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## Bangladesh: NGO and Public Sector Tuberculosis Service Delivery–Rapid Assessment Results

Dominic Robin Guda, Ikhtiar Uddin Khandaker,  
Sadia D. Parveen, and Terrence Whitson

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**Abstract:** The Quality Assurance Project commissioned a rapid assessment of the Bangladesh service delivery system for TB-DOTS, the internationally recommended strategy for tuberculosis control. The assessment was designed to inform the development of a context-specific strategy to ensure the delivery of high-quality TB-DOTS care to achieve sustained detection of 70% of new smear-positive patients and an 85% cure rate. Examining the various aspects of both the Government- and NGO-managed systems, the assessment measured the following elements of the Bangladesh National Tuberculosis Program, of which the USAID-funded NGO Service Delivery Program is also a part: awareness-raising efforts, identification of suspects, case detection, mode of DOTS, cure rate, physical facilities, technical capacity, record keeping, referrals, and facility-to-facility referrals. After a presentation of findings, the report makes recommendations to achieve the targeted case detection and cure rates.

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### Abbreviations

BCC	Behavior change communication	NGO	Nongovernmental organization
BCG	Anti-tuberculosis vaccine	NSDP	NGO Service Delivery Program
BRAC	(Formerly) Bangladesh Rural Advancement Committee	NTP	National Tuberculosis Control Program
		PC	Private clinic
CDC	Chest disease clinic	PHC	Primary healthcare
DOTS	A treatment strategy providing that patients are monitored to ensure medications are taken	PHN	Population, Health and Nutrition
		QAP	Quality Assurance Project
		TB	Tuberculosis
EPI	Expanded Program for Immunization	TB-DOTS	WHO-recommended strategy for TB control
GOB	Government of Bangladesh	UHC	Upazilla health complex
GP	General practitioner	WHO	World Health Organization
HC	Health center		



# **Bangladesh: NGO and Public Sector Tuberculosis Service Delivery—Rapid Assessment Results**

## **I. Introduction**

Tuberculosis (TB) is one of the most prevalent human infections and causes more deaths worldwide than any other infectious disease. Estimates show that approximately a third of the global population is infected with *Mycobacterium tuberculosis* and that 8 million new cases of TB occur each year, leading to nearly 3 million deaths annually. The World Health Organization (WHO) reports that TB is almost exclusively a disease of the developing world: 98% of TB-related deaths and 95% of TB cases occur in these countries.

However, TB is not life threatening if appropriate diagnosis (screening and case detection) and treatment are provided on time. The WHO-recommended strategy of directly observed treatment, DOTS, has proven successful in many parts of the world and is considered cost-effective. Nevertheless, DOTS is still not used widely: Less than 15% of TB patients worldwide have been treated through DOTS.

Furthermore, over the past decade, poly-, multi-drug-resistant forms of TB have become a significant threat to TB control. With increased use, misuse, and defaulting use, the number of multi-drug-resistant TB cases has risen dramatically and alarmingly.

## **II. Background**

Several factors influence the way that the Government of Bangladesh (GOB) can address its TB burden. Information about that burden, the historic development of the National Tuberculosis Control Program (NTP), the structure under which TB services are delivered, and the newly developed goals for TB service delivery is provided in this section.

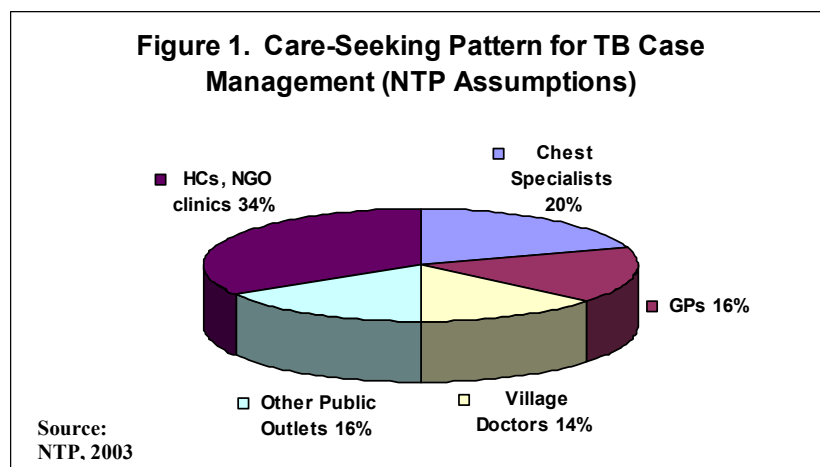
### **A. Burden Statistics**

While TB is a global concern, it is emerging as a major public health problem in Bangladesh, which now has the fifth highest burden of TB cases among all nations. Anecdotal evidence suggests that most Bangladeshi communities consider TB a greater threat than HIV/AIDS. NTP estimates that:

- There are 300,000 new cases annually; 137,000 are infectious, smear-positive cases;
- The annual incidence of TB is 99 per 100,000 population for smear-positive cases and 221 per 100,000 for all forms;
- TB causes 70,000 deaths per year;
- The case detection rate is 41% (NTP, 2003);
- The cure rate of detected cases under DOTS is 84% (with 300,000 new cases annually, those cured comprise only 3.2% of all new cases);
- Incidence is believed to be higher in densely populated, urban areas with poor living conditions; and
- The female:male is ratio 2:5 among new smear-positive cases registered for treatment.

Prior to the present assessment, several factors were believed to be contributing to Bangladesh's TB burden. First, low case detection was thought to be partly caused by an insufficient number of appropriately equipped microscopy centers. One microscopy center per 100,000 population is recommended in high-burden countries, but a 2004 WHO report indicates that in Bangladesh each upazilla (sub-districts with a population of approximately 300,000) is served by only one microscopy center: This proportion is a third that recommended. Second, the same report notes that only about half the population truly has access to DOTS services: Not covered are most urban areas, the district hospitals, academic institutions, private clinics, and certain other institutions (e.g., prisons, workplaces, corporate hospitals, armed forces). Third, quality assurance of smear microscopy was not implemented in about 70% of the microscopy centers in the DOTS program.

Furthermore, NTP notes that many people (60–70% in urban areas) seek care from the private sector, which maintains no record of patient numbers or treatment patterns: Such records are essential for TB control. NTP assumes that just over half of patients seek care from chest specialists, health centers, and nongovernmental organization (NGO) clinics (Figure 1). Most of these providers are not conversant with the DOTS strategy.



