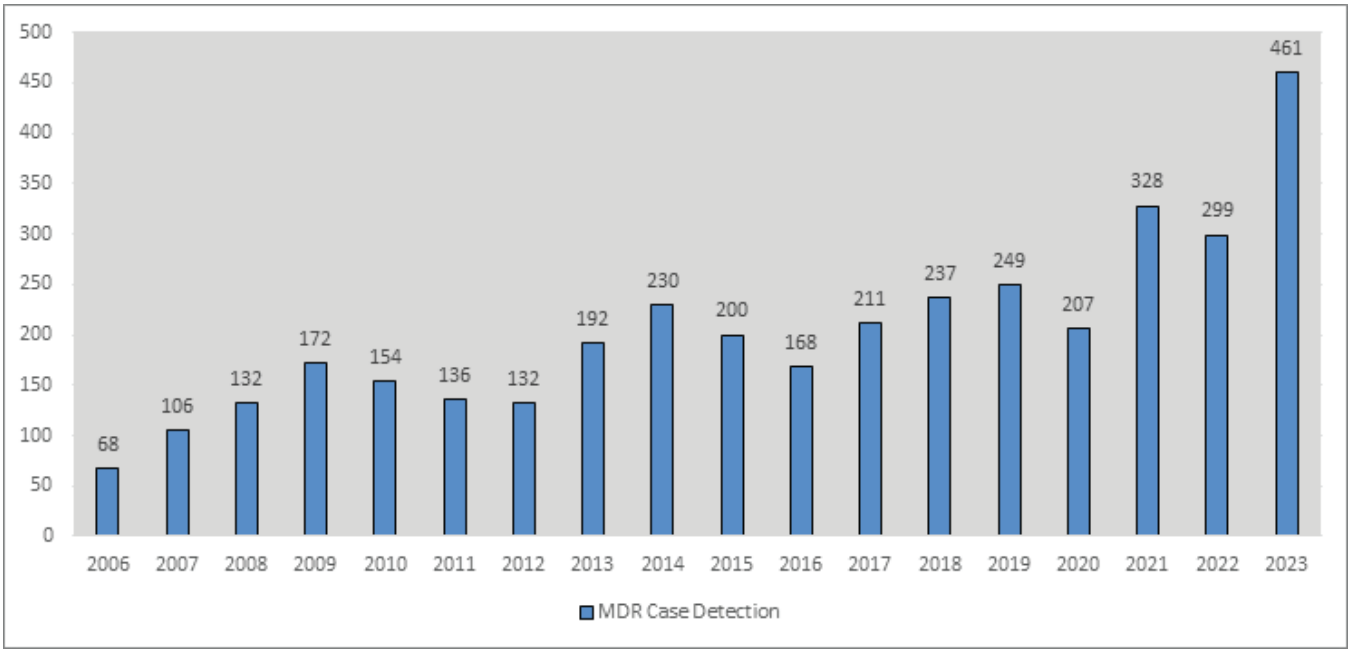
Observing the excellent results obtained by DF Bangladesh and following the WHO endorsement, several countries including NTP Bangladesh adopted and expanded this short course regimen. NTP Bangladesh adopted and started expansion of this regimen throughout the country in 2018 using moxifloxacin as the core drug and continued strengthening the services for MDR TB patients. However, in the meantime, WHO recommended an oral shorter regimen which is basically close to that of DF innovated 9-month shorter regimen where injectable has been replaced by the new oral drug “bedaquiline”. NTP, Bangladesh introduced the Shorter Oral Treatment Regimen (SOTR) in 2021 and expanded throughout the country in 2022. Following the NTP guideline, DF enrolled 461 MDR/DR TB patients in 2023.

Damien Foundation received intensive support from the Mycobacteriology laboratory of the Institute of Tropical Medicine (ITM) in establishing a culture and DST laboratory and including all other technical supports for the development of a standardized regimen for MDR TB in Bangladesh.

Since the introduction of GeneXpert MTB/RIF for diagnosis of RR-TB and the WHO endorsement of DF-invented shorter treatment regimen for MDR/RR-TB, DF has been using GeneXpert technology for the detection of RR-TB and the NTP adopted regimen under the programmatic conditions. However, DF continues to use slide DST to detect levofloxacin resistance among RR- TB patients besides sputum sample transportation to the LPA lab at NTRL. DF started a process of establishing a liquid culture DST lab along with GeneXpert MTB/XDR in 2022 but there was not a delay in various approval processes, which were done in 2023.

In 2023, enrolment of MDR TB patients on Shorter Oral Treatment Regimen (SOTR) was initiated. Since 2006, a total of 3,648 MDR TB patients have been enrolled under 9-month shorter regimen up to 2023 and the enrollment during 2023 was 461 under Multi Drug Resistant treatment out of which 93% (427) enrolled on shorter regimen. Increase in DR-TB in 2023 was mainly due to expansion of GeneXpert facilities. Treatment outcome of DR TB in 2023 (patient enrolled in 2022) is 80%.

Graph 26: Enrollment of MDR TB patients since 2006



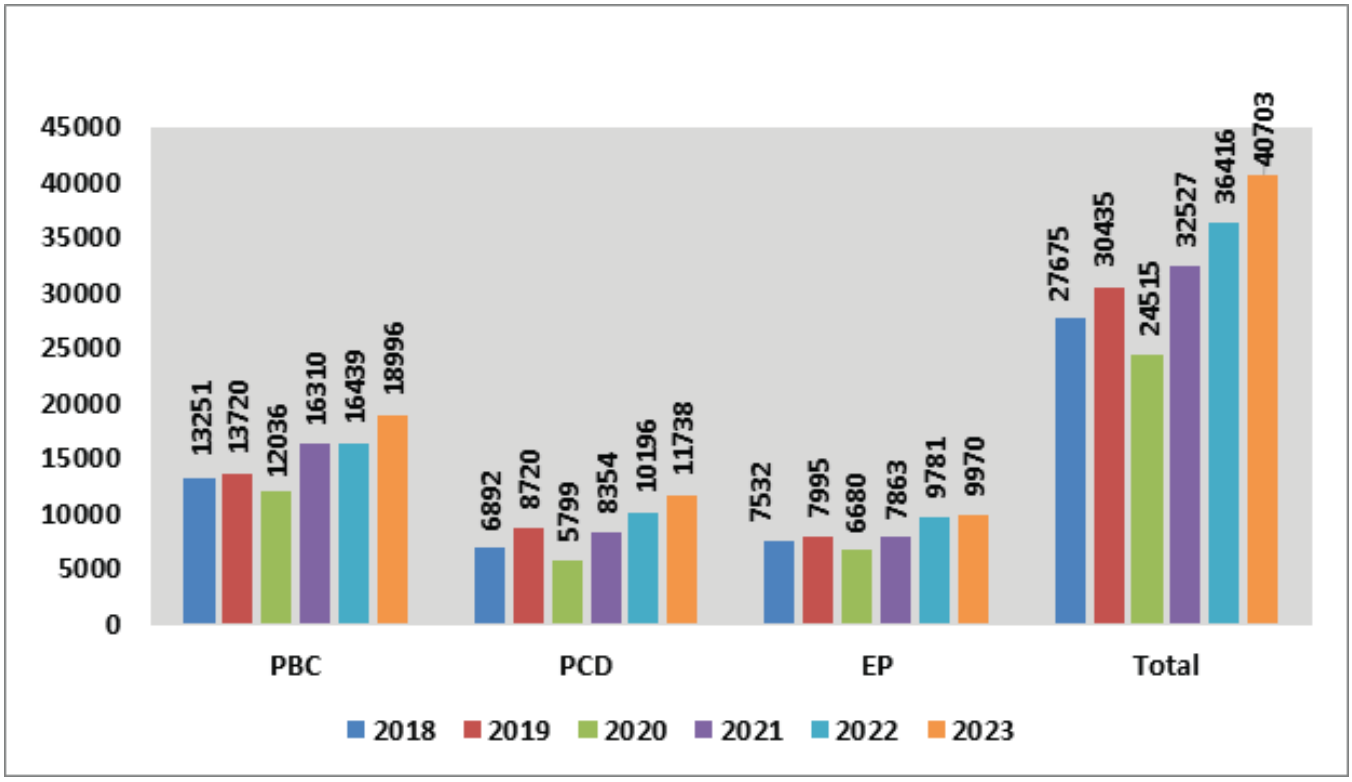
4.7 Infection Control (IC) for tuberculosis

Infection Control (IC) aiming at protecting healthy people from the sick remains an important step in the TB control Program especially when M/XDR TB is posing a threat to the achievements made so far in this disease Program. Moreover, strengthening the IC has become more important for preventing COVID-19 infection from patient to other people, not only protecting the healthy people and staff but also TB patients from COVID-19. Infection control measures were established in DF hospitals since its inception by ensuring separate rooms for MDR TB patients from non-MDR TB patients, and Pulmonary Bacteriologically Confirmed (PBC) patients from Pulmonary Clinically Diagnosed and Extra-pulmonary TB patients. Adequate ventilation and fresh air circulation in hospital ward rooms (removing the TB droplet-containing air) have been ensured in all the DF hospitals by keeping the doors and windows open and installing adequate fans. Health education among hospitalized patients on safe sputum collection (in 2-5% phenol solution containing buckets), cough hygiene and cough etiquette are being continued routinely. Masks are routinely supplied to all hospitalized patients in DF and Rajshahi Chest disease hospitals and their regular use has been ensured by the nurses. In the clinics, the infection control measures have been ensured by arranging the different assets (cupboard, tables, chairs etc.) and modifying the sitting arrangements taking the airflow into account. The infection control measures that have been strengthened due to the COVID-19 pandemic situation and has been continuing as per developed guidelines.

4.8 Continuing special efforts for finding missing TB patients:

The latest Global TB Report 2023 (WHO) shows that the TB treatment coverage in 2022 was 69%, meaning that still about 31% of estimated TB patients are not covered in Bangladesh although there is no clear picture of the volume of missing patients as the prevalence survey did not show any local-level prevalence. The prevalence survey indicates that more use of Gene Xpert and digital X-Ray technology can be helpful for finding missing TB patients. Accordingly, all projects of DF Bangladesh prepared their own plan up to upazila and union level to find out the missing TB presumptives patients and refer for diagnosis by testing by microscopy, GeneXpert, X-Ray and other tests. Active case finding was emphasized through more contact tracing and outreach smearing centres focused on hard-to-reach, underserved/unserved areas, and older and vulnerable populations. As a result, the detection of TB patients continued to increase each year since 2017, except in 2020, when there was a fall due to the COVID-19 pandemic. From 2018 to 2022 the increase of TB patients has been observed. The following graph shows the comparison of TB case findings from 2018 to 2023.

Graph 11: The following graph shows the trend of TB case finding from 2018 to 2023



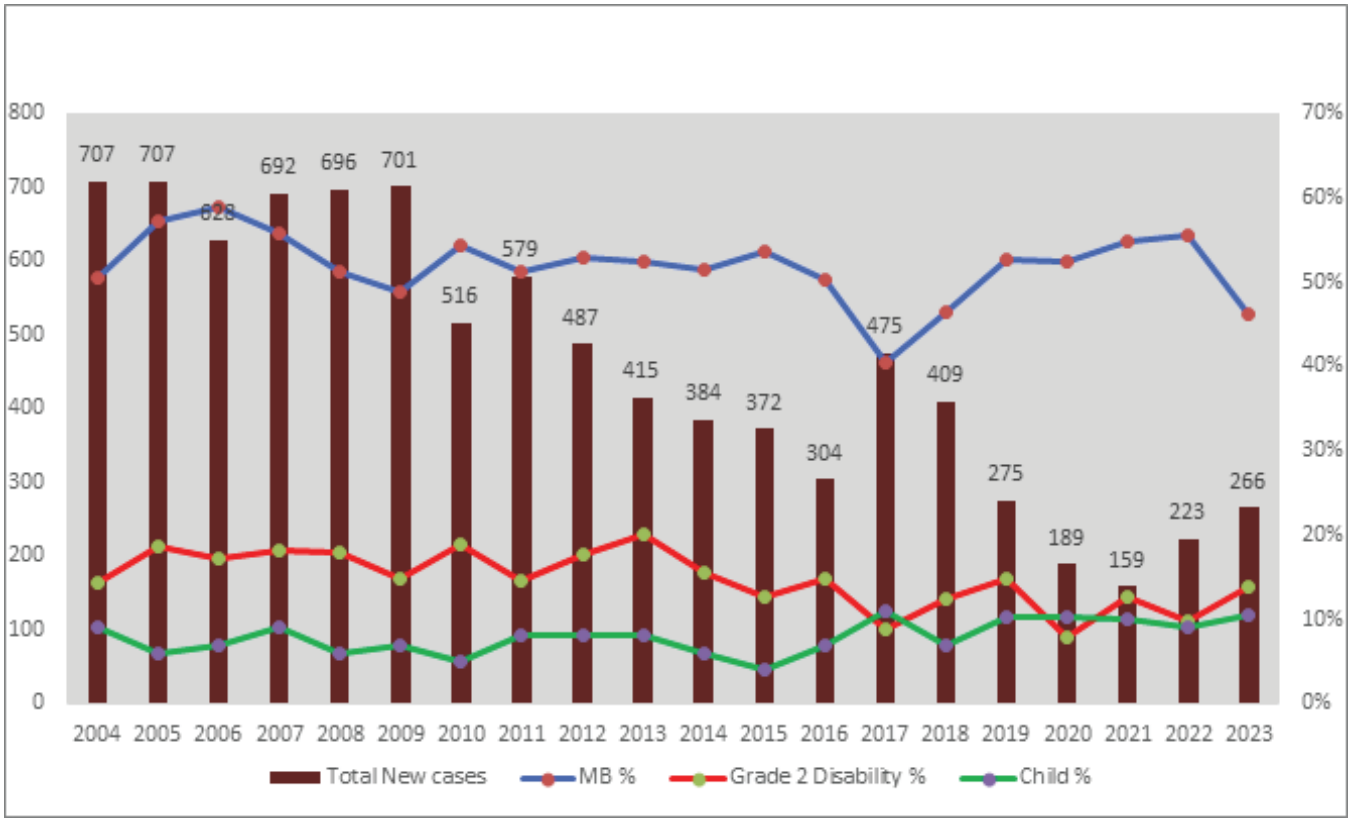
5. Leprosy

Although Bangladesh declared its achievement of the elimination status in 1998 at the national level, leprosy has been considered as a neglected public health problem in Bangladesh. Despite the elimination status, Bangladesh remains one of the countries worldwide detecting >2500 new leprosy patients annually. It has been observed that among the total new patients detected in Bangladesh more than 70% of patients are detected in the NGO-covered area.

In 2023, a total of 266 new leprosy patients were detected in the DF area, with approximately 46% being MB leprosy, which is about 10% fewer than in 2022. Around 18% of MB patients were skin smear positive. Children made up 10.5% of new cases, and 44% (118 patients) were female. The overall Grade 2 disability (G2D) rate in 2023 was 13.91%. Graph 12 illustrates the number of new leprosy patients and the proportion of MB, child cases, and G2D among those diagnosed in 2023.