These wide-ranging deficiencies recommend a large-scale, coordinated effort to ensure the smooth implementation of prevention and care programs for TB at all levels. Such effort will involve resource allocation in various areas, including program management; financial support; efficient supervision and monitoring at all levels; improving technical competence; and other steps. This report provides data to guide such effort.

Note: HCs = Health centers

## B. TB Service Delivery Structure

The Bangladesh NTP was officially established in 1993 through endorsement of the DOTS strategy for TB control (World Health Assembly, Geneva, May 1991). NTP now covers 99% of Bangladesh's geographical area.

Under the NTP, DOTS services are delivered from more than 500 Government-run centers and NGO clinics in all upazillas, districts, and city corporations. There are two types of Government facilities:

**Upazilla health complexes (UHCs):** There are 460 UHCs, each covering an average population of 270,000–300,000; UHCs are 31-bed hospitals with indoor facilities and field functionaries to deliver primary healthcare (PHC) services to the rural populations. UHCs are comprehensive sub-district-level facilities that provide TB care along with a wide range of other preventive and curative services, including both in- and out-patient care.

**Chest disease clinics (CDCs):** The 45 CDCs are secondary-level care facilities in 44 district headquarters; they serve large populations whose sizes vary widely from one catchment area to another. They are devoted specifically to the screening, diagnosis, and treatment of TB patients. They serve as DOTS centers and support the NTP through diagnosis of pulmonary tuberculosis cases, proper referral of patients for treatment to respective UHCs, and provision of technical advice according to national guidelines. They refer complicated cases to tertiary-level hospitals.

There are also 11 major nongovernmental organizations (with sub-awardees), including BRAC, Bangladesh, that provide DOTS under the NTP umbrella. The NGO Service Delivery Program (NSDP) is one of them and is responsible for providing DOTS in the major urban areas, i.e., the city corporations. This is implemented through NGO clinics under the NSDP network; of course, not all NGO clinics in Bangladesh participate in the network of the NSDP.

Although NSDP has both urban and rural NGO clinics, only some of the NGO clinics located in the city corporation areas provide DOTS support, in terms of diagnosis and care. This is because the NTP, besides its own 460 UHCs, also has a number of NGO partners to meet the needs of the rural populations.

Acid-fast bacilli microscopy is provided free in all DOTS centers, while chest X ray is used for the diagnosis of smear-negative or complicated cases, mainly in the CDCs. TB-DOTS treatment is provided free from all centers and, as much as possible, decentralized at the community level through community health workers, village doctors, the Government, and NGO staff.

### **C. New TB Service Delivery Goals**

Bangladesh recently became an awardee of the Global Fund for AIDS, TB and Malaria, and the Government is determined to reach the global targets for TB control. The expected overall outcome is to “achieve sustained detection of 70% of new smear-positive patients and to cure 85% of them.”

Through the Global Fund, the GOB hopes to achieve the following by the end of 2009:

1. TB diagnostic services will have been expanded from the existing 534 to 664 facilities;
2. TB treatment through DOTS will be delivered countrywide by:
  - a. Skilled community health workers as well as doctors at healthcare delivery points, like UHCs, public hospitals, etc.;
  - b. Skilled private doctors; and
  - c. Special services, such as those provided in prisons, the armed forces and police, academic institutions, and work places.
3. At least 80% of diagnostic facilities will deliver high-quality microscopy services;
4. Behavior change communication (BCC) strategies will be implemented countrywide to increase TB self-referrals; and
5. Timely, complete, and accurate reports on case detection and treatment outcome will be received from all districts; quarterly and annual country reports will be compiled within three months of a quarter's end; monitoring surveys will occur annually; and external evaluation of the program will be performed every second year.

The overall objective of Quality Assurance Project (QAP) activities in Bangladesh is to assist in developing a strategy for expanding access to and improving the quality of TB services supported by NTP Bangladesh. Such a strategy would be expected to:

1. Increase case detection;
2. Improve cure rate; and
3. Increase compliance with the drug regimen, resulting in fewer multiple-drug resistant strains.

To lay the groundwork for this effort, QAP commissioned a rapid assessment of TB-DOTS service delivery provided by Government clinics and the NGOs clinics participating in the NSDP.

## **III. QAP Study**

### **A. Goal and Objectives**

The study goal was to gather and analyze data that could be used to develop a context-specific strategy to ensure the delivery of high-quality TB-DOTS care and thereby achieve sustained detection of 70% of new smear-positive patients, with a cure rate of 85%.

The study's specific objectives were to: (1) identify gaps and opportunities for improvement and create a deeper understanding of the supply of and demand for TB services in selected Government and NGO facilities providing TB-DOTS and (2) prepare a strategy for improving access to and quality of TB-DOTS services, based on the study findings.



## **B. Methodology**

The study examined the existing structures and functions for (1) preventing the spread of TB; (2) promoting DOTS; (3) program capacity; and (4) systems used for case detection, referral, case management, and general surveillance and monitoring of programmatic outputs and impact.

The study was designed as a rapid systems analysis, collecting cross-sectional data from a sample of service delivery points in three city corporations: Rajshahi, Khulna, and Chittagong. Data collection was conducted in two six-week phases: October–November 2003 at 15 NSDP NGO sites and May–June 2004 at 10 Government sites (five CDCs and five UHCs). The 25 sites were purposively selected. While no clinic managed by the NGO, BRAC, Bangladesh was assessed, commonly known information about a component of the BRAC, Bangladesh TB-DOTS service is mentioned in this report.

At each service delivery site, data were collected from all levels of service provider (i.e., physicians holding the position of junior consultant or upazilla health and family planning officer for the GOB sites and clinic manager, project director/manager, or medical officer for the NSDP NGO sites), nurse/paramedic, and other service providers (i.e., laboratory technician, pharmacist, and community workers). The data were collected using:

- Interviews with both open and closed questions;
- Skills observations using a structured, program-based observation checklist; and
- Review of existing records and reporting formats.

Data collected from records covered the quarter preceding each data collection phase. The data were analyzed with SPSS PC+ software.

## **C. Results**

### **1. General findings**

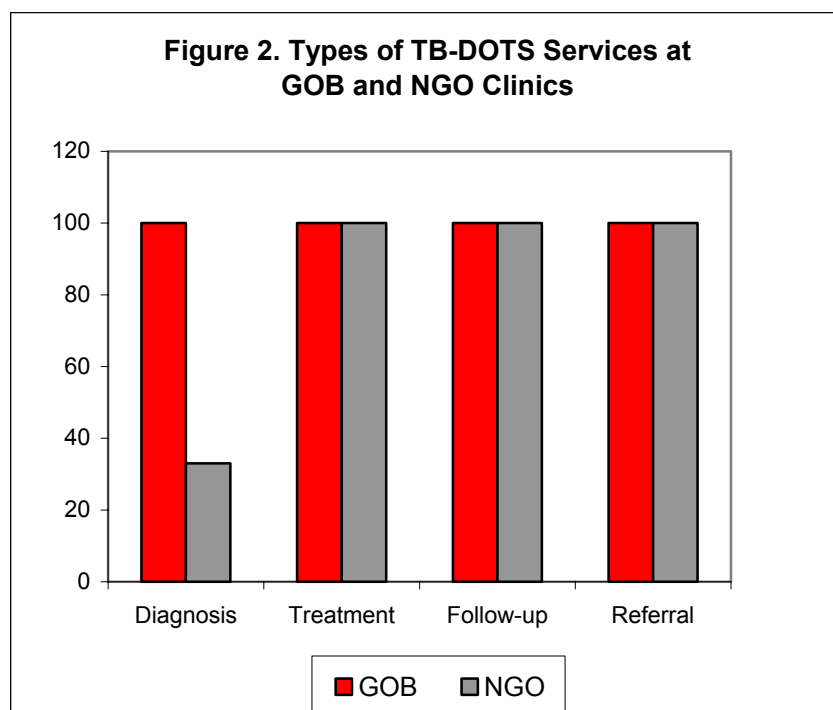
#### **a. NGO clinics**

Only five of the 15 NSDP NGO clinics offered diagnostic services, but all of them offered treatment, follow-up, and pulmonary TB patient referral services, as shown in Figure 2. These clinics serve an estimated catchment population of 1.8 million. All the clinics apply both a self-referral/passive case finding and a community active process to identify suspected pulmonary TB cases. Under the latter, community members identify TB suspects and send them to the clinic for screening and diagnosis. Based on the need to develop a cost-effective and sustainable process of suspect identification, NTP emphasizes the self-referral process more than the active one. Three clinics also receive referrals from Government facilities and general practitioners.

#### **b. GOB clinics**

All ten GOB facilities surveyed, as secondary-level Government healthcare facilities, offer the complete set of TB-DOTS services: diagnosis (including laboratory testing), treatment, follow-up, and pulmonary TB patient referral. The total catchment population covered by this study cannot be stated because of the widely varying CDC catchment sizes; however, the five UHCs combined serve a population of 1,519,592 in five sub-districts. All these facilities receive TB patients (both pulmonary and extra-pulmonary) referred from other health facilities: Government health centers, general practitioners, and the nongovernment sector.





## 2. Specific findings

### **a. Awareness-raising and prevention efforts**

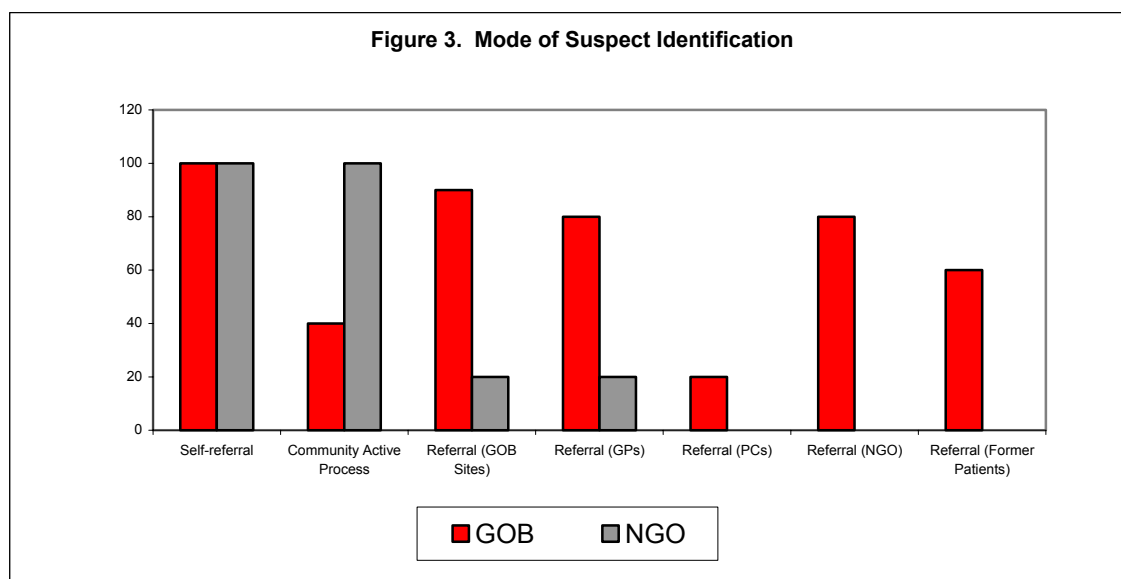
All facilities in the assessment conduct some form of BCC for TB awareness raising and prevention. These activities include health education about TB for patients and attendants, interpersonal communication with patients, distribution of leaflets and posters, school programs, community awareness-raising events, group meetings, etc. The NGO clinics were found to have stronger household-level awareness-raising activities in that only NGO health workers make house-to-house visits (detailed below).

As all these facilities also provide a wide range of maternal and child health and family planning services, BCG (an anti-TB vaccination) is a part of the overall Expanded Program for Immunization (EPI) package for children aged 0–12 months. However, no special efforts target preventing childhood TB, and no chemoprophylaxis is provided for newborn or child TB patient.

### **b. Identification of suspects**

Identification is done through (1) self-referral (passive case finding) in all facilities; (2) referrals from other Government facilities, general practitioners, and clinics in both NGO and private sectors; (3) community (active process); and (4) referrals from former TB patients.