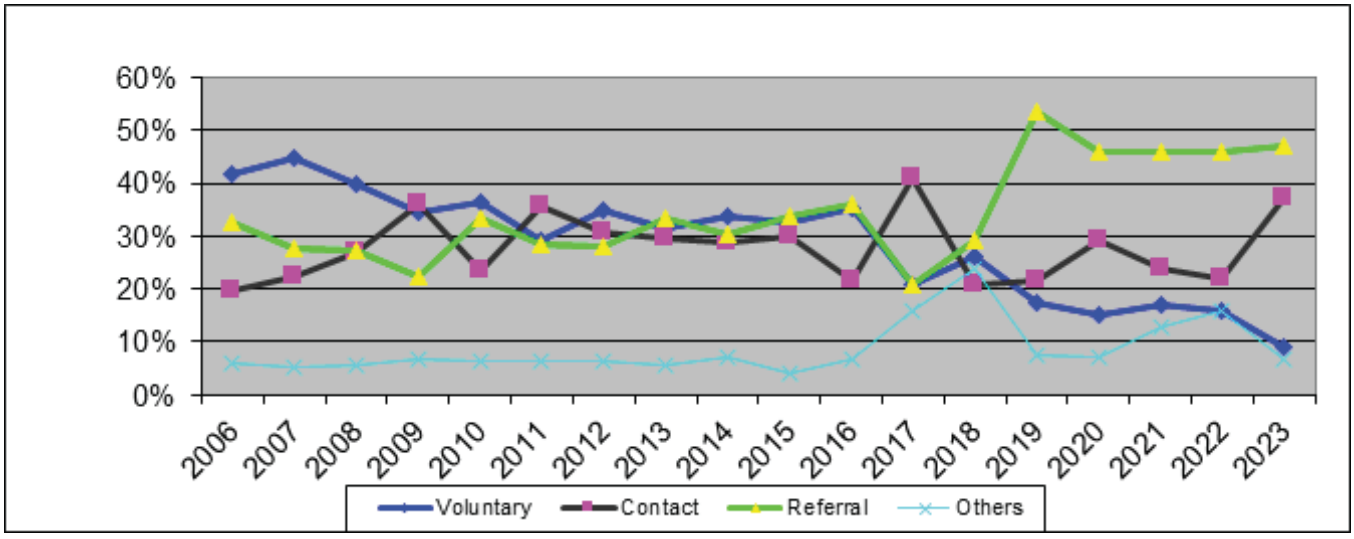
[7] Global TB Report 2023_WHO: TB profile (shinyapps.io)

Graph 12: New Leprosy Detection, Proportion of MB & disability grade 2 in DF Bangladesh, 2004 – 2023



The COVID-19 pandemic had a negative impact on leprosy case finding, both on active and passive case finding during 2020 and 2021. Due to the rarity of the disease and low number of patients, contact checking (active case finding) remains an important part of sustaining leprosy case detection in situations where the leprosy endemicity is low. However, in recent years the proportion of referrals has been increasing which may indicate an increasing role of local health care providers and other community stakeholders. The graph below shows the trends in leprosy case reporting indicating the sources.

Graph 13: Trends in leprosy mode of case detection in DF Bangladesh projects



The DF Bangladesh project has consistently maintained a high treatment completion rate of over 90% for both PB and MB leprosy patients in recent years. In 2022, the overall completion rate for all leprosy patients was 98%, with PB patients achieving 100%, registered in 2022 and MB patients, registered in 2021, also reaching 98%.

Although 54% of newly detected leprosy patients were pauci-bacillary, the presence of 46% multi-bacillary infectious cases, a higher child proportion (10.5%), and a significant grade-2 disability rate (13.91%) highlight ongoing late diagnoses and the continued spread of the disease. This delay in diagnosis may be driven by stigma. Combined with the need for lifelong care for deformed patients, these factors underscore the critical importance of the DF project's continued and intensified support for leprosy care.

5.1 Care of Leprosy patients; Prevention of Disabilities

Leprosy, being a disabling neurological disease, leaves affected persons with permanent disabilities if not detected early and treated properly. Disabilities and deformities require lifelong care to prevent further deformities and disabilities. Hence prevention and care of deformities and disabilities are the most important aspects of leprosy management. This could be achieved by early diagnosis and judicious treatment of both diseases and of any reaction/neuritis that occurs. Every step is taken to prevent further development of new disabilities through routine follow-up, early diagnosis and prompt management of nerve-function-impairment (NFI), supply of protective foot- wears, teaching on self-care, and other support.

The main objective of POD activities is to minimize additional disabilities apart from that which was present at diagnosis through teaching patients with disabilities about self-care and through providing protective footwear and ulcer care. Since the beginning (1972), Damien Foundation has been providing passive care to limit further disability and deformity by asking them to report voluntarily or any problem after completion of MDT. Additionally, from the year 2008 to 2017, Damien Foundation took the special initiative for the prevention of disability and deformity by active surveillance of all patients whether new or completed MDT by means of observing ‘POD Day’ in every clinic once a year. The main objectives of POD Day were to promote self-care by the patients and to optimize the skills of all field staff to limit the disability due to leprosy. To organize a successful POD Day, all clinic staff were informed about their presence in the clinic about the Pre-POD visit by the physio-technician (PT), and a visit by PT one month prior to the POD Day. For POD visits to a clinic, the clinic staff including the TLCO are informed so that they can make good planning and arrange effective POD activities including the listing of patients under care and informing them, checking the stock of POD materials, preparing a list of patients for reconstructive surgery and other supports needed. TB and Leprosy Control Assistants (TLCAs) also gain more confidence and improve their skill in patient management through this POD activity. General counseling on self-care to limit further disability through peer Education by the selective patient is performed on the POD Day. Individuals are taught self-care, ulcer care, and active and passive exercises. Protective footwear is distributed based on the needs of patients.

Since 2017, POD Day has been integrated into the regular field visit program of the physio- technician, where leprosy patients are informed to attend the clinic on the day of the physio- technician’s visit to the clinic. The clinic staff and physio-technician jointly provide necessary support services to the patients who attend the clinic. For the care of leprosy patients having anesthetic feet, a total of 867 pairs of MCR shoes were supplied in 2023.

During the year 2023, a total of 334 leprosy patients were hospitalized for the management of different types of complications in the three DF hospitals, 76% of them were hospitalized for ulcer management and for special types of shoes. Around 18% of the admitted leprosy patients had reaction/neuritis and 4% had other complications.

6. Damien Foundation Reference laboratory and Quality Control of laboratories

The Damien Foundation culture laboratory located at Netrakona started LJ culture in 2002 under close supervision of the mycobacteriology laboratory of the Institute of Tropical Medicine (ITM), Antwerp, Belgium. As a rapid tool, FDA staining was used as the screening tool for the identification of MDR TB presumptive patients and slide culture DST (which gives results in 2 weeks) for detection of MDR TB. This laboratory procedure (slide DST) requires very minimal equipment and infra-structure which was also established in other project laboratories afterward. Later, since 2012, the game changer revolutionary technology, Gene Xpert machine was made available in all DF hospital-based laboratories. This technology can detect the presence of MTB in sputum specimens and the presence of rifampicin resistance only in about 2 hours. Since then, GeneXpert has been used as a screening tool for the detection of rifampicin resistance and FDA staining was phased out. Slide DST has been used for GeneXpert RR samples to detect SLD resistance. LJ culture DST has been performed if X-pert MTB/RIF test shows RR and for routine monitoring of MDR TB treatment and other extensive DST for diagnosis of pre/XDR TB in the DF area. This Netrakona laboratory has been serving as the central role for laboratory aspects of all research in Damien Foundation in Bangladesh.

Netrakona laboratory provides technical support to the DF project laboratories located at the project offices and the project laboratories provide support to all field laboratories located at the district, sub-district and below levels. Sputum samples from all previously treated (for at least 1 month) patients including non-converters and failure patients and contacts of DR TB patients are first tested using GeneXpert technology to detect rifampicin resistant (RR) patients. RR patients detected through GeneXpert are then referred to DF hospitals for slide DST for 2nd line drugs (mainly levofloxacin) and for enrollment on DR TB regimen. Slide DST (mainly for levofloxacin) is routinely performed besides LJ culture DST for all sputum samples collected from all RR TB patients at the start of treatment and the initial strains are also routinely sent to the Antwerp lab for first- and second-line DST through Netrakona lab. All follow-up sputum samples during treatment of DR TB are also sent to Netrakona laboratory for solid culture and DST if found culture positive.

The Quality Assurance (QA) system for all other laboratories of DF Bangladesh has been developed through a regular monitoring mechanism by this DF- Reference lab at Netrakona, which is working with the full technical support of SRL, Antwerp, Belgium. Netrakona lab is also providing full assistance for DF clinical and lab-related research, e.g. currently supporting the lab aspects of MDR TB management.

Primary culture on LJ medium and conventional phenotypic LJ-DST is done in the Netrakona lab. Strains isolated on LJ culture at the Netrakona culture lab are regularly sent to the Antwerp supra-national reference lab (SRL) for quality control of culture and DST of this lab.
In 2023, the Reference laboratory processed 1710 primary culture and 44 LJ-DST, 44 slide DST and 4385 Xpert test. Netrakona lab sends one strain for each MDR patient before the treatment start of MDR/Pre-XDR and NTM strains that are asked by ITM. LJ- DST in Netrakona is done only for Rifampicin, Kanamycin, Isoniazide and Ethambutol and is rewarding for the DF projects to find out Pre-XDR and XDR TB patients earlier.

DF Netrakona Lab. has been participating in the quality assurance programme for DST of MTB in the network of supra-national laboratories (SRL) for long (rounds of proficiency testing) and has successfully demonstrated acceptable performance. During the last round (round 26) of proficiency testing, this lab demonstrated acceptable proficiency for rifampicin genotypic, rifampicin, isoniazid and amikacin phenotypic DST.

Netrakona lab has also been serving as the external quality assessment site of skin smears from leprosy patients examined at the DF project laboratories. All the DF project laboratories serve as the first control of all DF field laboratories for EQA of sputum smears. The Netrakona lab served as second control for EQA of sputum smears for several years and later on the 2nd control has been temporarily shifted to Tangail project lab as a step of decentralization with capacity development.


DF DST Laboratory at Netrakona

7. Hospital Activities

Besides 160 field clinics situated at Government premises mostly, DF also runs three own hospitals with a bed capacity of 255 to take care of complicated leprosy and TB including MDR TB patients among 34 million population in DF area in Bangladesh. These hospitals are situated in Jalchatra - Madhupur, Raghurampur Shambhuganj and Anantapur (Baluakanda) under Tangail, Mymensingh and Netrakona districts respectively. During the year 2023, a total of 1377 patients (TB 1043 or 76% and leprosy 334 or 24%) received care from DF hospitals. Complicated patients and patients with very poor general conditions are normally referred to hospitals. Overall bed occupancy in Jalchatra, Mymensingh and Netrakona hospitals was 31%, 30% and 27% respectively during 2023. The average bed occupancy rates per disease category and duration of stay in different DF hospitals are shown in the table below:

Table 2: Bed Occupancy and duration of stay

		TTLCP		MTLCP		NTLCP	
	Leprosy	TB		Leprosy	TB	Leprosy	TB
Subtotal	21%	38%		46%	20%	49%	23%
Total	31%			30%		27%	
Duration of stay in days							
Average	35	20	0	40	20	32	18

Graph 14: Trends in hospital bed occupation

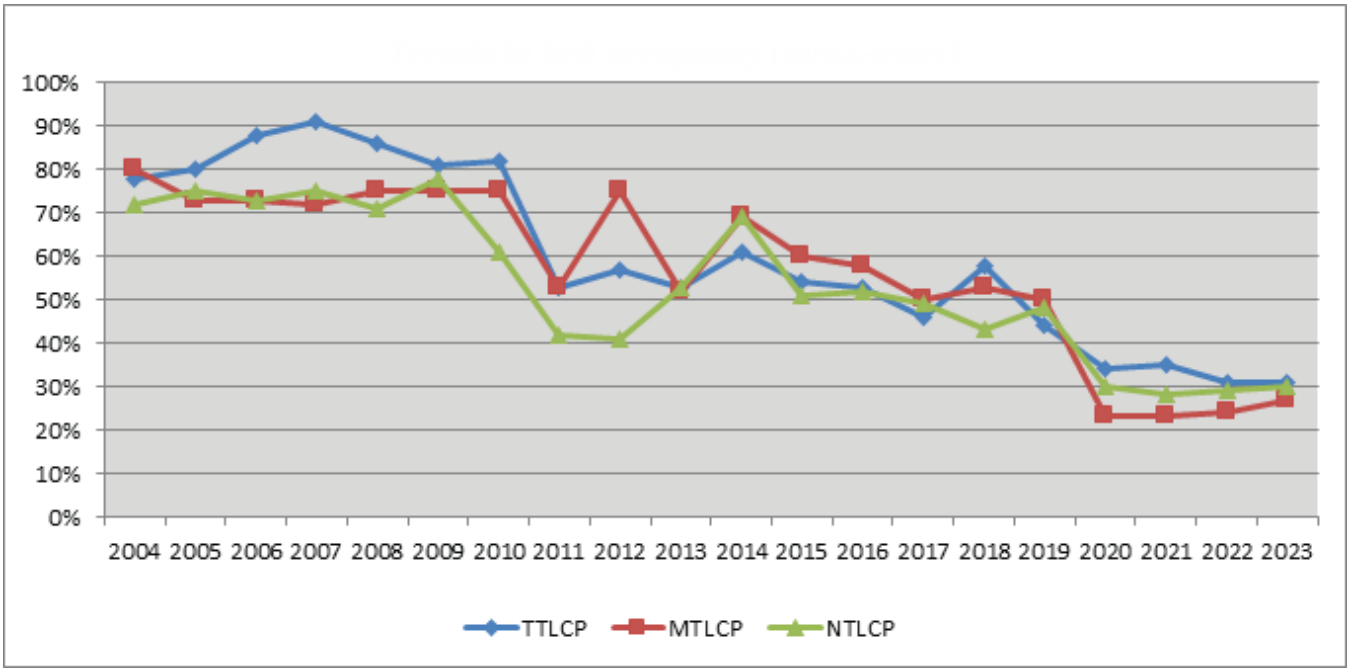


Table 3: Reasons of TB admission in 2023

Hospital	Treatment Complication	Poor general health	Drug reaction	MDR Follow-Up	MDR (To start)	Other	MDR (To start)
MTLCP	41(16%)	57(22%)	87(34%)	30(12%)	36(14%)	5(2%)	256
NTLCP	129(40%)	18(6%)	169(52%)	0(0%)	10(3%)	0(0%)	326
TTLCP	153(33%)	93(20%)	151(33%)	0(0%)	37(8%)	27(6%)	461
Total	323(31%)	168(16%)	407(39%)	30(3%)	83(8%)	32(3%)	1043

Table 4: Reasons of Leprosy Admission- 2023

Hospital	Reaction & neuritis	Ulcer	Eye complication	Reconstructive Surgery	Other	Total patient
MTLCP	29(17%)	135(79%)	1(1%)	1(1%)	5(3%)	171
NTLCP	4(5%)	64(85%)	2(3%)	0(0%)	5(7%)	75
TTLCP	28(32%)	55(63%)	0(0%)	0(0%)	5(6%)	88
Total	61(18%)	254(76%)	3(1%)	1(0%)	15(4%)	334

The organization runs an OPD for general patients from Jalchatra Hospital (TTLCP) to serve the local community and ensures twenty-four hours emergency service for the general patients.

8. Community engagement through Advocacy Communication & Social Mobilization (ACSM)

ACSM is an important component of the TB Program to address four key challenges - improving case detection, treatment adherence, combating stigma/discrimination, and empowering people affected by TB and mobilizing political commitment and resources for TB.

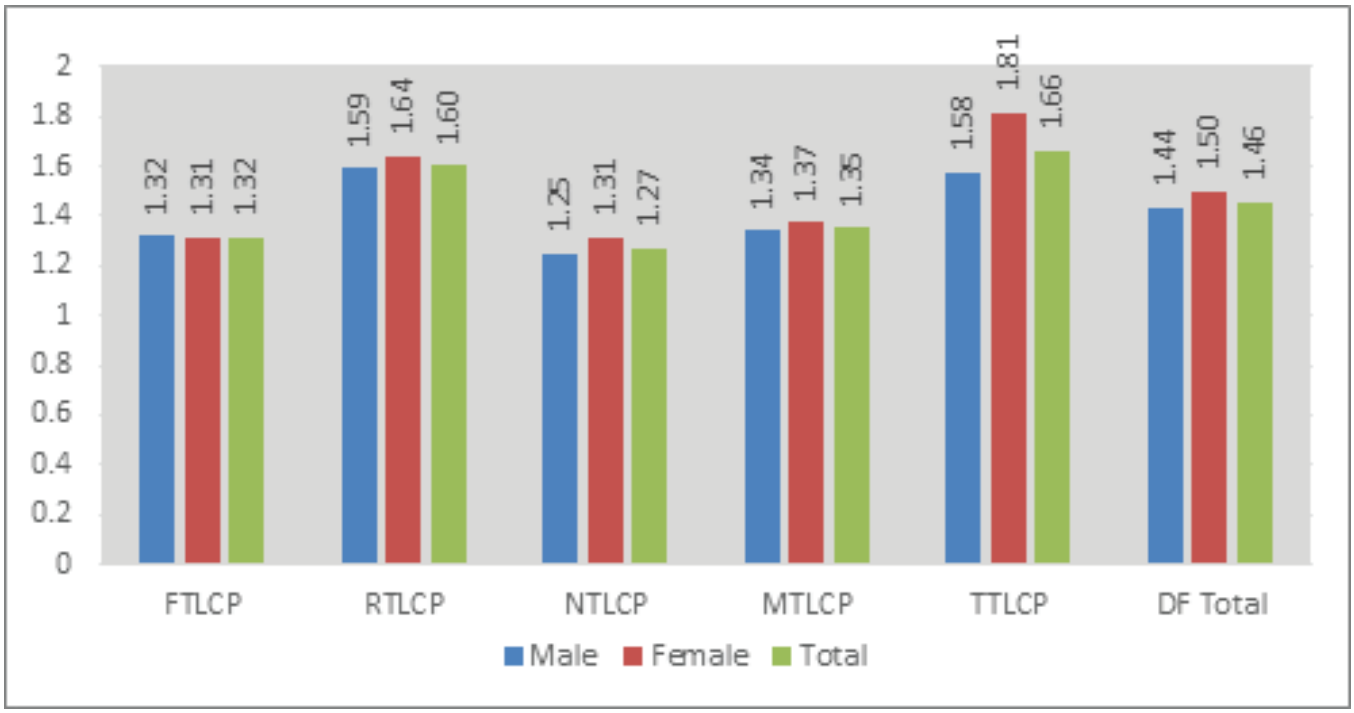
The objectives of ACSM are to increase awareness, bring about behavioral change, influence social norms, and expand community support in the TB control Program. In line with the Global and National strategy the Damien Foundation Bangladesh (DF) is actively involved in disseminating TB & Leprosy related health messages through a variety of communication channels to improve and sustain TB & Leprosy related safe behavior among individuals and community. These are as follows:

- Community & OPD health education
- Orientation of village doctors
- Meeting with cured TB patients/elites of the community (TB club meeting)
- Orientation of Medical Officers/General Physicians
- Meeting/orientation with different NGO staff/Government health service providers
- Health Education in out-patient and indoor department of health service providing institutes
- Mobilization through miking at community/marketplaces and mobilization through house-to-house visits
- Patient to patient education for self-care
- Observance of World TB & Leprosy Day
- Training and refresher course for own staff

9. Role of ACSM in early TB diagnosis

ACSM (Advocacy, Communication, and Social Mobilization) activities play a crucial role in promoting early TB diagnosis. These efforts have helped reduce the overall delay in diagnosis to under 1.5 months across all DF projects up to 2023. As shown in Graph 15 below, there has been a noticeable reduction in the time taken for disease diagnosis, highlighting the effectiveness of ACSM initiatives. By raising awareness, engaging communities, and encouraging timely healthcare-seeking behavior, ACSM has been instrumental in minimizing delays and improving early detection rates, which is key to controlling TB transmission and ensuring better patient outcomes. The details of the ACSM activities have been described in the upcoming sessions.

Graph 15: Diagnosis delay in 2023 - project and gender wise



Community-based health education

Hospital Health Education (Outdoor)

DOT of Child TB

Hospital care of complicated TB patients

World TB Day and World Leprosy Day of this reporting year have been observed on 24 March 2023 and 29 January 2023 respectively. The days were observed in collaboration with local Government health authorities. Observance of these days was through rallies, short meetings and the display of banners at the Upazila Health Complexes.

World TB Day at Damien Foundation Mymensingh

World Leprosy Day 2023 celebration at Netrakona

10. Engaging all care providers and community

10.1 Public-public and public-private mix approaches

Engaging all care providers through public-private mix (PPM) approaches is an important core component of the TB Program. The engagement of all relevant healthcare providers is essential to meet the TB-related Sustainable Development Goals (SDGs) and reach the targets for TB Program.

In the project area, Damien Foundation successfully involved all health institutions belonging to public sector health care networks, such as public hospitals, health care providing facilities at rural levels, medical college hospitals, prison health facilities and workplaces.

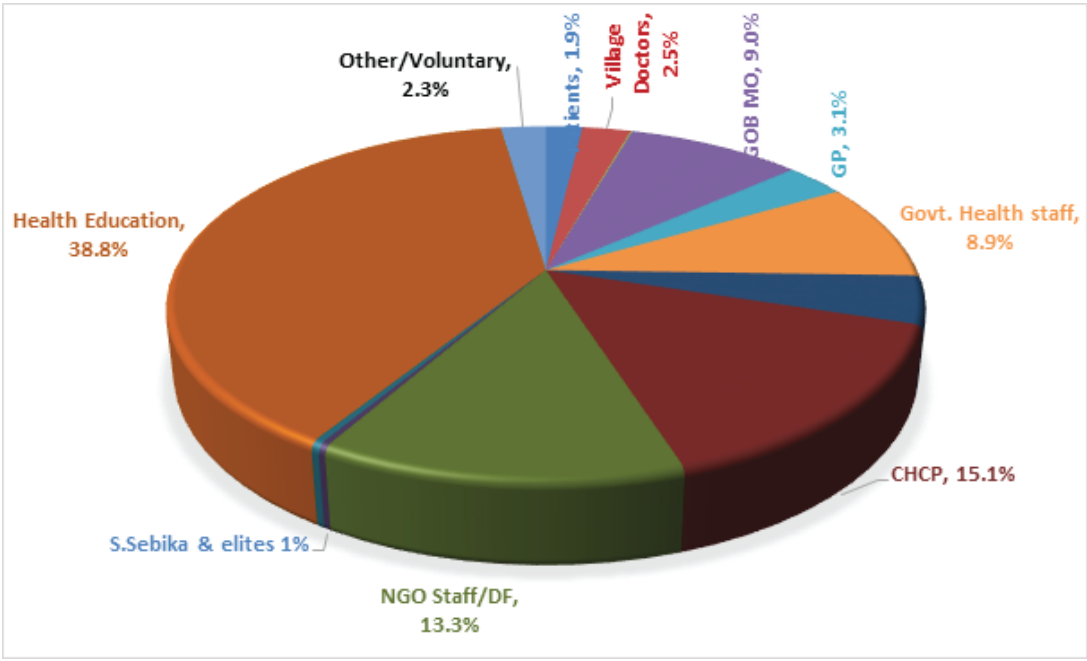
Networking meeting with Graduate PPs/Pediatricians at DF Mymensingh

Besides, many non-graduate private practitioners (village doctors), cured TB patients, graduate private medical practitioners, private hospitals and NGO health facilities were involved in referral of presumptive patients and providing DOT.

Non-Graduate Private Practitioners' (Village Doctors) orientation at MTLCP

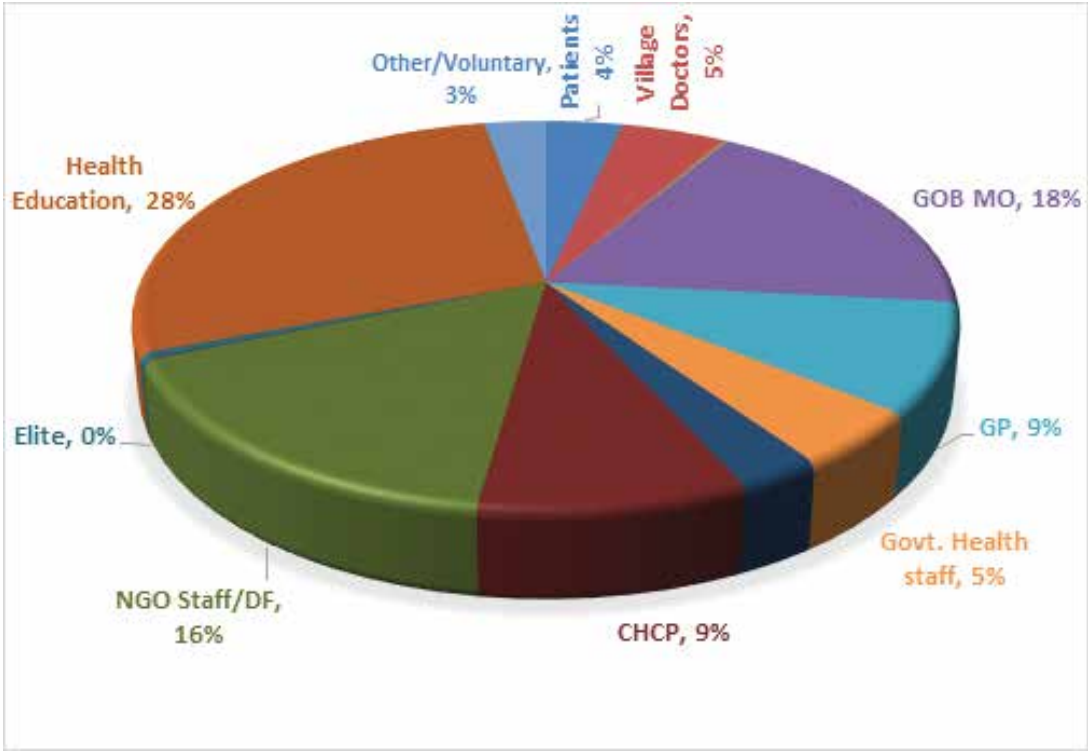
Community Health Education

Graph 16: Contribution to referral of TB presumptive by different providers and sources

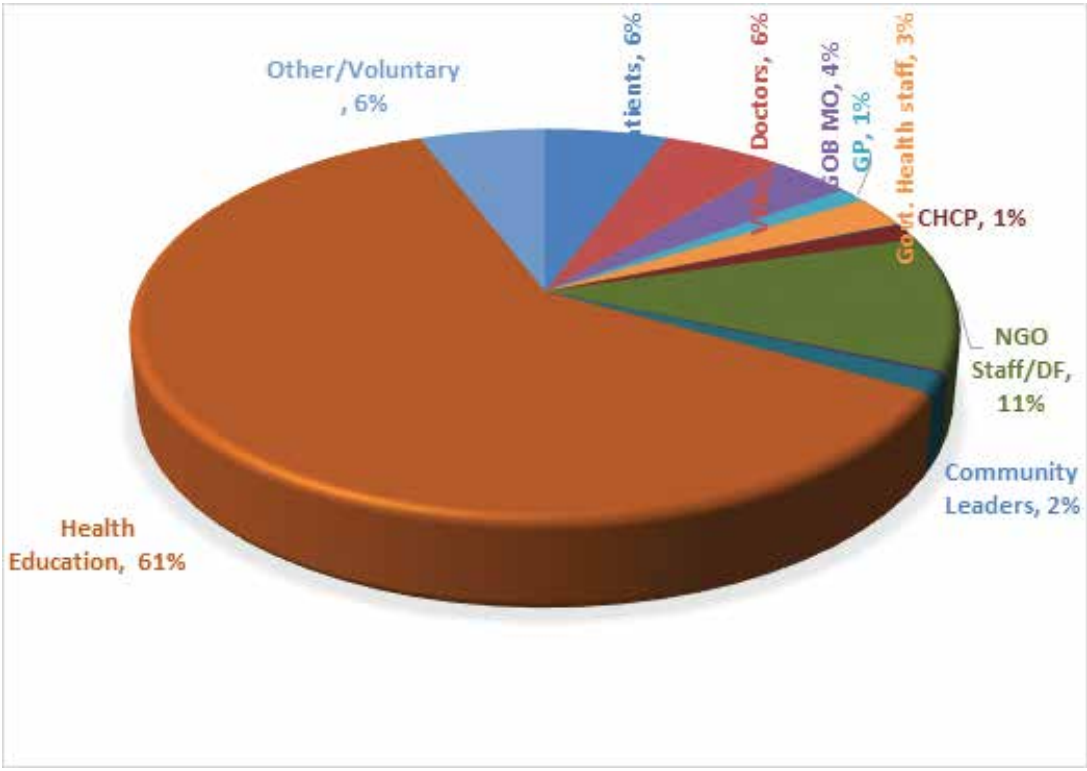


Health education mainly includes community sessions by health workers during household visits, sessions in the OPDs and indoors of UHCs, SH, MC, FWC, SC, CCs and in DF clinics.

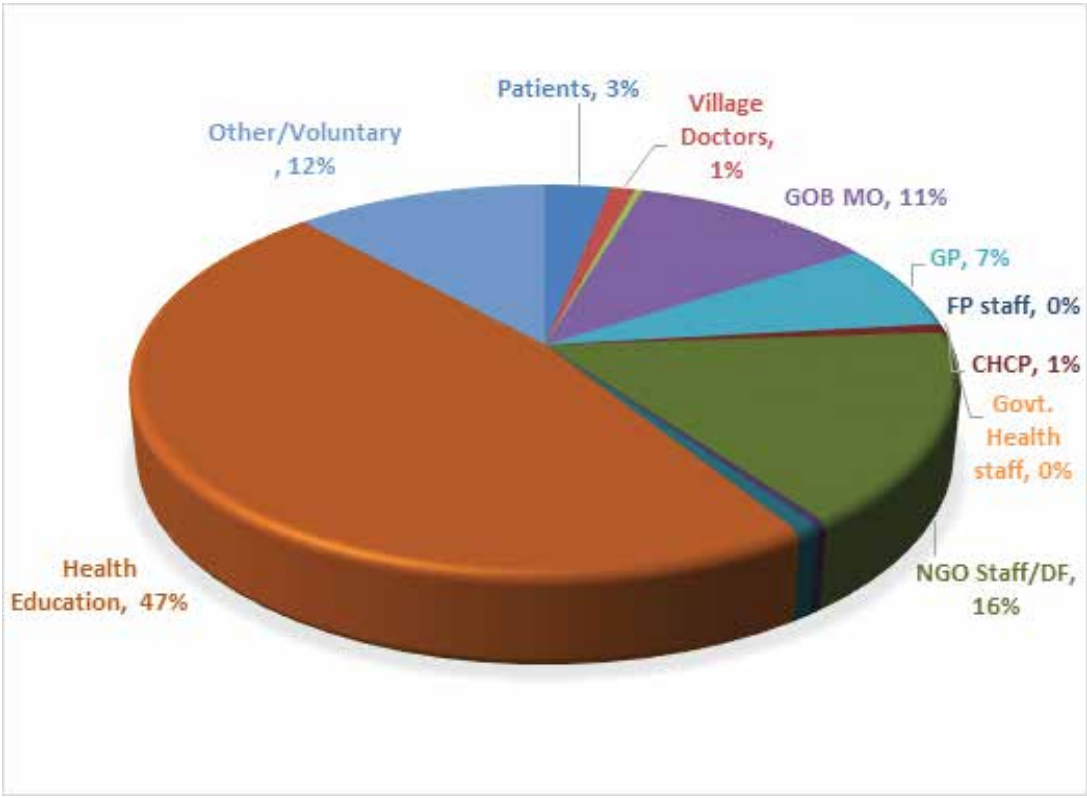
Graph 17: TB case detection by different providers and sources.