However, as shown in Figure 3 and unlike the GOB facilities, none of the NGO clinics receive referrals from private clinics, other NGOs, or former TB patients, and few community-identified clients are referred to GOB clinics. Both in- and out-bound referrals are detailed below in Section C.2.h.



**Note:** GPs = general practitioners; PCs = private clinics.

### **c. Case detection from suspects**

Once suspects report to any of these facilities, they undergo relevant diagnosis and laboratory tests to confirm diagnosis. In all the Government facilities, suspect identification is primarily done by doctors, though in some cases a nurse is trained and involved in the process. In the NGO clinics, the first point of contact for suspects is the counselor or paramedic, trained accordingly. Complicated cases requiring higher-level care and multi-drug resistant cases are “referred out,” while those who can access TB-DOTS from facilities in their own locales are “transferred out.”

In this section, we calculated the number of cases that would be expected to present at various types of clinics. Our calculations were based on the national prevalence rate of 99 sputum-positive cases per 100,000 population per year. Reports cover two quarters: one for NGO clinics (July–September 2003) and another for GOB clinics (January–March 2004).

#### **NGO clinics**

The case detection rate was very low at NGO clinics: 17%.

*Clinics with laboratory facilities:* Only five of the 15 clinics had laboratory facilities for sputum test. The total number of new sputum-positive cases identified at the laboratories of these clinics in the referenced quarter was 21 out of 101 (21%) suspects. The total catchment population served by these clinics was 553,362, which would be expected to produce 137 sputum-positive cases per quarter.

*All study clinics, including those with laboratory:* The total number of sputum-positive cases identified during the quarter at all studied 15 NGO clinics was 76 out of 185 suspects. In this catchment population of 1.8 million, the expected number of sputum-positive cases would be much higher: 448.

#### **GOB clinics**

These facilities specialize in TB case detection and treatment; their performance would be expected to be better than that of their NGO counterparts.

*UHCs:* In the quarter studied, 56 sputum-positive cases were diagnosed from 447 suspects. With a total population of 1.5 million, these facilities would be expected to generate 1485 sputum-positive cases annually: 371 quarterly. Thus, the case detection of 15% at the UHC level (in the study areas) is very poor. Also, given that the national level figure is one sputum-positive case for every 10 suspects, the fact that 56 sputum-positive cases were identified from 447 suspects may raise questions related to the quality

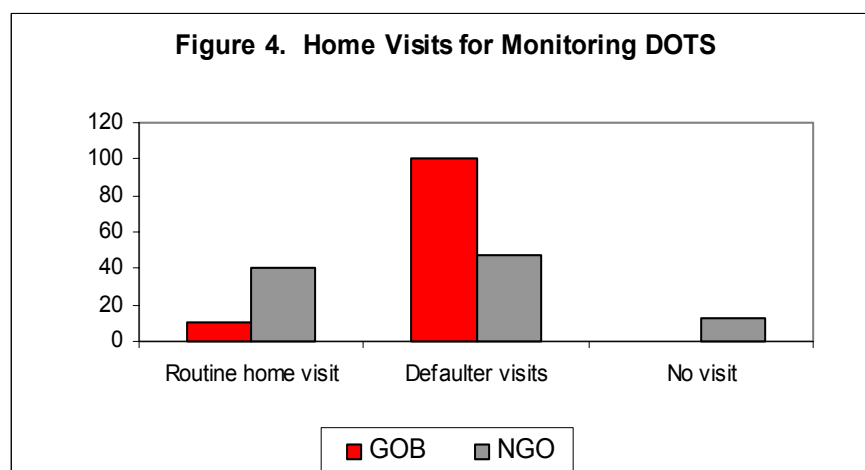
of diagnosis: It could imply over-diagnosis and/or faulty staining techniques and may need re-examination.

*CDCs:* Three hundred and ninety-four sputum-positive cases were diagnosed from 2523 suspects. Since the CDC catchment populations vary with time, it was not possible to calculate the expected number of sputum-positive cases or the respective case detection rate.

#### **d. Mode of DOTS**

All 25 study facilities provide DOTS through direct patient attendance in the clinic/center. Where feasible, providers also train family members to observe the patient taking the drug at home. Other methods adapted by these facilities to ensure DOTS are through community members and field health workers, though not all facilities used these methods. No incentives are offered by either the NGO or GOB centers for treatment compliance or for performing any other DOTS-related activity.

Figure 4 shows that NGO clinic staff commonly make home visits for both routine and defaulter visits, although a small percentage of these clinics never make home visits. Government clinics make home visits mostly to identify and follow up defaulters. However, staff in one GOB facility claimed that from time to time they send health workers on routine home visits for all listed patients.



#### **e. Cure rate**

Only one of the 15 NGO clinics had cured 11 or more pulmonary TB patients in the quarter. A third of these clinics reported curing between one and five patients. Almost half the clinics reported “no cured patient,” but this may reflect poor registration practices (further investigation may be required). The 10 Government sites had 178 DOTS recipients registered during the quarter, of whom 144 (81%) had been cured.

#### **f. Laboratory and pharmacy facilities**

Facility structure and materials are discussed here; facility staff capacity is discussed in Section C.2.g below.

#### **NGO clinics**

As mentioned, five of the 15 NGO clinics could perform sputum tests; eight offered blood tests, and none offered X rays or Mantoux tests (see Table 1). Most laboratories met most of the NTP physical facility standards: adequate space, light, water supply, etc., and all labs were equipped as stipulated in guidelines.

All the clinics had pharmacies, but only two-fifths of them had adequate space and only half had adequate furniture. The pharmacies were managed (including dispensing of anti-TB drugs) by the paramedic, counselor, or clinic aide. No NGO clinic in our study had a pharmacist.

All NGO clinic pharmacies had an adequate supply of anti-TB drugs, and most (13) had all the treatment guidelines (i.e., for Categories -1, 2, and 3). It was encouraging to see that most clinics maintained continuity in anti-TB treatment by using cards and registers to identify and follow up with defaulter patients.

### **GOB clinics**

All 10 GOB facilities had well-equipped laboratories and pharmacies. The labs had the appropriate reagents and equipment in sufficient quantity, along with waste disposal equipment. They offered sputum examination services but no Mantoux tests. Over three-fifths had blood testing equipment, but only a fifth offered X-ray service. Also, 60% had adequate space and 70% adequate furniture. All drug registers were completed. The record-keeping systems (the laboratory register, sputum report form, etc.) in all the clinics/centers were up-to-date.

**Table 1. Facility Assessment of NGO and GOB Laboratories and Pharmacies**

Indicator	NGO Clinics	GOB Clinics
<b>Percentage of Facilities Meeting Standard for the Indicators</b>		
<b><i>Laboratory: Equipment</i></b>		
Sputum test	33	100
Blood test	53	60
Chest X-ray	20	0
Mantoux test	0	0
<b><i>Pharmacy</i></b>		
Adequate space	40	60
Adequate furniture	53	70
Record keeping according to standard	33	100
<b>Average Score for Facilities, Based on Multiple Indicators</b>		
<b><i>Laboratory: Quality Assessment</i></b>		
Quality of laboratory tests	84	100
Record keeping	50	100

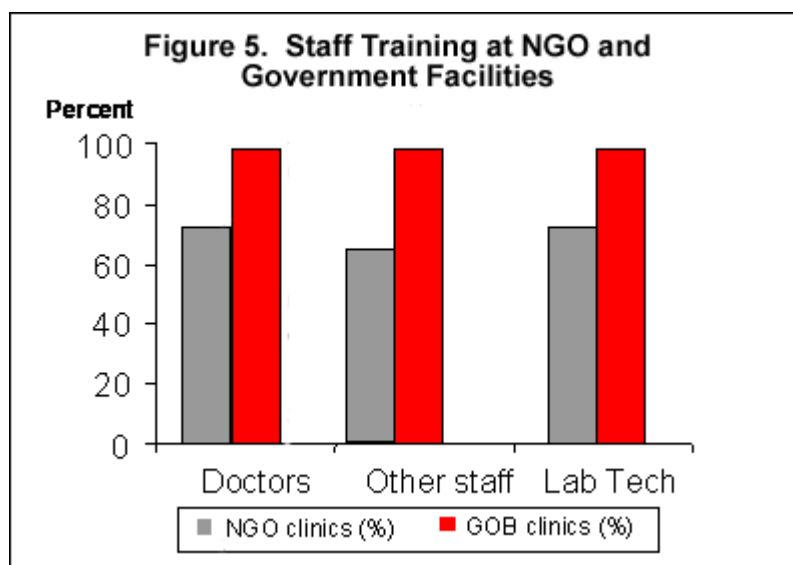
With regard to TB-DOTS supply logistics, the clinics/centers had sufficient supplies of all three categories of anti-TB drugs. The assessment found no problems with the drug supply chain from the central to local level. The supply of drugs from the local level to the patient was not assessed, but the low cure rate in NGO clinics suggests the need for further analysis of this element and possible improvement.

### **g. Technical capacity**

The three major elements for measuring technical capacity are staff training, knowledge, and provider skills. Certain limitations precluded assessing provider skills in this study, so programmatic outputs (e.g., quality of laboratories and pharmacies, and record keeping and reporting) were examined as indicators of provider skills.

### **Staff training**

*NGO clinics:* About three-fourths of NGO clinic doctors had received TB-DOTS training (Figure 5). Other staff who were available at the time of our interview and had been trained in TB-DOTS included some counselors, paramedics, and service promotion officers (they are responsible for raising community awareness). Four-fifths of the lab technicians had also been trained. As mentioned above, no NGO clinics had pharmacists.



*GOB clinics:* All the GOB staff had been trained in DOTS. This included doctors, pharmacists, laboratory technicians, some program organizers (service promotion personnel), and lady health visitors who had also taken condensed foundation training in PHC.

#### **Knowledge**

*NGO clinics:* Overall, the providers demonstrated average knowledge about TB-DOTS (Table 2), although NGO providers scored well below

their GOB counterparts. The knowledge assessments included general knowledge about signs and symptoms of TB and ability to diagnose various forms of pulmonary TB, drug side effects, the DOTS strategy (meaning and implementation of DOTS, etc.), and ability to evaluate completion of treatment (follow-up and failure) for all three treatment categories.

**Table 2. Provider Knowledge at NGO and GOB Clinics**

Indicator	Percentage	
	NGO Clinics	GOB Clinics
<b><i>Doctors</i></b>		
General knowledge	87	100
Knowledge of TB diagnosis	80	100
Knowledge of TB treatment	80	100
Knowledge of DOTS	43	100
<b>Composite score</b>	<b>73</b>	<b>100</b>
<b><i>Other Clinic Staff</i></b>		
General knowledge	59	100
Knowledge of TB diagnosis	60	100
Knowledge of TB treatment	63	100
Knowledge of DOTS	31	99
<b>Composite score</b>	<b>53</b>	<b>100</b>
<b><i>Laboratory Technicians</i></b>		
Knowledge of slide maintenance	40	100
Knowledge of patient instruction for sputum collection	20	100
<b>Composite score</b>	<b>30</b>	<b>100</b>

Most doctors had been trained in TB-DOTS. While NGO doctors' knowledge of pulmonary TB, its diagnosis, and treatment was good, their ability to evaluate the treatment and their knowledge of drug side effects was poor.



Similarly, most other NGO providers (paramedics, counselors, service promoters) had adequate knowledge of pulmonary TB, but they were unable to correctly identify extra-pulmonary TB. Other knowledge gaps among these providers related to DOTS and side effects. Most lab technicians demonstrated poor knowledge in slide maintenance and instructing patients to collect sputum. NGO clinic staff responsible for dispensing anti-TB drugs exhibited below-standard knowledge of this task. Although two-thirds of the drug dispensers knew that there are three categories of treatment for pulmonary TB patients, none could provide appropriate advice to pulmonary TB patients regarding DOTS, especially the importance of regular treatment and follow up.

The NGO clinics did not have pharmacists for dispensing anti-TB drugs; paramedics and/or counselors had this responsibility; as shown in the table, their knowledge of TB-related tasks was poor.