Graph 18: Mode of Leprosy Presumptive Referral in 2023



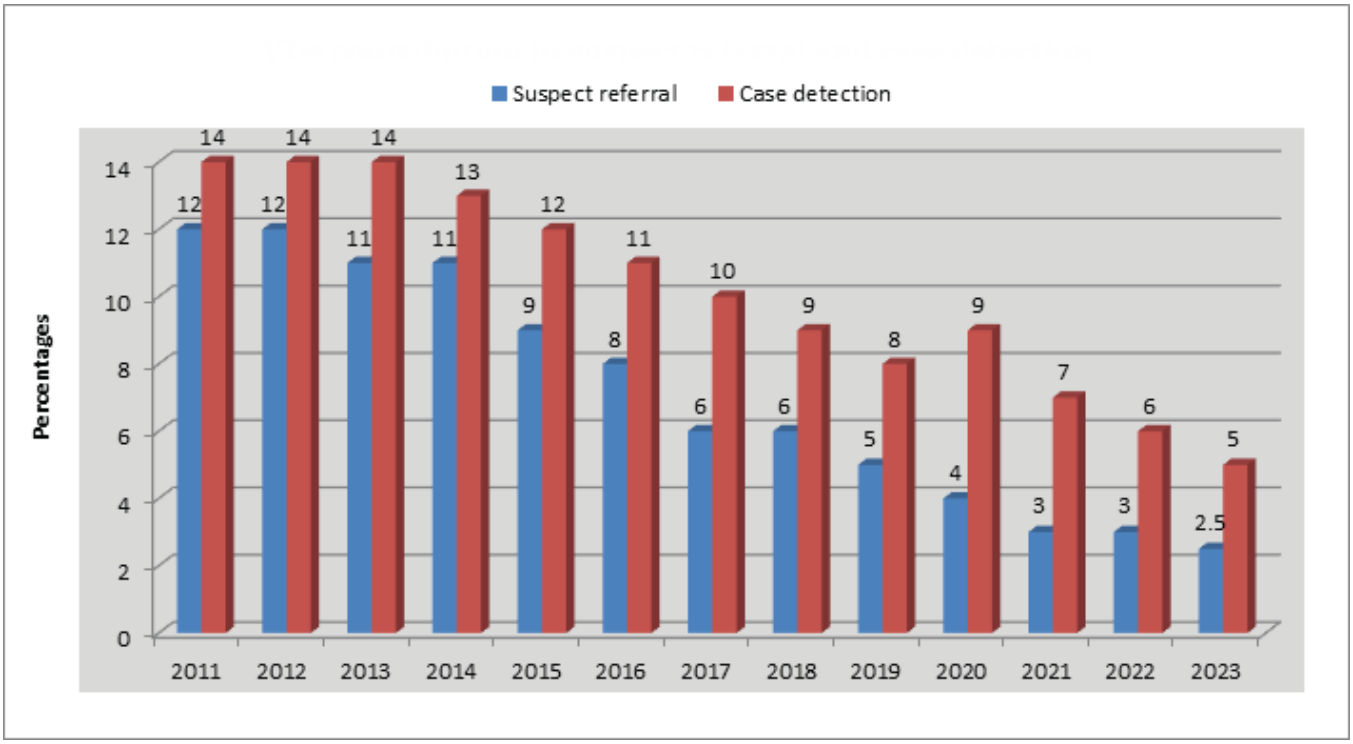
Graph 19: Mode of Leprosy Patients Detection in 2023



10.2 Partnership with the Village Doctors

Over the period, the Damien Foundation's partnership with the Village Doctors (VD) has been proven as one of the most effective and sustainable approaches; thus, the partnership with the VD was continued in 2023. The Village Doctors continued their important role in contributing to case detection by referring Presumptive and providing TB treatment supporter (DOTs provider) services to the community as in previous years. In 2023, 62 one-day training/orientation sessions were held for 1534 Village Doctors, resulting in contribution of 13581 presumptive TB cases and 871 PBC (Pulmonary Bacteriologically Confirmed) patients. These referrals represented 2.5% of total presumptive cases and 5% of total PBC cases. In addition to the referral, the Village Doctors were involved as DOT providers for 16,919 TB patients, 42% of the total TB patients.

Graph-20: Contributions of village doctors in TB case detection



10.3 Working with the Government Health & Family Planning staff and General Physicians

DF partnership with the Government Health Personnel is another cost-effective approach for case finding and case holding. This partnership has continued as before. In 2023, 12 one-day orientation sessions were held for 242 medical doctors, resulting in 66,457 presumptive TB cases and 4,839 confirmed TB patients, which represents 12% of total presumptive cases and 27% of total confirmed TB patients. For leprosy, 648 presumptive cases and 49 confirmed cases were identified, making up 5% of total presumptive and 18% of confirmed leprosy cases. In the project area, the Government Medical Doctors continue their support in diagnosing and managing complicated patients (both TB and Leprosy) at the early stages and facilitating different courses/orientations for other stakeholders.

Government Health & Family Planning staff in 2023

Support of the Government Primary Health Care Field Staff in referring presumptive patients to the clinic and monitoring of DOT in the community has been continued as in previous years.

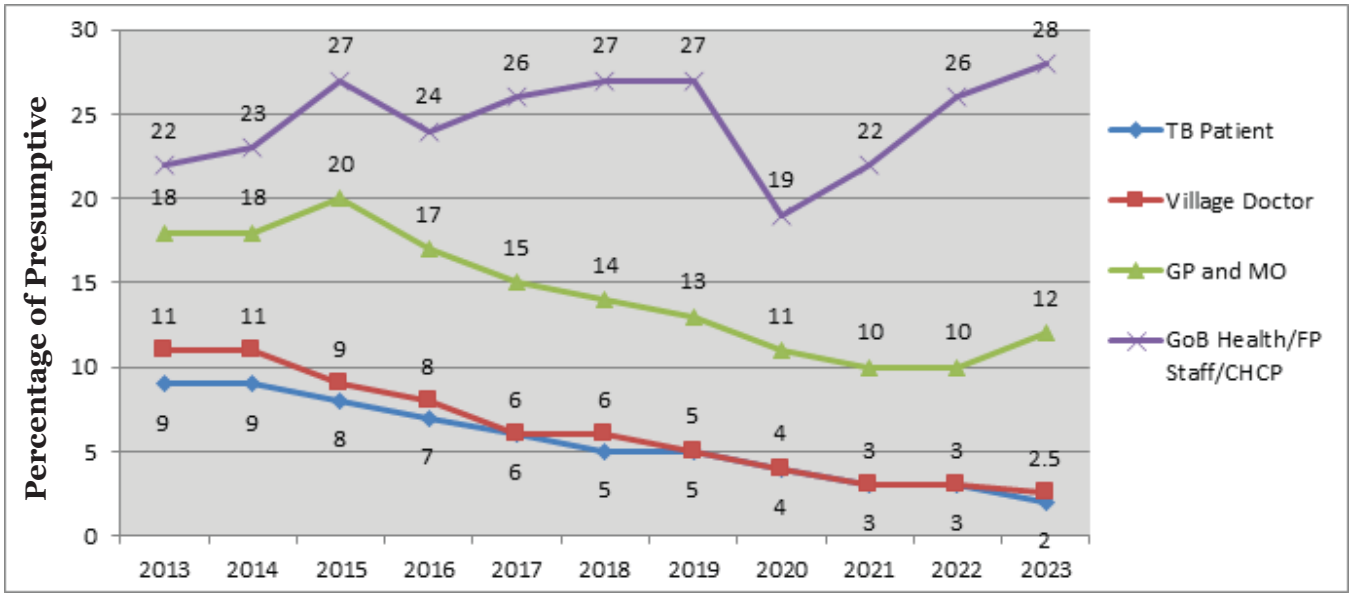
Damien Foundation Efforts in 2023 with Government Health & Family Planning staff			**Contribution by Government Health & Family Planning staff**		
	Session	Average Participants per session		Presumptive	Patients
Review meeting/ Orientation (1 day)	1532	40	TB (Number)	72,695	1,341
			% among total	13%	8%
			Leprosy (Number)	359	0
			% among total	3%	0%

Besides referral, Government Health and FP staff play an important role in providing DOT. A total of 5085 TB patients received DOT under their supervision in 2023, which is an 13% contribution to the total DOT for patients at the community level. Their involvement increased the DOT expansion in the community, which is very important to improve patient- friendly access to the services and enabling community participation in TB control for enhancing sustainability.

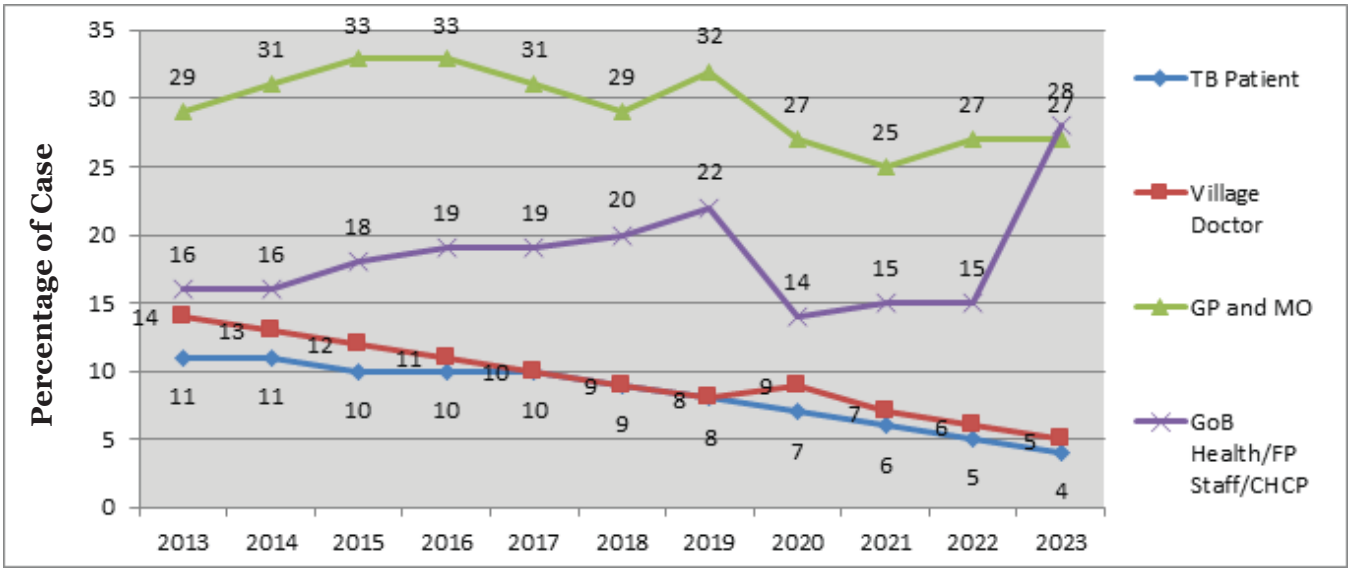
Report of last ten years shows that there the trend in the referral of TB presumptive by Government MO, GP, VD & cured patients remains static since 2022 but case detection is increasing through MO & GP. There is an increasing trend of referral of presumptive observed for Government health staff. Trend of TB case finding also slightly increasing through Government health staff. This increasing trend of involvement of field health staff also seems a positive sign for long-term sustainability.

The following graphs (21 & 22) shows the trend of TB presumptive and case detection in the last ten years (2013 to 2023) -

Graph 21: Comparison of trend of TB presumptive referral from Cured TB Patients, VD, GoB Staff and GP-MO



Graph 22: Comparison among trends of contribution from VD, GoB Staff and GP-MO for TB patient detection



10.4 Empowering patients and communities

Considering the pivotal role of Community engagement in the field of TB control and Leprosy elimination, the ACSM activities have been continued in collaboration with the Government (NTP & NLEP), with financial support from the Belgian Government through Damien Foundation and GFATM.

The effect of several ACSM activities and a dense network of services has been revealed through sustaining the referral of presumptive patients and increasing trends among certain groups of people as well. The clinic staff was involved with several ACSM activities besides routine activities on diagnosis, treatment and follow-up.

10.4.1 Working with the Former Patients and Community Leaders (TB Survivors)

The objective is to involve cured patients from the community to increase the case finding and to encourage them to refer presumptive TB patients and for early detection of new patients and relapse. Since 2000, DF has emphasized involving former patients in the identification of presumptive TB patients from the community and referring them to health centers to reduce stigma. This involvement was extended to organizing "TB clubs" of former patients at the union level (a union is a small administrative unit with a population of about 20,000) by utilizing patient volunteers. The vast majority of the cured TB patients are from the poorest segment of society, but their role in TB and Leprosy control activities has given them an identity as the best advocate to the community in terms of referral of presumptive TB and Leprosy patients.`

Contribution of cured TB Patients and Local Elites		
	Presumptive	TB Survivors
TB (Number)	12,116	716
% among all	2%	4%
Leprosy (Nr.)	945	10
% among all	7%	4%

10.4.2 Health Education Activities in Community and Government Health Facilities

Health education events create greater social commitment and support behavioral change to ensure access to treatment and care for all, particularly the poor, vulnerable and hard-to-reach populations. The activities include disseminating accurate information on the diseases and dispelling myths about TB/Leprosy, educating and encouraging people with their family members to be more actively involved. Several events of health education were conducted in the year 2023.

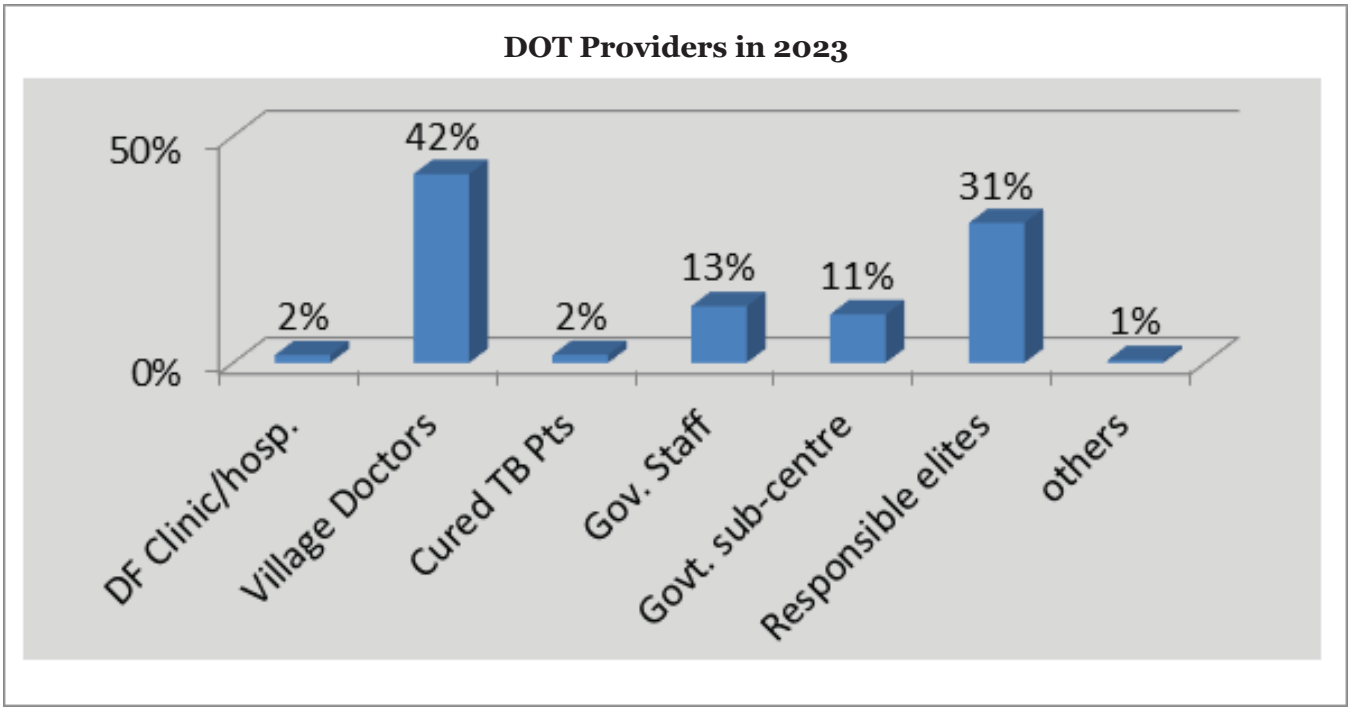
Details are in the following table:

<table>
<tr><th colspan="3">Health Education Activities in 2023</th><th colspan="3">Contribution from all Health Educational Activities</th></tr>
<tr><th></th><th>Session</th><th>Participants</th><th></th><th>Presumptive</th><th>Patients</th></tr>
<tr><td>Health education sessions in the community</td><td>342070</td><td>2110114</td><td rowspan="2">(Number)</td><td rowspan="2">212188</td><td rowspan="2">4974</td></tr>
<tr><td rowspan="2">Health Education session in OPD (UHC, SH, MC, FWC, SC, CC)</td><td rowspan="2">148889</td><td rowspan="2">1830312</td></tr>
<tr><td rowspan="2">% among total</td><td rowspan="2">39%</td><td rowspan="2">28%</td></tr>
<tr><td>Health Education session in INDOOR (UHC, SH, MC)</td><td>27430</td><td>543921</td></tr>
<tr><td rowspan="2">Health Education session in the DF clinic</td><td rowspan="2">230337</td><td rowspan="2">885330</td><td>Leprosy (Number)</td><td>7983</td><td>88</td></tr>
<tr><td>% among total</td><td>61%</td><td>47%</td></tr>
<tr><td>Total</td><td>686148</td><td>4894687</td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Health education activities help to enhance community participation which leads to increased awareness, promotes health-seeking behavior, inspires dialogue, and heightens community concern and action for TB/Leprosy control.</td></tr>
</table>

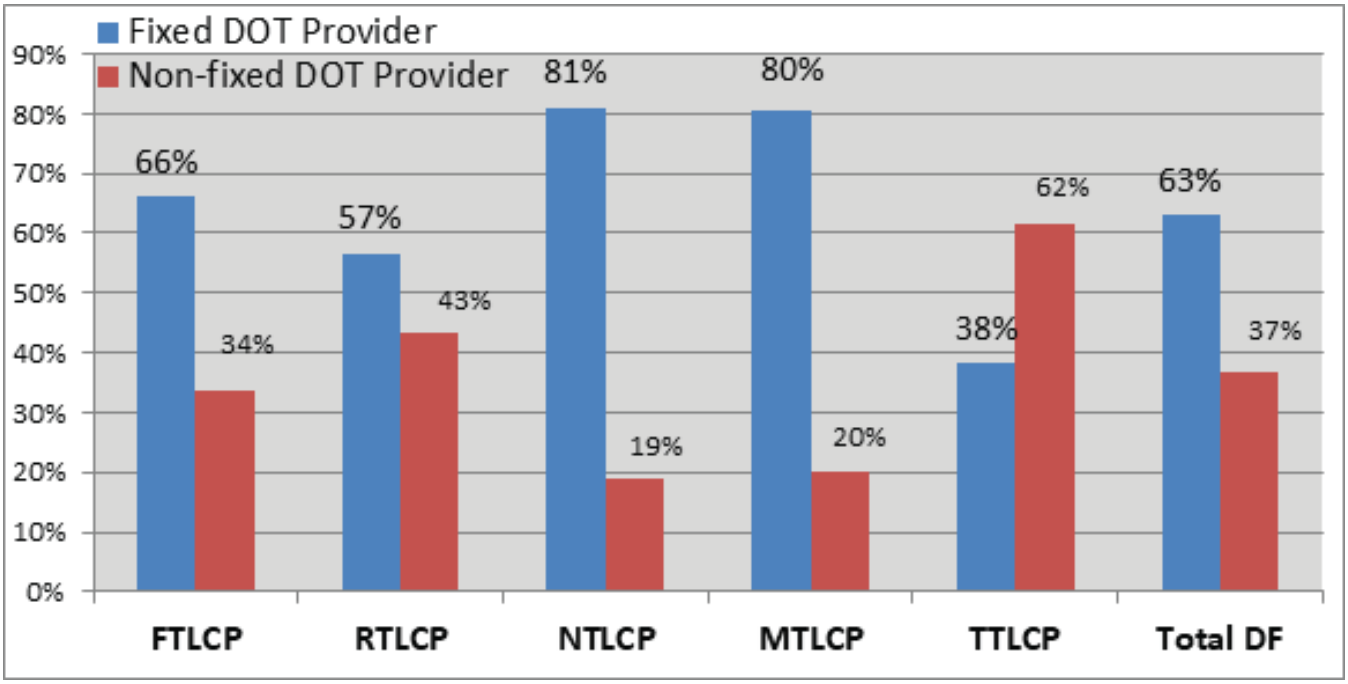
10.4.3 Community participation and treatment support

In line with the global End TB strategy of maintaining high-quality TB treatment supporter (DOTs), Damien Foundation Bangladesh, since initiation of the TB control Program, has decentralized DOT to the community level to make it more patient-friendly by involving VDs, GOB Health and Family planning staffs, other NGO staff, cured patients, school teachers, religious leaders and local elite. In each Union, there are 5 to 6 Fixed DOT Providers (FDP) to provide DOT to the patients, next to other Non- Fixed DOT Providers. The graph below shows the involvement of different categories of DOT providers in the TB Control Program, where about 42% of them are Village Doctors in DF project areas.

Graph 24: TB treatment supporters (DOT Providers) in 2023



Graph 25: Fixed and Non-Fixed DOT Provider in DF project areas in 2023



11. Operational Research in Damien Foundation Bangladesh

Damien Foundation Bangladesh conducted operational research next to its routine activities aiming at defining or establishing cost-effective means of diagnosis and treatment, documenting and validating different research findings or publications from other countries and providing input to the national and international Health Agencies to develop or recommend new tools and strategies for different NTPs based on study results obtained in DF Bangladesh.

11.1 Assessing the Effectiveness of Intensified Extended Contact Survey (IECS)

Damien Foundation started the implementation of this IECS study project in 2020 with funding support from the Leprosy Research Institute (LRI) and in collaboration with Institute of Tropical Medicine, Antwerp, Belgium; MSF, Belgium; Erasmus MC, University Medical Centre Rotterdam.

Realizing the facts and experiences from different countries that leprosy often clusters not just within households but also within neighborhoods. Apart from screening household contacts, it would therefore be equally important to screen neighborhood contacts. Therefore, a new approach of contact screening based on door-to-door screening of a wide circle of neighborhood contacts of new leprosy patients was tested through this operational research project. Areas to be screened was determined based on the geographical coordinates of the affected households, ensuring a targeted area that was wide enough to avoid identification of the index case households. With this 'Intensified Extended Contact Survey' approach, hereafter called the 'IECS Strategy', and through this strategy, it was expected to achieve early case detection, reflected in a reduced prevalence of G2D among new patients.

The main objective of this operational study project was to assess the impact of the IECS strategy in reducing the proportion of patients with G2D at diagnosis. Moreover, reducing the delay in diagnosis were also important aspect of the project to assess the feasibility of this strategy to run in the future in the programmatic condition. This was a cluster randomized intervention trial where, out of a total of 14 DF districts, 7 districts were selected as intervention area and 7 as control areas. A total of 727 patients (347 in intervention and 380 in control arm) were enrolled under this project. GPS trackers were used for collecting coordinates (longitude and latitude) of the patients' house with the help of an Android mobile set.

So far till December 2023, a total of 727 leprosy patients have been enrolled – 380 in the control area and 347 in the intervention area since the starting of this project activities in March 2020. The figure shows

that the intervention area, the main IECS activity, was affected more by COVID-19 than the control area both in 2020 and 2021. However, the IECS activities improved in the following years. The preliminary results obtained were shared at a Dissemination meeting in the following year, which showed an increasing trend of leprosy case findings in intervention area. The study showed an increasing trend in leprosy detection, with the intervention area seeing more new cases due to IECS activities. Grade-2 disability rates remained higher than in control areas, indicating persistent undiagnosed cases.

12. Drug resistance monitoring

The Damien Foundation monitored TB drug resistance in Damien Foundation Bangladesh projects since the end of 1995, mainly through systematic referral of sputum from a return after loss to follow-up, relapse and failure patients, besides the random surveys done in 1995 and 2001. From May 2002 onwards, most primary cultures were handed over by Antwerp to the reference lab in Bangladesh (Netrakona). Netrakona lab started LJ DST in 2008 and since 2010 this lab has been performing LJ DST independently under the direct supervision and control of Antwerp lab (coordinating laboratory for supra-national TB reference laboratories). Selective strains are sent for quality control to Antwerp lab besides the routine participation in proficiency testing. The total number of inoculated cultures has risen considerably over the years. Annually approx. 2,000 sputum samples are processed in the Netrakona lab, most of which belong to follow-up samples of MDR TB patients. Since 2004 following the introduction of rifampicin throughout intermittent regimen in the country, an increase in the MDR TB rate was observed. The analysis of trends in Rifampicin and Ofloxacin resistance incidence for all DF districts

expressed per 1000 smear- positive patients (new+Rett.), showed that there is no increase in rifampicin resistance over the last several years. Considering only RIF-resistant isolates, fluoroquinolone resistance has reached 20%, and the trend seems to be increasing slowly. Apart from MDR follow-up specimens, XDR and 2nd-line injectable resistance are virtually absent. Shipment of infectious samples including primary TB culture strains to the Antwerp laboratory has been very challenging. The ethanol-deactivated samples belonging to the MDR/RR-TB sputum samples have been sent to the Antwerp laboratory for drug resistance monitoring among MDR/RR-TB patients since 2000.

FDA staining and slide DST

DF used Fluorescein Di-Acetate (FDA) staining in detecting live AFB among routine microscopy- positive follow-up sputum samples presumptive of DR TB. FDA-positive sputum samples were then processed for slide culture DST which took about 14 days to know MDR/RR-TB status. This simple, cheap technology was used in DF project laboratories for early detection of MDR/RR-TB patients. Since the introduction of GeneXpert MT/RIF in 2012, DF has been using Xpert technology in detecting RR-TB patients. Slide DST has been performed to detect levofloxacin resistance among RR-TB patients as obtaining SL LPA result (for levofloxacin) from NTRL through sputum sample transportation often takes longer time.

Slide DST is thus performed to detect 2nd line drug resistance on all newly enrolled RR- TB patients' sputum samples. However, after introduction of Gene Xpert XDR technology, which gives quick results on susceptibility of certain anti-TB drugs, slide DST are not used widely.

13. Short-term new projects

13.1 Molecular technology expansion through Truenat under Infectious Disease Detection and Surveillance (IDDS) Project

In 2022, Damien Foundation in partnership with the Infectious Disease Detection and Surveillance (IDDS) project implemented by FHI360 expanded TB laboratory services by introducing "Truenat" molecular technology, a new technology for Bangladesh, in 18 remote sites in the DF working area. Moreover, another 20 Gene Xpert sites were provided additional human resources and logistic support to help in increased utilization of Gene Xpert machines and hence to increase TB case finding. Another technical focus of the project was to streamline the existing specimen collection and transportation process to improve timely access to second-line Line Probe Assay (LPA), liquid culture and drug susceptibility testing (DST), and testing resistance to Isoniazid and Fluoroquinolone (FLQ) services available at the national and divisional level reference laboratories.

The duration of the project was very short. It started in April 2022 and ended in August 2023. During this short period following results have been achieved –

- Around 6,036,028 people, especially in remote areas including sub-districts and hard-to- reach areas, were brought under the coverage of molecular diagnostic test facility through 18 Truenat sites.
- A total of 24455 presumptive tested by Truenat and 1759 Drug Sensitive TB (DS-TB) patients and 38 Drug Resistant TB (DR-TB) patients were diagnosed during the project period through 18 Truenat machines.
- Orientation sessions and sensitization meetings were organized at each Truenat site for doctors, village doctors, GO-NGO authority and health workers and community people and, so far, oriented 380 GO-NGO health staff, 232 Medical doctors, 360 Village doctors and 170 Community health workers during the project period. Moreover, organized 90 campaign events at the community level at Truenat sites.

13.2 Learning 360: Learning for Change and Resilience project

The Learning 360: Learning for Change and Resilience project was started in June 2022 in the DF area with funding and technical support from TLMI Bangladesh. The main objective of the project is to Empower leprosy people and their organization (including federation) and people affected by NTDs, and create an environment where disability and marginalization have increased accessibility to all levels of education, technical and vocational training for employment, decent jobs and entrepreneurship.

The project has been implemented in 8 upazilas/ sub-districts of 4 districts, namely Rajshahi, Chapai Nawabganj, Naogaon and Mymensingh since 2022. A total of 55 self-help groups and 8 federations are formed currently, consisting of mainly Leprosy affected people, leprosy disabled people, and their family members.
In 2023 following results have been achieved –

- Around 1,680 contact surveys have been conducted in the year, in remote areas including sub-districts and hard-to- reach areas, and people within the community were educated about leprosy and its symptoms and cure.
- Orientation sessions and sensitization meetings were organized for Government staff and school sessions. A total of 326 staff were oriented, which included civil surgeons, UH&&FPO, MO, Health Assistant and CHCP. Through school health educations, 1337 students and school teachers were oriented.
- Leadership trainings, financial management trainings and volunteer trainings were conducted by the project as routine activities, through which the self-help group members and federation members were oriented.
- Complicated leprosy patients (24) were referred to tertiary hospitals
- Assistive devices are provided to leprosy affected disabled people. In 2023, besides the providing 56 routine MCR shoes, the project provided 4 wheelchairs, 15 crutches and 3 walking sticks have been provided.
- Vocational trainings on beauty parlor work, driving, tailoring, plumbing, electric mechanical work, graphic designing, etc. have been provided to 27 people from the self-help group, which included family members of the leprosy affected people. Similarly, ICT training also was provided to 11 people from the self-help group.
- Ten leprosy disabled patients were provided social support for startup business, which included grocery shop, shop for selling rice, sewing machine, provision of goats, etc.
- Educational support was provided to 81 students and 6 disabled students from the self-help group. Six students and one disabled student also provided coaching center support from the self-help group.

32. Education support for children of leprosy affected family at Mymensingh

14. Human Resource Management & Development

To provide high quality healthcare service to the community and to ensure smooth functioning of 160 DF field clinics and 3 hospitals, a total of 614 local staff are involved. Out of this, 485 staffs (Medical Technologists/TLCA and Field Level Staffs) are directly involved in carrying out the field activities under the supervision of 29 Supervisors (TLCOs, Sr. TLCO, Monitoring & Evaluation Officers) and 4 Medical Doctors. Among the total staff 360 Field Level Staff are involved in community level active case finding activities. These Field Level Workers have been trained in identifying TB & Leprosy presumptive and in preparing smears. The male-female staff ratio of Damien Foundation Bangladesh is 2:1 in 2023.

14.1 Workshop/Training/orientation organized by Damien Foundation in 2023

To develop skills in different key staff, the DF Bangladesh organized several training/workshops in the year 2023. A detailed schedule of the workshop/training is given below:

Name of Training Course/Orientation	Participants	Organized by
Technical Capacity Building	25	Organized by Damien Foundation at TTLCP
Technical Assistance Capacity Building Training for Lab staffs	15	Organized by Damien Foundation at NTLCP
Refresher Training for MT and Lab	3	Organized by Damien Foundation
Technical Assistant Capacity Building Workshop	3	Organized by Damien Foundation

DF lab technician operating 16-Module Gene Xpert machine

Admitted patients in DF Hospital

14.2 Participation of DF staff in different in-country training courses in 2023

To develop skills in different fields, DF staff members attended different in-country training courses in 2023, organized by NTP/BRAC/ICDDR,B. A detailed schedule of the training courses and participants is given below:

Name of Training Course/ Orientation/Workshop	Participants	Duration and Organized by
Truenat Training	5	Organized by IDDS at TTLCP
Basic Training on Truenat testing and Implementation	3	Organized by NTP-IDDS at NTLCP
One day Training on External Quality Assurance (EQA) of Gene Xpert Testing	1	Organized by NTP-IDDS at NTLCP
Training on LTBI-TPT	7	Organized by NTP at NTLCP
Training on ELMIS	8	Organized by NTP-MTAB at MTLCP
Orientation & Training for Field Health Workers on PTB identification, Referral & DOT	26	Organized by NTP at MTLCP
Training on Gene Xpert	4	Organized by NTP at MTLCP
Training on TPT	8	Organized by NTP at MTLCP
Training on Truenat	4	Organized by NTP-ICDDRB at MTLCP
Training on LTBI	6	Organized by NTP and MTLCP
LED Training	5	Organized by NTP at RTLCP
Aspect Training	5	Organized by NTP at RTLCP
Gene Xpert Training	5	Organized by NTP at RTLCP

14.3 Participation in International training courses/meetings/conferences including webinar:

With a view to update knowledge and to share experience, DF Bangladesh staff members participate in different international training courses, meetings, conferences, workshops, seminars and also provided technical support by DF staff around the world. In 2023, Dr. Mahfuza Rifat and Dr. Abir visited Antwerp to attend a training course on management of DR-TB. Dr. Mahfuza also attended the LRI Spring meeting and The Union World Conference on lung Health which was held in France.

15. Program Management and Coordination

At the project level, program management is handled by the Management Team (MT), led by the Project Director and including the Hospital/Field Director, Medical Officer, M&E Officers, and Accounts Officer. The MT meets weekly to address day-to-day issues and quarterly for major decisions, including those from TLCO meetings, with additional meetings for urgent matters as needed. Regular monthly TLCO meetings, attended by TLCOs, M&E Officers, Medical Officers, and Directors, play a key role in program coordination. TLCOs serve as the primary link between the project office and field clinics.

Monthly meetings involve in-depth analysis of progress reports, with active participation leading to decisions, recommendations, and action plans for improvement. Dissemination of information and instruction from the national level, exchange of information between field clinic and project/DFCO, monthly clinic-wise planning, settlement of bills and collection of monthly running / different costs of the clinics take place in these monthly meetings.

A manual geographic information system is used in each Upazila to assess TB and leprosy case detection, helping identify low-case areas and address barriers accordingly. Information and instructions are regularly exchanged between the national office and project offices via email, with mobile phones used for urgent matters, ensuring the national office stays updated on field activities.

To facilitate better coordination representative/s from the Damien Foundation Coordinating Office (DFCO) in Dhaka organize meetings with Management Teams and guide them.

16. Monitoring, Supervision & Evaluation

16.1 Internal monitoring, supervision & Evaluation

Damien Foundation is maintaining its monitoring, supervision, and evaluation according to its Monitoring and Evaluation Plan. Monitoring of case detection, sputum conversion, results of treatment and quality control of smear microscopy are routinely done and evaluated quarterly. In addition, drug resistance surveillance is continued through routine sputum culture and DST of failure and relapse patients. Monitoring Drug-resistant TB treatment through regular updating of DR-TB files. The quarterly collected data from the projects are being used to monitor the performances. Cross- checking between different datasets allows assessing the quality of the data and feedback is given to the projects in order to improve the performances. Reports are cross-checked with registers and cards by supervisors during their supervision visits and feedback is given on the spot to the field staff.

Monitoring of activities and supportive supervision of staff is done through field visits by different levels of staff. At the field level, TB and leprosy Control Officers (TLCOs) are the first-line staff for monitoring of the project activities in 3-5 upazilas (Sub-districts) each. They supervise the first- line field staff, Medical Technologists (MT) laboratory, TB & Leprosy Control Assistants (TLCAs)
/ paramedics, Field Level Staff (FLS) and other community-based workers. TLCOs monitor all the activities implemented at the field level, provide need-based support and build/strengthen the capacity of the field staff for better implementation or improvement.

A TLCO regularly visits each TB clinic/lab/UHC under his/her mandate to monitor and supervise once a

week and check/cross-check the clinic documents including registers, reports, treatment cards and other records. S/he monitors case detection, sputum conversion, treatment results, quality control of sputum microscopy, and drug resistance and failure and relapse patients. S/he also pays need-based visits to the community and discusses with patients, DOT providers and other stakeholders to cross-check status of DOT implementation, patient follow-up, social mobilization and presumptive referral activities. Monitoring and follow-up of project performances are carried out by analyzing the achievements realized, compared to the planned activities and results. Quarterly and annual reports are used to monitor the project's performance.

M&E Officer (M&EO) and Medical Officer (MO) pay monitoring visits to a TB clinic/laboratory/UHC once in 3 months (quarterly) as well as additional visits based on the needs of the program/project. During the monitoring visits they supervise the activities of TLCO and other field staff, guide them, provide technical supports and build or strengthen their capacities through on-the-job training.

The Project Director, who is the overall responsible person of a project, and the Field Director are the management staff at the project level of DF, and they also monitor field activities on a sample basis as well as according to the needs.

DFCO staff, including the Medical Coordinator, Data Management Specialist, and Programme Specialist, make field visits as needed for program monitoring and technical support. The Finance Director and Manager also visit for financial monitoring, while the Country Representative visits to address strategic issues and overall management.

16.2 Supervision & monitoring from DF Head Quarter, Belgium:

Dr. Lena Fiebig, Head of Programme Department, Damien Foundation Belgium, visited DF Bangladesh project from 30 October 2023 to 06 September 2023. She visited clinics, hospitals, and laboratories of Mymensingh and Tangail projects, had meetings with beneficiaries and teams of DF Coordinating Office and Projects.

Dr. Lena Fiebig's meeting with DFCO Team

Dr. Lena Fiebig's Visit at DF Hospital, Mymensingh

Damien Foundation Clinic visit by NTP Divisional Expert

17. New initiatives of Damien Foundation in 2023

17.1 BSL-2 laboratory set up at Shambhuganj, Mymensingh, Damien Foundation, Bangladesh

In 2023, Damien Foundation upgraded a Biosafety Level 2 (BSL-2) laboratory at Shamvuganj, Mymensingh, at the Damien Foundation hospital which will be supported by the national TB control programme. This upgrade was supported by GFATM through BRAC. This was a challenging milestone for Damien Foundation, as the timeline was to be achieved within a short duration, through an open tender, as per Global fund component. The ToR covered the procurement process related support through a consultant to conduct the bidding process by Damien Foundation. After winning the tender, all the procedures were completed within the timeline. The technical specification was finalized by a committee that consisted of Damien foundation, NTP, and IDDS members. The final documents were reviewed and approved. The specifications included redesigning the TB laboratory to Biosafety Level-2 with directional airflow and refurbishing and liquid culture and Drug Susceptibility Testing (DST) for TB.

The establishment of the BSL-2 laboratory has helped in strengthening the TB diagnostic network through improved diagnostic capacity. This has helped in reducing the referral of MDR/XDR TB patients, where all the specimens are being tested currently at the BSL-2 lab. There are a number of laboratory equipment and accessories, that will be provided by NTP in the upcoming year.

NTP and IDDS authorities paid monitoring visits to BSL-2+ lab

Biosafety Laboratory

17.2 Harnessing Solar Technology for Sustainable Energy: Solar Power Grid Installation at Three DF Hospitals

Damien Foundation believes in adoption of environment friendly approach to operate its functions thereby sustaining energy. In 2023, the installation of the solar power grids at the Damien Foundation hospitals has been yet another milestone for Damien Foundation Bangladesh. Through this, the energy production has been optimized and the savings for the electricity bill has been reduced to half. It has contributed to the national electrical grid. This innovation has also contributed to environmental pollution reduction. This reliable technology will lead to long term savings with minimal maintenance requirement.

Solar Power Plant at Jalchatra Hospital

17.3 Initiation of Bulk SMS at Jalchatra Hospital for OPD appointments

A SMS system had been initiated at the Jalchatra hospital to streamline the appointment process for outdoor patients to manage long queues and provide efficient service to patients. The system will be managed by an outdoor appointment provider who will oversee both online and offline appointments and have full access to the portal details.

All patients visiting the outpatient department (OPD) will be provided with a hotline number to schedule their appointments. The hospital aims to improve the efficiency and management of patient appointments, ensuring a smoother and more organized process for both patients and healthcare providers through this system.

Way Forward

The Damien Foundation (DF) has achieved significant milestones in the fight against TB and leprosy, as evidenced by the remarkable 12% increase in TB case notifications in 2023 compared to 2022. This success is largely attributed to the expansion of molecular diagnostics services, dedicated staff, capacity development of staff and strategic operational planning. Moreover, the increase in outreach centers in remote areas, enhanced contact investigations, and equal emphasis on diagnosing pulmonary and extra-pulmonary TB patients, supported by contact investigation funds and close supervision contributed to a 95% treatment success rate for drug-susceptible TB. Support from the national TB Control Programme was continued to achieve the milestones. However, to sustain and build upon these achievements, several key actions need to be prioritized.

Continued expansion of molecular diagnostics services is crucial. This includes maintaining the momentum in TB detection through advanced technologies and ensuring these services reach remote and hard-to-reach areas.

Damien Foundation, as a renown pioneer of Drug-resistant TB care, has been supporting the National TB control programme (NTP) that has adopted the modified shorter WHO recommended regimen countrywide, which is basically evolved from the DF-innovated shorter 9-month MDR treatment regimen. A total of 461 MDR TB patients received treatment in the covered DF area. DF also supported the NTP in the strategy development and implementation for the MDR-TB guideline preparation. DF hospitals support the national end TB effort through care and patient-centered support for TB patients. Maintaining the high treatment success rate of 95% for drug-susceptible TB and 80% for MDR TB requires ongoing support for patient-centered care and adherence to the modified shorter WHO-recommended regimen.
DF has been practicing contact survey among the contacts of all diagnosed leprosy patients since 1971. With a 19% increase in leprosy case detection in 2023, it is imperative to continue early diagnosis and treatment efforts. The use of mobile apps and extended contact surveys should be expanded to further enhance detection rates and reduce the incidence of Grade 2 disabilities. This approach is expected to limit new visible and permanent disabilities and curb disease transmission, which was 13.9% in 2023. Additionally, addressing ongoing leprosy transmission requires preventive therapy for household members, continued early detection and treatment, and improved social support for patients. Expanding these efforts will increase access to health services and further reduce leprosy incidence.

To enhance recent advancements in diagnostics and treatment, and to enhance household contact tracing and preventive care, it is paramount to deploy adequately trained staff and retain technical personnel. Strengthening ongoing training and capacity development for Damien Foundation staff is essential. This includes providing refresher courses on new diagnostics and treatment protocols to maintain the highest standards of care. To address ongoing transmission of TB and leprosy, preventive therapies for household members, early detection, and improved social support for patients are crucial. These measures will help limit new patients and reduce transmission rates.

Engaging community stakeholders such as village doctors, private practitioners, opinion leaders, and community members through health education sessions can enhance the reach and impact of DF's initiatives. A people-centered approach ensures better patient outcomes and cost-effectiveness.

Continued partnership with the National TB Control Programme (NTP) and other governmental bodies is necessary. This collaboration ensures resource allocation for medicines and diagnostics, enhancing the overall effectiveness of TB and leprosy control efforts. Long term support for disease control contributed to the national level impact, i.e. mortality due to TB reduced nationally from 75 in 2000 to 25 per 100,000 population in 2022. (WHO Global TB Report 2023). However, TB reduction in incidence rate in Bangladesh requires sustained intensive TB case finding and treatment, along with tuberculosis preventive therapy (TPT).

Although a geographical rearrangement was underway under the global fund (GFATM) supported TB area, TB performance was well maintained and enhanced in overall DF supported areas in Bangladesh, in 2023. This area rearrangement is to be initiated at the beginning of 2024. It is expected that this rearrangement may initially affect leprosy case finding in Rajshahi region. This should be managed carefully to maintain and enhance TB and leprosy performance. DF will search for some additional fund, especially for filling up the gap in Rajshahi region. Regular monitoring and analysis of data will be essential to adapt strategies and improve outcomes.

To address ongoing transmission of TB and leprosy, preventive therapies for household members, early detection, and improved social support for patients are crucial. These measures will help limit new patients and reduce transmission rates.

Securing sustained funding and adequate resources is essential to support the comprehensive TB and leprosy control initiatives. Efforts should focus on leveraging international aid and optimizing existing resources to maximize impact.

By focusing on these strategic areas, the Damien Foundation can continue to make significant strides in eradicating TB and leprosy in Bangladesh, ensuring sustained improvements in public health outcomes and contributing to the global effort to end these diseases by 2030.

Government Health Infrastructure in DF-areas

Annex Table-1

District / project	Square KM	Population	Hospitals	Upazila Health Complexes	Health Centres	TB Clinics	TB beds	Leprosy beds
Tangail Project	**6,810**	**8,033,185**	**5**	**24**	**1,124**	**2**	**0**	**0**
Tangail	3,414	4,038,655	2	12	569	1	0	0
Jamalpur	2,032	2,534,476	2	7	346	1	0	0
Sherpur	1,364	1,460,054	1	5	209	0	0	0
Mymensingh Project.	**7,052**	**9,303,572**	**4**	**24**	**958**	**2**	**48**	**0**
Mymensingh	4,363	5,963,482	2	12	593	1	48	0
Kishoreganj	2,689	3,340,091	2	12	365	1	0	0
Netrakona Project.	**2,810**	**2,553,120**	1	9	352	0	0	0
Netrakona	2,810	2,553,120	1	9	352	0	0	0
Rajshahi Project	**7,546**	**7,7,46,085**	**14**	**25**	**796**	**2**	**150**	**0**
Rajshahi	2,407	2,918,234	9	9	436	1	150	0
Naogaon	3,436	2,872,100	4	11	230	0	0	0
Nawabganj	1,703	1,955,751	1	5	130	1	0	0
Faridpur Project	**7,008**	**6,924,036**	**7**	**24**	**1,159**	**3**	**24**	**0**
Faridpur	2,073	2,108,815	3	8	292	1	24	0
Gopalganj	1,490	1,166,521	1	4	275	1	0	0
Madaripur	1,145	1,196,430	1	3	206	1	0	0
Rajbari	1,119	1,195,291	1	4	186	0	0	0
Shariatpur	1,181	1,256,979	1	5	200	0	0	0
Total DF	**31,226**	**34,559,999**	**31**	**106**	**4,389**	**9**	**222**	**0**

Supportive activities over 2023
Hospitals, physiotherapy, shoemaking and health education

Supportive activities over 2023
Hospitals, physiotherapy, shoemaking and health education

Project	no. of beds on		Hospitalizations: no. of bed-days for			Average bed occupation	no. of Lep. patients admitted		TB admissions for		OPD
	1/1/2023	12/31/2023	Leprosy	TB	General		surgery / ulcer	Reaction / other	Retreatments	Others	
TTLCP	95	95	3.008	8,257	16	**31%**	55	33	37	424	25,371
MTLCP	100	100	6,663	4,318	0	**30%**	135	36	66	190	0
NTLCP	60	60	1,559	4,034	0	**27%**	64	11	10	316	0
RTLCP	No hospital, not applicable										
FTLCP	No hospital, not applicable										
projects	**255**	**255**	**1,1270**	**16,609**	**16**	**30%**	**254**	**80**	**218**	**749**	**25,371**

Project	Shoes made (pairs)		Plastic / Spring shoes supplied	HE activities: no. of sessions				Training / Orientation / ref. / seminar: no. of sessions for						Skinsmears		Physiotherapy sessions
	MCR	Plastazote		Miking	Folk song	Community *1	Schools	GP / MO	GoB H & FP staff	VD / FDP *2	TB club	Seminar / workshops *3	Opinion leader/ scout / NGO *4	Total done		
TTLCP	509	5	5	80	0	15,388	235	5	0	18	0	1	32	222	24	494
MTLCP *5	1,456	1	2	214	0	56,529	222	8	0	30	0	0	32	498	47	312
NTLCP	0	0	0	0	0	38,736	201	4	0	19	0	0	14	22	6	79
RTLCP	0	0	0	280	0	82,079	3510	4	0	14	0	0	137	152	14	0
FTLCP	0	0	0	65	0	153,424	652	1	0	6	0	0	11	15	2	0
Total projects	1,965	6	7	639	0	346,156	4,820	22	0	87	0	1	226	909	93	885

*1 Community HE : in the villages, OPD HE, UHC indoor HE and organisation (microcredit or other groups), informal group HE during field visit, HE with the patient's attendants etc.
*2 Village Doctors, Fixed DOT provider and Pharmacy hoders training.
*3 Seminar in Medical college, sadar hospital
*4 Opinion leader, scout and girls guide, NGO workers, review workshop at Upazilla level and DOT committee meeting.
*5 MTLCP made shoe for NTLCP, FTLCP and RTLCP.