**GOB clinics:** All service providers demonstrated good knowledge of TB-DOTS and case management.

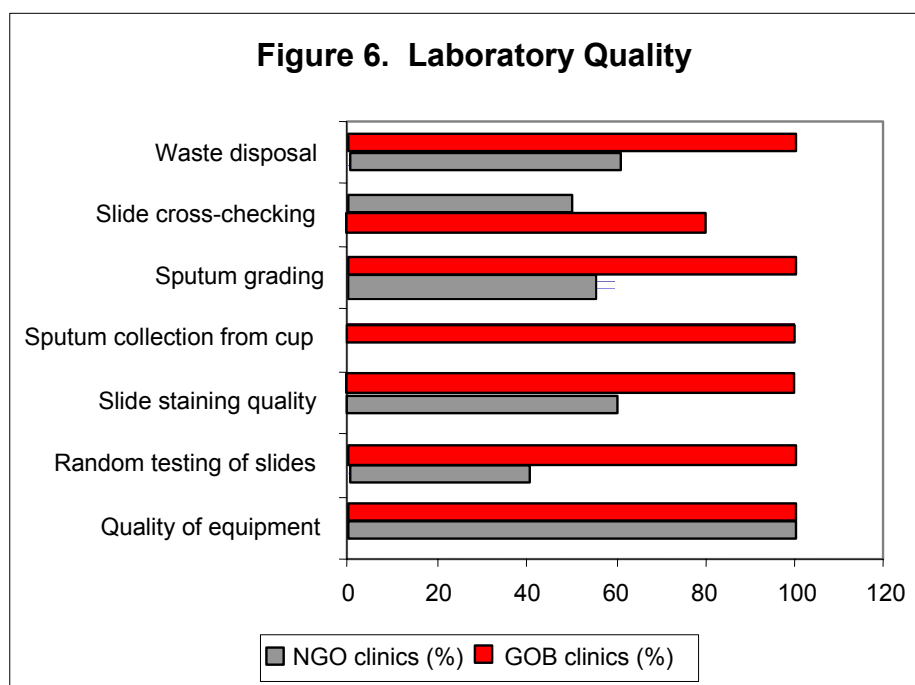
As Table 2 shows, all providers performed very well on the knowledge assessments. Also, the laboratory technicians had sound knowledge of basic laboratory techniques, like maintaining slide quality, instructing patients to collect sputum, and identifying the correct mechanism of collecting and grading sputum result. The only area of weakness was that cross-checking was done regularly in only half the GOB clinics.

Finally, all the GOB pharmacists/drug dispensers demonstrated sound knowledge of DOTS regarding treatment regimen, dosage, and side effects; advice to patients about the importance of regularity; and ensuring a follow-up visit.

### **Laboratory quality**

Material inputs that affect lab quality, such as space and reagents, are discussed above in Section C.2.f. This section discusses personnel and processes (Figure 6).

**NGO clinics:** Although four NGO laboratories had trained technicians, their technical skills and service quality were not satisfactory. Indicators associated with lack of quality included poor quality of slide staining and sputum grading, inappropriate waste disposal, and disparity when routine slides were matched with random ones. However, the laboratory technicians at the NGO clinics more routinely had their slides cross-checked than their GOB counterparts did.



*GOB clinics:* Diploma-holding pharmacists were available in five clinics, and non-diploma-holding pharmacists/drug distributors were available in the other five. They were all trained to deliver TB drugs. The quality of staining was found to meet standards; on random testing, the examination slides fulfilled the criteria of the existing standards.

### **Record keeping and reporting**

Compliance to standards for record keeping and reporting varied widely between the NGO and Government facilities.

*NGO clinics:* As mentioned earlier, the level of compliance to record-keeping and reporting standards was poor. Only the Laboratory Registers (TB – 04) and Request Form for Sputum Examination (TB – 05) were filled completely in most clinics, as shown in Table 3.

**Table 3. Record-Keeping Completion Rates**

Indicator	Percentage	
	NGO Clinics	GOB Clinics
TB Treatment Card (TB – 01)	60	80
TB Register (TB – 03)	40	80
TB Laboratory Register (TB – 04)	80	100
Request Form for Sputum Examination (TB – 05)	100	100
TB Referral/Transfer Form (TB – 07)	28	100
Quarterly Report on Case Finding of TB (TB – 10)	47	90
Quarterly Report on Treatment Results of Pulmonary TB Patients Registered 12–15 Months Earlier (TB – 11)	40	100
Quarterly Report on Sputum Conversion at 2/3 Months of Smear-Positive Pulmonary TB Patients Registered 3–6 Months Earlier (TB – 12)	60	90

Some of the main gaps in record keeping were due to the use of the wrong color of ink in filling specific columns, sputum-negative cases not being properly diagnosed as pulmonary TB, some columns left blank, inconsistencies between the figures in the report and those in the treatment card and register, transfer-in patients recorded as new cases, defaulters recorded and counted as cured patients, and missing laboratory number.

*GOB clinics:* The Referral Forms (TB – 7) were used by all the health centers for referring TB patients as new cases or transfer-out cases to other health centers. However, half of clinics used the standard three copies, while the rest used two.

Most facilities (90%) completed the TB – 10 Form (Case Finding) correctly. The only problem seen was in one facility where all transfer-in patients were included in the total number of patients in the report. Similarly, Form TB – 12, the quarterly report form for reporting sputum conversion, was also correctly completed in most facilities. One clinic was found to be wrongly reporting defaulter-positive patients as converted.

In eight GOB facilities, the Treatment Card (TB – 01) and TB Register (TB – 03) were largely filled out correctly. The main problem with the card was the inappropriate categorization of referred new patients on the card and use of the wrong color of ink to record sputum-positive cases.

### **h. Referrals**

There were both in- and out-bound referrals to and from the NGO and Government facilities, as discussed in this section.