Personnel and infrastructure over 2023
Numbers of personnel, transport, equipment

Personnel and infrastructure over 2023
Numbers of personnel, transport, equipment

Department:	Administrative + Hospital												
Project	Personnel						Transport			Operation	X-Ray	Microscopes in	Shoe
	Doctors	Paramedical	Administrative	Support/Techn.	MT Lab	Others	Cars	Motorcycles	Bicycles	Theatre (OT)	Units	use	workshops
TTLCP	2	17	4	18	2	0	1	1	2	1 sterile	1	2	1
MTLCP	1	12	3	16	2	0	1	19	35	1 septic	0	1	1
NTLCP	0	7	1	13	2	0	1	0	0	1 septic	0	2	0
RTLCP	1	0	11	0	0	0	2	8	1	not applicable, no hospital		0	0
FTLCP	0	0	0	0	0	0	0	0	0	not applicable, no hospital		0	0
DFCO	3	0	5	8	0	1	0	0	0	not applicable, no hospital		0	0
Total projects	7	36	24	55	6	1	5	28			1	5	2

Department:	Field												
Project	Personnel							Transport			in	Combined	
	Doctors	M&EO	TLCO	TLCA/ATLCA	MT Lab	Field Workers	Clinic Assis.	Cars	Motorcycles	Bicycles	use	TB/Lep clinic	Leprosy clinic
TTLCP	1	1	6	50	29	16	0	1	11	34	34	5	1
MTLCP	1	1	7	55	17	30	0	2	9	35	35	6	1`
NTLCP	1	1	2	16	9	14	1	0	3	12	12	0	1
RTLCP	1	1	6	26	21	59	0	2	13	33	33	0	1
FTLCP	0	1	8	21	11	73	0	2	9	40	38	0	0
DFCO	0	0	0	0	0	0	0	2	0	0	0	0	0
Total projects	3	5	29	168	87	192	1	9	45	154	152	11	3

CONSOLIDATED REPORT, LEPROSY 2023

Evolution of case-finding and caseload

Annex Table-4

Year	Project	Districts & population	New patients PB	MB	Total	New children	Disabled G2 new patients	On treatment at end (Year)	New Lepr./ 100.0000 pop.	Lep. preval. / 10.000 pop.	Proportion MB new Lep.	Prop. new children L.	Prop. new disabled L.
2016	TTLCP	TG+JM+SP	16	31	47	1	6	39	0.62	0.05	66%	2%	13%
		7,586,936											
	MTLCP	MM + KS	34	39	73	7	14	62	0.85	0.07	53%	10%	19%
		8,540,798											
	NTLCP	Netrakona	4	9	13	0	3	9	0.55	0.04	69%	0%	23%
		2,359,995											
	RTLCP	RA + NG + NW	86	64	150	13	18	140	2.09	0.19	43%	9%	12%
		7,188,760											
	FTLCP	FP+GP+MP+RJ+SR	11	10	21	1	4	18	0.32	0.03	48%	5%	19%
		6,653,417											
	TOTAL	32,329,907	151	153	304	22	45	268	0.94	0.08	50%	7%	15%
2017	TTLCP	TG+JM+SP	31	36	67	3	6	51	0.88	0.07	54%	4%	9%
		7,649,200											
	MTLCP	MM + KS	34	29	63	4	8	51	0.73	0.06	46%	6%	13%
		8,645,801											
	NTLCP	Netrakona	13	13	26	1	9	25	1.09	0.10	50%	4%	35%
		2,386,663											
	RTLCP	RA + NG + NW	202	101	303	46	16	220	4.17	0.30	33%	15%	5%
		7,270,597											
	FTLCP	FP+GP+MP+RJ+SR	3	13	16		3	8	0.24	0.01	81%	0%	19%
		6,691,233											
	TOTAL	32,643,494	283	192	475	54	42	355	1.46	0.11	40%	11%	9%
2018	TTLCP	TG+JM+SP	36	44	80	8	8	65	1.04	0.08	55%	10%	10%
		7,711,985											
	MTLCP	MM + KS	35	31	66	1	5	57	0.75	0.07	47%	2%	8%
		8,752,099											
	NTLCP	Netrakona	11	22	33	1	7	28	1.37	0.12	67%	3%	21%
		2,413,632											
	RTLCP	RA + NG + NW	130	84	214	18	27	165	2.91	0.22	39%	8%	13%
		7,353,411											
	FTLCP	FP+GP+MP+RJ+SR	7	9	16	2	4	12	0.24	0.02	56%	13%	25%
		6,729,346											
	TOTAL	32,960,473	219	190	409	30	51	327	1.24	0.10	46%	7%	12%
2019	TTLCP	TG+JM+SP	19	25	44	7	5	40	0.57	0.05	57%	16%	11%
		7,775,296											
	MTLCP	MM + KS	30	33	63	3	9	44	0.71	0.05	52%	5%	14%
		8,859,707											
	NTLCP	Netrakona	5	11	16	0	6	10	0.66	0.04	69%	0%	38%
		2,440,906											
	RTLCP	RA + NG + NW	71	67	138	18	18	92	1.86	0.12	49%	13%	13%
		7,437,214											
	FTLCP	FP+GP+MP+RJ+SR	5	9	14	0	3	10	0.21	0.01	64%	0%	21%
		6,767,759											
	TOTAL	33,280,882	130	145	275	28	41	196	0.83	0.06	53%	10%	15%
2020	TTLCP	TG+JM+SP	4	19	23	3	3	21	0.29	0.03	83%	13%	13%
		7,839,136											
	MTLCP	MM + KS	22	25	47	7	5	34	0.52	0.04	53%	15%	11%
		8,968,642											
	NTLCP	Netrakona	8	9	17	1	1	13	0.69	0.05	53%	6%	6%
		2,468,488											
	RTLCP	RA + NG + NW	48	41	89	7	4	74	1.18	0.10	46%	8%	4%
		7,522,018											
	FTLCP	FP+GP+MP+RJ+SR	8	5	13	1	1	10	0.19	0.01	38%	8%	8%
		6,806,474											
	TOTAL	33,604,759	90	99	189	19	14	152	0.56	0.05	52%	10%	7%
2021	TTLCP	TG+JM+SP	12	20	32	2	7	27	0.40	0.03	63%	6%	22%
		7,903,511											
	MTLCP	MM + KS	23	21	44	1	5	39	0.48	0.04	48%	2%	11%
		9,078,921											
	NTLCP	Netrakona	5	8	13	0	5	12	0.52	0.05	62%	0%	38%
		2,496,382											
	RTLCP	RA + NG + NW	25	34	59	12	2	55	0.78	0.07	58%	20%	3%
		7,607,836											
	FTLCP	FP+GP+MP+RJ+SR	7	4	11	1	1	8	0.16	0.01	36%	9%	9%
		6,845,495											
	TOTAL	33,932,145	72	87	159	16	20	141	0.47	0.04	55%	10%	13%
2022	TTLCP	TG+JM+SP	11	25	36	2	8	32	0.45	0.05	69%	6%	22%
		7,968,424											
	MTLCP	MM + KS	28	26	54	5	4	42	0.59	0.06	48%	9%	7%
		9,190,560											
	NTLCP	Netrakona	11	11	22	2	3	13	0.87	0.09	50%	9%	14%
		2,524,591											
	RTLCP	RA + NG + NW	47	59	106	11	4	100	1.38	0.14	56%	10%	4%
		7,694,680											
	FTLCP	FP+GP+MP+RJ+SR	2	3	5	0	1	4	0.07	0.01	60%	0%	20%
		6,876,758											
	TOTAL	34,255,013	99	124	223	20	20	191	0.65	0.07	56%	9%	9%
2023	TTLCP	TG+JM+SP	12	25	37	0	10	31	0.53	0.05	68%	0%	27%
		8,033,185											
	MTLCP	MM + KS	36	14	50	4	4	38	0.54	0.05	28%	8%	8%
		9,303,576											
	NTLCP	Netrakona	9	10	19	0	4	18	0.74	0.07	53%	0%	21%
		2,553,119											
	RTLCP	RA + NG + NW	84	72	156	24	19	143	2.01	0.20	46%	15%	12%
		7,746,085											
	FTLCP	FP+GP+MP+RJ+SR	2	2	5	0	0	3	0.07	0.01	40%	0%	0%
		6,924,036											
	TOTAL	34,555,999	143	123	266	28	37	233	0.79	0.08	46%	11%	14%

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Case loading and results of treatment, workload

Annex Table - 5

Project	District	PB/MB	On treatment on 31-12-2022	Completed MDT	For care on 31/12/2022	MDT Relapse over 2022	Outcome of treatment (chohrt: PB 2022 & MB 2021 in %)	
							Completed	defaulted/ failure/died
TTLCP	Tangail, Jamalpur & Sherpur	PB	7	10	55	0	100%	0%
		MB	25	21	378	0	91%	9%
		TOTAL	32	31	433	0	94%	6%
MTLCP	Mymensingh & Kishoreganj	PB	16	25	101	0	100%	0%
		MB	26	25	332	0	100%	0%
		TOTAL	42	50	433	0	100%	0%
NTLCP	Netrokona	PB	3	11	28	0	100%	0%
		MB	10	10	119	0	100%	0%
		TOTAL	13	21	147	0	100%	0%
ALL PROJECTS	6 districts	PB	26	46	184	0	100%	0%
		MB	61	56	829	0	96%	4%
		TOTAL	87	102	1013	1	98%	2%

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Evolution of case-finding and caseload

Annex Table-6

Project	Districts & population	NUMBERS								RATES						
		New patients	New patients		New	New	New Gr. 2	SSS+ve	UT	New per	Preval. per	New	Women	(%) SSS+ve	New	New Gr. 2
		PB	MB	Total	child	Women	Disab.	MB	at end	100,000 pop.	10,000 pop.	(%) MB	%	among MB	(%) Child.	(%) Disab.
TTLCP	Tangail	4	7	11	0	4	3		10	0.3	0.0	63.6	36%	0.0	0.0	27.3
	4,038,655															
	Jamalpur	2	13	15	0	7	5	2	13	0.6	0.1	86.7	47%	15.4	0.0	33.3
	2,534,476															
	Sherpur	6	5	11	0	5	2		8	0.8	0.1	45.5	45%	0.0	0.0	18.2
	1,460,054															
	Total project	**12**	**25**	**37**	**0**	**16**	**10**	**2**	**31**	**0.5**	**0.0**	**67.6**	43%	**8.0**	**0.0**	**27.0**
	8,033,185															
MTLCP	Mymensingh	33	11	44	4	21	3		33	0.7	0.1	25.0	48%	0.0	9.1	6.8
	5,963,482															
	Kishoregonj	3	3	6	0	3	1		5	0.2	0.0	50.0	50%	0.0	0.0	16.7
	3,340,091															
	Total project	**36**	**14**	**50**	**4**	**24**	**4**	**0**	**38**	**0.5**	**0.0**	**28.0**	48%	**0.0**	**8.0**	**8.0**
	9,303,573															
NTLCP	**Netrakona/Project**	**9**	**10**	**19**	**0**	**8**	**4**		**18**	**0.7**	**0.1**	**52.6**	42%	**0.0**	**0.0**	**21.1**
	2,553,120															
RTLCP	Naogaon	41	29	70	12	35	7	1	61	2.4	0.2	41.4	50%	3.4	17.1	10.0
	2,872,100															
	Nawabganj	16	20	36	3	14	4	3	34	1.8	0.2	55.6	39%	15.0	8.3	11.1
	1,955,751															
	Rajshahi	27	23	50	9	19	8		48	1.7	0.2	46.0	38%	0.0	18.0	16.0
	2,918,234															
	Total project	**84**	**72**	**156**	**24**	**68**	**19**	**4**	**143**	**2.0**	**0.2**	**46.2**	44%	**5.6**	**15.4**	**12.2**
	7,746,085															
FTLCP	Faridpur	1	0	1	0	0	0	0	0	0.0	0.0	0.0	0%	0.0	0.0	0.0
	2,108,815															
	Gopalgonj	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0%	0.0	0.0	0.0
	1,195,291															
	Madaripur	0	0	0	0	0	0	0	0	0.0	0.0	#DIV/0!	0%	0.0	0.0	0.0
	1,196,430															
	Rajbari	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0%	0.0	0.0	0.0
	1,166,521															
	Sariatpur	1	2	3	0	2	0	0	3	0.2	0.0	66.7	67%	0.0	0.0	0.0
	1,256,979															
	Total project	**2**	**2**	**4**	**0**	**2**	**0**	**0**	**3**	**0.1**	**0.0**	**50.0**	50%	**0.0**	**0.0**	**0.0**
	6,924,036															
All project	**Total population**	**143**	**123**	**266**	**28**	**118**	**37**	**6**	**233**	**0.8**	**0.1**	**46.2**	44%	**4.9**	**10.5**	**13.9**
	34,559,999															

Annex Table-7

TUBERCULOSIS:
Evolution of case findings and caseload 2023

2016	TTLCP	TG+JM+DEPZ 6,235,784	5,766	3,353	0	2,413	58%
	MTLCP	MM + KS 6,189,302	7,451	4,243	0	3,208	57%
	NTLCP	Netrakona 2,359,995	2,585	1,569	0	1,016	61%
	RTLCP	RA + NG + NW 6,896,330	4,393	2,292	0	2,101	52%
	FTLCP	FP+GP+MP+RJ+SR 6,653,417	4,105	2,056	0	2,049	50%
	TOTAL	28,334,828	24,300	13,513	0	10,787	56%
2017	TTLCP	TG+JM+DEPZ 6,239,782	5,906	3,391	0	2,515	57%
	MTLCP	MM + KS 6,254,078	7,905	4,403	0	3,502	56%
	NTLCP	Netrakona 2,386,663	2,724	1,716	0	1,008	63%
	RTLCP	RA + NG + NW 6,781,245	4,812	2,498	0	2,314	52%
	FTLCP	FP+GP+MP+RJ+SR 6,691,233	4,286	2,096	0	2,190	49%
	TOTAL	28,353,001	25,633	14,104	0	11,529	55%
2018	TTLCP	TG+JM+DEPZ 6,294,251	6,531	3,114	0	3,417	48%
	MTLCP	MM + KS 6,329,761	7,974	4,073	0	3,901	51%
	NTLCP	Netrakona 2,413,632	3,094	1,589	0	1,505	51%
	RTLCP	RA + NG + NW 6,857,942	5,302	2,463	0	2,839	46%
	FTLCP	FP+GP+MP+RJ+SR 6,729,346	4,774	2,012	0	2,762	42%
	TOTAL	28,624,932	27,675	13,251	0	14,424	48%
2019	TTLCP	TG+JM+DEPZ 6,419,197	7,221	3,353	0	3,868	46%
	MTLCP	MM + KS 6,406,364	8,361	4,115	0	4,246	49%
	NTLCP	Netrakona 2,440,906	3,308	1,474	0	1,834	45%
	RTLCP	RA + NG + NW 6,985,551	6,060	2,756	0	3,304	45%
	FTLCP	FP+GP+MP+RJ+SR 6,767,759	5,485	2,022	0	3,463	37%
	TOTAL	29,019,777	30,435	13,720	0	16,715	45%
2020	TTLCP	TG+JM+DEPZ 6,474,624	5,703	2,635	0	3,068	46%
	MTLCP	MM + KS 6,483,896	7,365	3,825	0	3,540	52%
	NTLCP	Netrakona 2,468,488	2,516	1,183	0	1,333	47%
	RTLCP	RA + NG + NW 7,064,085	5,048	2,657	0	2,391	53%
	FTLCP	FP+GP+MP+RJ+SR 6,806,474	3,883	1,736	0	2,147	45%
	TOTAL	29,297,567	24,515	12,036	0	12,479	49%
2021	TTLCP	TG+JM+DEPZ 6,530,534	8,723	3,987	0	4,736	46%
	MTLCP	MM + KS 6,562,370	9,411	5,037	0	4,374	54%
	NTLCP	Netrakona 2,496,382	3,085	1,548	0	1,537	50%
	RTLCP	RA + NG + NW 7,143,553	6,247	3,605	0	2,642	58%