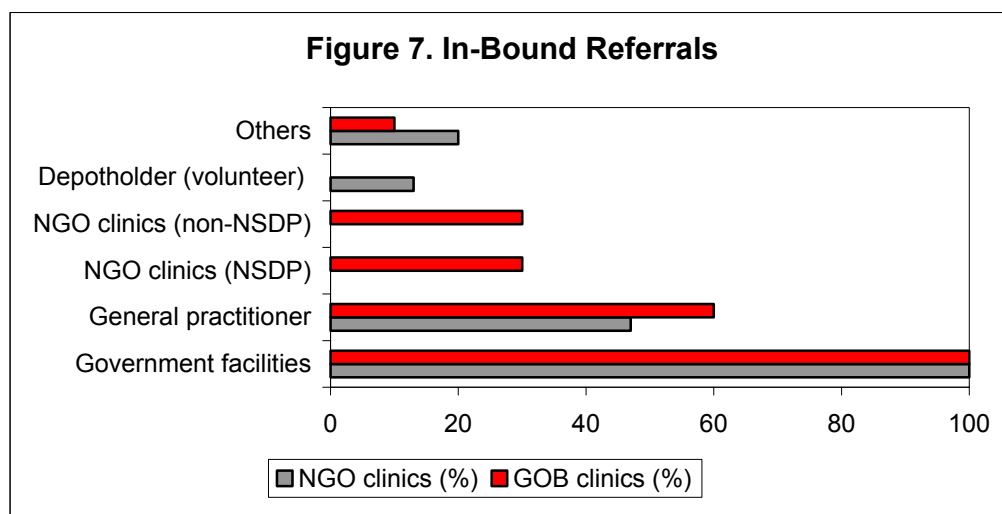
### **In-bound referrals**

The number of in-bound referrals varied by type of facility/provider, as shown in Figure 7.



*NGO clinics:* The NGO clinics received some TB referrals (pulmonary and extra-pulmonary) from other health facilities, but in comparatively small numbers. In the quarter before the survey, just over a tenth of the clinics had received 10 or more TB patient referrals, and two-third received five or fewer, the remainder each having received between six and nine TB patient referrals. However, unlike their Government counterparts, the NGO clinics did not receive any referrals from NGO clinics either within or outside the NSDP network.

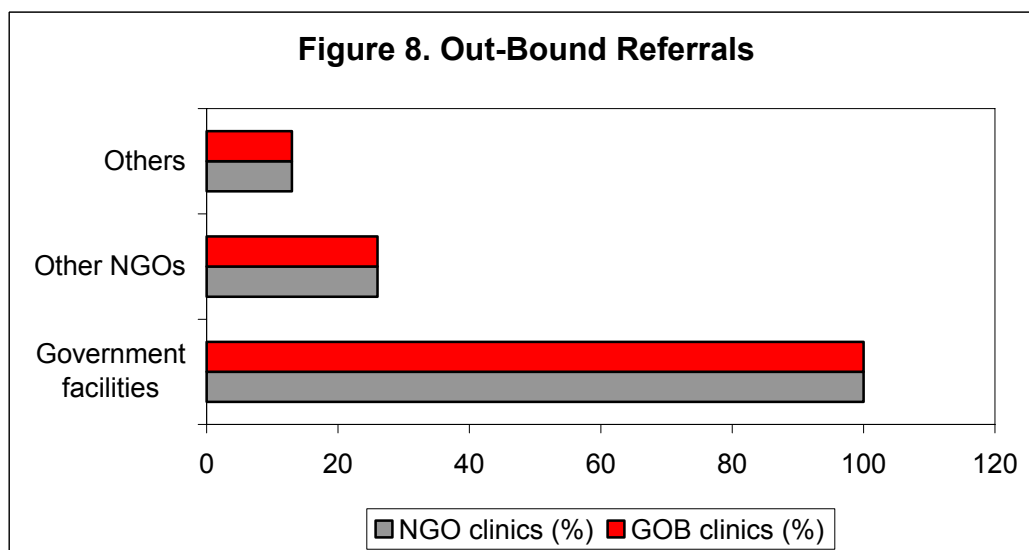
*GOB clinics:* All 10 facilities received both pulmonary and extra-pulmonary TB referrals from other health facilities in comparatively large numbers. In the quarter before our survey, the five CDCs received 1129 suspected TB cases as in-bound referrals. However, unlike their NSDP NGO counterparts, the Government facilities did not receive any referrals from “depotholders,” the NSDP cadre of village-level volunteers.



### Out-bound referrals

These also varied by the type of facility (Figure 8).

*NGO clinics:* These facilities refer the difficult-to-diagnose and complicated cases to the CDCs to confirm diagnosis of sputum-negative but X-ray-positive cases and for management.



*GOB clinics:* Between January and March 2004, the five CDCs referred out 641 cases to other health centers for registration, treatment, and follow-up. On the other hand, the five UHCs received 68 TB suspects and referred only 14 TB patients to other health centers for management of complications and as transfer-out cases.

#### ***i. Referral system***<sup>1</sup>

There is a written plan for comprehensive referral and counter-referral of TB-DOTS with other service delivery facilities, as all the centers are linked to other Government and nongovernment facilities through the referral network. Lack of funds and transport facilities for supervision, along with lack of cooperation and coordination with NGOs and the private sector, prevents full referral and counter-referral.

#### ***j. Supervision***

The assessment found little evidence of supervision of either the NGO or GOB facilities. No entity seems to be ensuring that national guidelines are implemented for the provision of care, lab and pharmacy services, and facility maintenance.

### **IV. Recommendations**

***Awareness-raising and prevention efforts:*** While there are some awareness-raising and behavior change communication efforts underway with regard to TB and its identification, most are targeted at potential or at-risk catchment populations. Some diffuse efforts are conducted within the community, like the distribution of leaflets and posters, but these activities are neither regular nor systematic. The effects of such sporadic BCC efforts are often not sustained, as attention is diverted to BCC activities related to other PHC services. Also, few community-based, preventive measures apart from the BCG vaccination are undertaken to prevent TB. NGO clinics offer household visits; GOB clinics do not.

Significant gains in both identification and cure rates cannot be achieved without blanketing all of Bangladesh with information about the risks of TB and when and how to seek diagnosis. Such information should be designed to reduce anti-TB stigma. An intense and systematic program involving all media is an important step.

While children aged 0–12 months receive BCG as part of the EPI package, children most commonly become infected between one and four years of age. GOB had neither a strategy to diagnose and treat childhood TB nor prevention efforts in the national program until late 2004, when the Third Edition of the National Guideline for TB was published (NTP 2004). Although this issue is addressed by the national guideline now, the task remains of building capacity (human and material) in this regard before an appropriate prevention and management strategy can be implemented.

***Identification of suspects:*** The lack of adequate BCC efforts targeting all categories of people is commingled with the fact that almost all case identification is by self-referral. The low case detection rate is caused mostly by TB-associated stigma, which prevents open discussion about TB and care seeking.