	FTLCP	FP+GP+MP+RJ+SR 6,845,495	5,061	2,135	0	2,926	42%
	TOTAL	29,578,335	32,527	16,312	0	16,215	50%
2022	TTLCP	TG+JM+DEPZ 6,590,934	9,684	4,120	0	5,564	43%
	MTLCP	MM + KS 6,641,797	10,713	5,145	0	5,568	48%
	NTLCP	Netrakona 2,524,591	3,304	1,453	0	1,851	44%
	RTLCP	RA + NG + NW 7,173,969	7,286	3,568	0	3,718	49%
	FTLCP	FP+GP+MP+RJ+SR 6,876,758	5,429	2,153	0	3,276	40%
	TOTAL	29,808,050	36,416	16,439	0	19,977	45%
2023	TTLCP	TG+JM+DEPZ 6,650,722	10,295	4,550	0	5,745	44%
	MTLCP	MM + KS 6,722,188	12,833	6,810	0	6,023	53%
	NTLCP	Netrakona 2,553,120	3,674	1,570	0	1,851 0	43%
	RTLCP	RA + NG + NW 7,275,838	7,951	3,824	0	4,127	48%
	FTLCP	FP+GP+MP+RJ+SR 6,924,036	5,951	2,242	0	3,709	38%
	TOTAL	30,125,904	40,704	18,996	0	21,455	47%

TB case notification, 2023

Annex Table-8

District	Population covered	Pulmonary Bacteriologically Confirmed (PBC) TB Patients					Pulmonary Clinically Diagnosed (PCD) New	Extra-pulmonary (EP) New	PCD & EP not New	Total registration	% of new PBC patients	Notification rate/ 100,000 pop. new PBC	Notification rate/100,000 pop. all forms of TB
		New patients	Relapses	Failures	RALTFU	Other							
Faridpur	2,108,815	604	80	6	0	4	393	646	80	1813	33%	29	86
Rajbari	1,166,521	213	18	5	0	5	119	248	30	638	33%	18	55
Madaripur	1,196,430	331	35	2	0	14	279	357	35	1053	31%	28	88
Gopalganj	1,195,291	387	39	1	0	2	349	270	32	1080	36%	32	90
Shariatpur	1,256,979	436	52	3	0	5	437	337	97	1367	32%	35	109
FTLCP	**6,924,036**	**1971**	**224**	**17**	**0**	**30**	**1577**	**1858**	**274**	**5951**	**33%**	**28**	86
Naogaon	2,872,100	1530	113	20	3	0	860	757	171	3454	44%	53	**120**
Nawabganj	1,955,751	660	82	6	0	8	301	640	73	1770	37%	34	91
Rajshahi	2,427,491	1272	91	10	3	3	495	705	60	2639	48%	52	109
RMCH	20,496	22	0	0	0	1	5	59	1	88	25%	107	429
RTLCP	**7,275,838**	**3484**	**286**	**36**	**6**	**12**	**1661**	**2161**	**226**	**7951**	44%	48	109
Tangail	4,038,655	2536	216	24	1	0	2,082	1259	435	6553	39%	63	**162**
Jamalpur	2,534,476	1524	138	27	1	0	945	732	193	3560	43%	60	**140**
DEPZ	77,591	80	2	1	0	0	23	69	7	182	44%	103	235
TTLCP	**6,650,722**	**4140**	**356**	**52**	**2**	**0**	**3050**	**2060**	**635**	**10295**	40%	62	**155**
NTLCP	**2,553,120**	**1375**	**182**	**12**	**1**	0	**1,212**	**664**	**228**	**3674**	37%	54	**144**
Mymensingh	3,382,097	2547	312	19	2	2	1,092	1164	430	5568	46%	75	**165**
Kishoreganj	3,340,091	3699	221	7	1	0	1,603	1502	232	7265	51%	111	**218**
MTLCP	**6,722,188**	**6,246**	**533**	**26**	**3**	**2**	**2,695**	**2,666**	**662**	**12,833**	49%	93	**191**
DF Bangladesh	**30,125,904**	**17,216**	**1,581**	**143**	**12**	**44**	**10,195**	**9,409**	**2,025**	**40,704**	42%	57	**135**

Note: RL = Relapses, FL = Failures, RALTU = Retrun after loss to follow-up

Table - 9 Treatment outcomes for new bacteriologically confirmed patients, 2022 cohort

Annex Table -9

Treatment outcomes (%)								
Districts	Registered	Cured + Completed	Died	Failed	Lost to follow up	Transferred out / Not. Evaluated	Not evaluated	Treatment success (%)
DEPZ	83	93%	1%	1%	4%	1%	0%	93%
Faridpur	605	94%	3%	1%	1%	0%	0%	94%
Gopalganj	330	96%	4%	0%	0%	0%	0%	96%
Jamalpur	1407	90%	6%	3%	1%	0%	0%	90%
Kishoreganj	2818	97%	2%	0%	0%	0%	0%	97%
Madaripur	310	93%	5%	0%	2%	0%	0%	93%
Mymensingh	1881	95%	4%	1%	0%	0%	0%	95%
Naogaon	1581	93%	4%	1%	2%	0%	0%	93%
Nawabganj	601	94%	5%	1%	0%	0%	0%	94%
Netrakona	1300	95%	3%	1%	0%	0%	0%	95%
Rajbari	217	88%	6%	3%	2%	0%	0%	88%
Rajshahi	1076	93%	5%	1%	1%	0%	0%	93%
RMCH	26	58%	4%	8%	31%	0%	0%	58%
Shariatpur	458	94%	3%	2%	1%	0%	0%	94%
Tangail	2243	95%	3%	1%	1%	0%	0%	95%
TOTAL DF	**14936**	**94.20%**	**3.63%**	**1.23%**	**0.78%**	**0.11%**	**0.05%**	**94.20%**

Table - 10 Treatment outcomes for re-treatment smear positive patients, 2022 cohort

Annex Table -10

Treatment outcomes (%)								
Districts	Registered	Cured + Completed	Died	Failed	Lost to follow up	Transferred out / Not. Evaluated	Not evaluated	Treatment success (%)
DEPZ	6	100%	0%	0%	0%	0%	0%	100%
Faridpur	65	94%	3%	1%	1%	0%	0%	94%
Gopalganj	38	95%	3%	0%	3%	0%	0%	95%
Jamalpur	145	87%	5%	5%	2%	1%	1%	87%
Kishoreganj	163	95%	3%	1%	0%	1%	0%	95%
Madaripur	37	86%	9%	2%	2%	0%	0%	86%
Mymensingh	192	90%	5%	3%	1%	1%	0%	90%
Naogaon	110	95%	2%	0%	3%	0%	0%	95%
Nawabganj	67	89%	11%	0%	0%	0%	0%	89%
Netrakona	146	95%	3%	2%	0%	0%	0%	95%
Rajbari	32	94%	3%	0%	3%	0%	0%	94%
Rajshahi	70	90%	3%	3%	5%	0%	0%	90%
RMCH	10	100%	0%	0%	0%	0%	0%	100%
Shariatpur	43	91%	2%	4%	2%	0%	0%	91%
Tangail	200	93%	5%	0%	1%	0%	1%	93%
TOTAL DF	**1324**	**92.26%**	**4.04%**	**1.67%**	**1.46%**	**0.35%**	**0.21%**	**92.26%**

Table: Summary results of External Quality Assurance by project 2023

Annex Table 11

		Routine smears examined (nos.)			Smears rechecked by EQA (nos.)			EQA rechecking results					
PROJECTS	Nr. Of Microscopy centers	Total	% positive	% scanty	Pos.	Scanty	Neg.	Nr. HFP slides	Nr. HFN slides	Nr. LFP slides	Nr. LFN slides	HFP%	HFN%
FTLCP	38	281235	0.7%	0.3%	57	24	2198	1	1	0	4	1.23%	0.05%
MTLCP	34	275546	2.0%	0.8%	147	37	1943	1	4	1	8	0.54%	0.21%
NTLCP	12	73540	1.3%	0.6%	196	26	497	1	1	0	9	0.45%	0.20%
RTLCP	32	121404	1.6%	1.2%	132	26	1282	13	2	2	16	8.23%	0.16%
TTLCP	34	159175	2.1%	0.9%	73	17	1991	1	1	0	9	1.11%	0.05%
Total	**150**	**910900**	**1.5%**	**0.7%**	**605**	**130**	**7911**	**17**	**9**	**3**	**46**	**2.31%**	**0.11%**

Quality Control of Skin Smear- 2023

Annex Table 12

Project	Total smears checked in QC			Rates of false results						Proportions registered results			Neg.(among all smears)	Rates of false results					
	Pos.		Neg.	False positives		False negatives		Quantification		Among all positives				False positives		False negatives		Quantification	
	+1	+2 to +6		+1	+2 to +6	+1	+2 to +6	1 log	>1 log	+1/+2	+3/+4	+5/+6		+1	+2 to +6	+1	+2 to +6	1 log	>1 log
TTLCP	0	3	27	0%	0%	0%	0%	67%	33%	33%	33%	33%	90%	0	0	0	0	2	1
MTLCP	0	15	42	0%	13%	0%	0%	27%	20%	53%	40%	13%	74%	0	2	0	0	4	3
NTLCP	4	2	18	0%	0%	0%	0%	17%	0%	83%	17%	0%	75%	0	0	0	0	1	0
RTLCP	0	9	60	0%	33%	0%	7%	11%	0%	33%	33%	33%	87%	0	3	0	4	1	0
FTLCP	0	0	24	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0	0	0	0	2	0
DF TOTAL	**4**	**29**	**171**	**0%**	**9%**	**0%**	**1%**	**24%**	**11%**	**41%**	**25%**	**16%**	**85%**	**0**	**5**	**0**	**4**	**10**	**4**

Pictures of some activities

Regular Patient checkup at OPD

A leprosy patient during a field visit

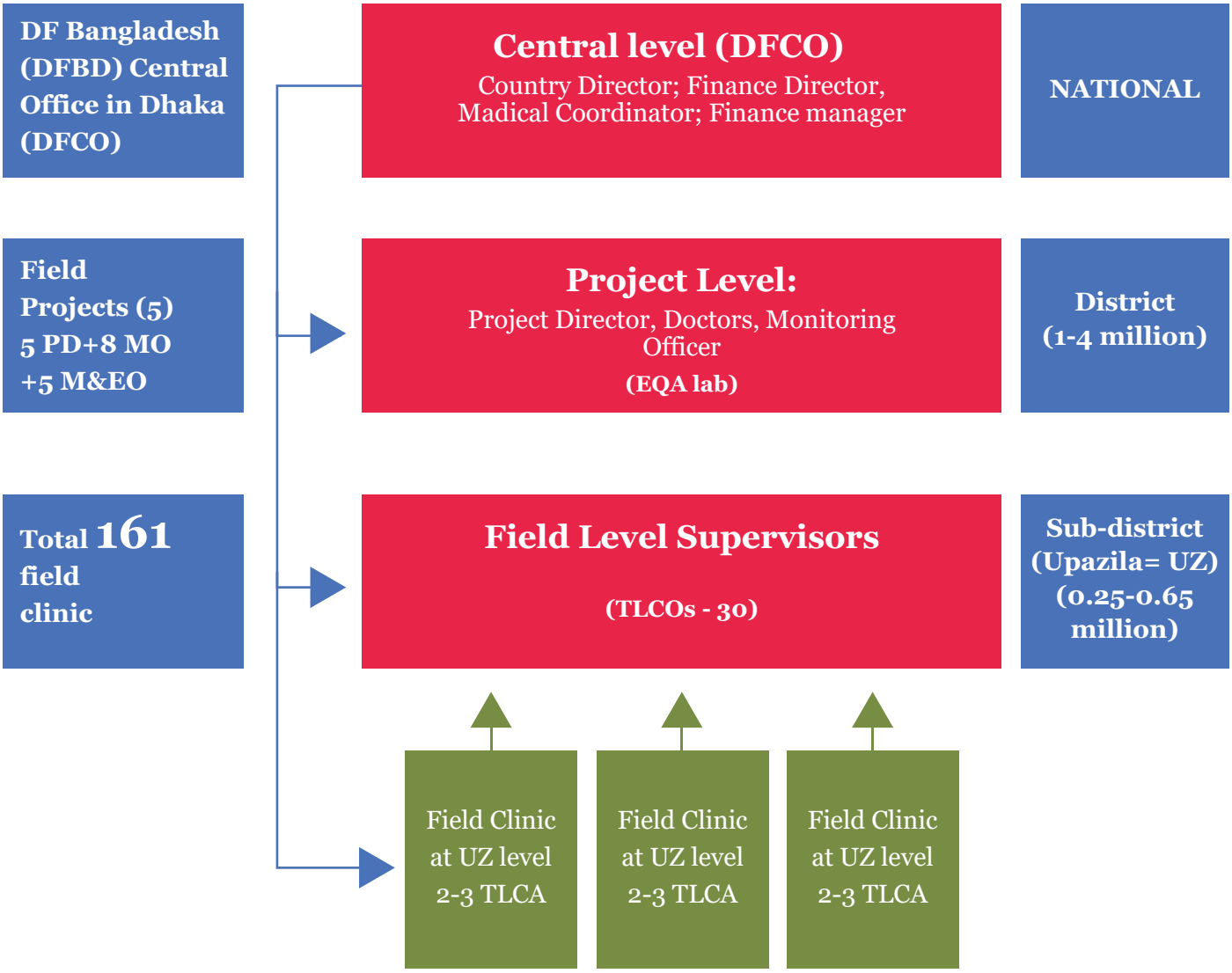
TLCA's conducting health education sessions

Physiotherapy of leprosy patient under disability care

Indoor Health education session

Damien Foundation Bangladesh

Monitoring and Supervision Structure



PD = Project Director, MO = Medical Officer, M&EO = Monitoring & Evaluation Officer, UZ = Upazila (Sub-district), TLCO = TB & Leprosy Control Officer, TLCA = TB & Leprosy Control Assistant, EQA = External Quality Assurance.

Short forms of names of districts in DF area:

FP = Faridpur, RJ = Rajbari, GP = Gopalganj, MP = Madaripur, SR = Shariatpur,
RA = Rajshahi, NG = Naogaon, NW = Nawabganj, NK = Netrakona, MM = Mymensingh, KS = Kishoreganj,
TG = Tangail, JM = Jamalpur, SH = Sherpur

DF Mymensingh Hospital

DF Netrakona Hospital

DF Jalchatra Hospital

ANNUAL REPORT 2023

damien foundation
let's act now, it's contagious
BANGLADESH

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