While a BCC campaign is being implemented and stigma reduced, GOB should strengthen referral services, especially by NGO clinics lacking sputum test ability and/or in rural areas. Case detection statistics from both GOB and NGO clinics are very low, so monitoring and supervision efforts should be strengthened until detection rates approximate prevalence rates.

In addition, the system of screening for TB should be strengthened and integrated into the overall PHC service delivery system.

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<sup>1</sup> While the term “integration” is used in Bangladesh to mean a referral and counter-referral system, this report uses “referral and counter-referral.”

**Facilities:** Laboratory facilities were unavailable in two-thirds of NGO clinics, and those having the facilities lacked external quality assurance and related quality improvement efforts. Lab staff in NGO clinics had very poor skills, while GOB staff had very high skills. This suggests that the existing system of sending NGO lab staff to the GOB labs for information exchange opportunities needs to be strengthened and made fully functional. If possible, this information exchange program should also be monitored regularly by the NGO management. Simultaneously, GOB staff could learn from NGO staff about the importance of slide cross-checking.

Since laboratory service is an integral component of a TB-DOTS program, ensuring quality laboratory services in all program clinics should be undertaken in a system-wide program; if this is not possible, special clinic-based efforts should ensure that each clinic has a close relationship with a laboratory related to the program in the area.

Only 20% of the GOB and no NGO clinics offered chest X ray, and no surveyed facilities offered Mantoux tests. Both weaknesses need to be addressed as soon as resources allow. The clinic pharmacy and drug-dispensing capacities exhibited weaknesses that should be addressed through training. Finally, because of its potential hazards, waste disposal should be nothing short of perfect: The NGO labs need improvement in this area.

**Training and staff knowledge:** Almost all the staff in the GOB facilities had the relevant knowledge. Not all staff in the NGO clinics had been trained in TB-DOTS, and all assessed NGO staff categories were deficient in their knowledge of TB-DOTS. One of the reasons for this may be that TB-related services are not part of the standard PHC services in all the clinics across the NSDP network. Even among clinics that have TB as part of their PHC package, only specific staff are trained in DOTS, and there is no system of cascading the training to the remaining staff members of the specific clinic. As a result, the DOTS services in these facilities are managed in a vertical manner.

All clinic staff working in the TB control program should be trained in TB-DOTS through basic, refresher, leadership, and on-the-job training. Various on-the-job activities, like quizzes, discussion sessions, and on-site assistance, should be implemented to keep staff up-to-date and to orient new recruits as they await institutional training.

At present, the rural NGO clinics in the NSDP network are not under the purview of the NTP, since the NTP claims to have a moderately strong rural program in place already. However, the NSDP NGOs could still serve as DOTS centers as well as diagnostic facilities, based on local level availability of these resources. Thus, personnel working in rural NGO clinics in the NSDP network should be trained in the TB-DOTS program.

**Referral and counter-referral:** Government facilities (both CDCs and UHCs) have integrated referral activities with other Government facilities, NSDP and other NGO clinics, and general practitioners. In many cases these referrals (integrations in Bangladeshi parlance) are weak, and efforts need to be strengthened to ensure appropriate referral for all patients who need it. One aspect of such strengthening relates to accountability and responsibility. Training, discussed below, along with appropriate follow-up and monitoring, is essential to ensure that healthcare providers include TB diagnosis for any non-urgently ill patients who present for PHC but may be TB suspects. Hospital staff should be trained to screen for TB in any patients who may be suspected of having TB. All treatment facilities will have to record information on TB symptomatics and follow up with them.

**Record-keeping and follow-up:** Irregularities and incompetence were identified in the recording and reporting system. Both can be addressed through training, job aids, and checklist-based supervision and tracking.

The assessment found the GOB staff's capability of maintaining records and reporting to be comparatively better. What few gaps exist could be corrected by appropriately functional supervision and monitoring systems.

**TB-DOTS:** Clearly, TB-DOTS efforts are comprehensive in the Government healthcare facilities, with screening, diagnosis, treatment, and follow-up in all the facilities assessed. However, in the urban facilities (i.e., CDCs), the service is offered in a more vertical manner than in the rural (sub-district-level) ones: In the latter TB treatment and care are provided side-by-side with maternal and child and family planning services, as well as other, curative care.

Still, a missing link in all this is the lack of community-level involvement and awareness that is necessary to overcome the stigma associated with TB and thus ensure appropriate case identification and treatment. Home visits and community- and family-based care will be necessary to reduce TB to the target levels. In addition, incentives could be offered to both patients and providers for treatment completion.

BRAC, Bangladesh, a leading NGO providing TB-DOTS in rural clinics, uses a revolving incentives system whereby both the providers and patients benefit financially from treatment completion. The patient makes a deposit of a fixed amount with the provider upon commencement of treatment, part of which is returned to the patient upon completion of the full course of treatment. NTP could consider implementing a pilot with a similar incentive mechanism and then scale it up if successful. However, a functional monitoring system would be necessary to ensure that the incentives are appropriately issued. Such a system would require transparency and community-level participation.

With renewed emphasis on domiciliary service delivery from the Government, new initiatives aimed at generating community-level involvement and greater patient-provider support need to be tested and implemented across the network. These may lead to an overall improvement in cure rates that could be sustained over time.

**Supervision:** The existing supervision system in the NSDP NGO clinics could be strengthened to increase efficiency and output. There is a moderately functional monitoring system, implemented by the NTP, at the GOB level. While the NTP also monitors DOTS in the NGO clinics, the latter need their own internal monitoring mechanism to ensure high quality of TB services.

**Facilities:** Although the assessed facilities were moderately well equipped in terms of physical infrastructure and availability of personnel, there is plenty of room for strengthening their capacity in case detection. Having a well-equipped physical infrastructure is not enough. Opportunities to improve drug delivery from the local level to the patient likely also exist: The assessment did not examine this issue, but cure rates suggest a problem in this area.

Implementation of the activities recommended above can be expected to support Bangladesh's TB service delivery goals by increasing case detection, improving cure rates, and increasing compliance with the drug regimen, resulting in fewer multiple-drug-resistant strains. Ancillary but untargeted results would logically include better diagnosis, improved healthcare, and higher cure rates for other diseases covered by the Essential Services Package; reduced stigma against victims of other illnesses, such as HIV/AIDS; and general improvements in healthcare delivery resulting from increased program efficiency, performance monitoring, and continuing education.

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