ADDIS ABABA UNIVERSITY

FACULTY OF MEDICINE

DEPARTMENT OF COMMUNITY HEALTH

ASSESSMENT OF FEASIBILITY OF IMPLEMENTING DOTS IN PRIVATE HEALTH FACILITIES IN ADDIS ABABA, ETHIOPIA

By
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A THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH FACULTY OF MEDICINE ADDIS ABABA UNIVERSITY FOR THE PARTIAL FULFILLMENT OF MASTER'S DEGREE IN PUBLIC HEALTH

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List of abbreviations and acronyms

A.A : Addis Ababa

AFB : Acid Fast Bacilli

CSA : Central Statistics Autority

DOTS: Directly Observed Treatment Short Course

ETB: Ethiopian Birr

EPTB: Extra Pulmonary Tuberculosis

GHCPs: General health care practitioners

GHWs: General health workers

FEFO: First Expired First Out

FIFO: First In First Out

FRPC: Faculty Research and Publication Committee

HBCs: High Burden Countries

HCF: Health Care Financing

HIV/AIDS Human Immuno Deficiency Virus/ (Acquired Immuno deficiencySyndrome)

HO: Health Officer

KAP: Knowledge Attitude and Practice

LCC: Long Course Chemotherapy

MAPPP: Medical Association of Physicians for Private Practice

MD: Medical Doctor

MDGs: Millennium Development Goals

MPH: Masters of Public Health

NTLP or NTP: National Tuberculosis and leprosy Control Programme

PHCPs: Private Health Care Providers

PPs: Private Practitioners

PPM: Public-private-Mix

PTB: Pulmonary Tuberculosis

SCC: Short Course Chemotherapy

SPSS: Statistical Package for Social Science

TB: Tuberculosis

WHO: World Health Organization

Abstract

Introduction: The MDG of reducing deaths from TB can be achieved, if TB control efforts approach as closely as possible the global goals for case detection of smear positive PTB (70%) and cure rate of 85% or above. Currently Ethiopia's case detection rate stands 36% since the year 2002, and unless the current efforts are intensified with innovative approaches, such as the involvement of private health care providers in the service delivery, the government with its limited resources can't reach the target set by MDG regarding TB control. Before directly embarking to the new approach, a baseline assessment of private health facilities capacity and willingness to collaborate in TB control programme is of paramount importance.

Objective: to assess feasibility of implementing DOTS in private health facilities in Addis Ababa. More specifically to assess willingness of private health facility managers, to asses staffs' knowledge, current practices in diagnosis, treatment and referral of Tuberculosis, and to assess private health facilities' institutional capacity to provide comprehensive tuberculosis prevention and control services.

Methodology: An institution based, cross sectional descriptive study was carried out from November 2005 to June 2006. Feasibility of implementing DOTS was assessed using a structured and pre tested interviewer administered questionnaire and observation checklist to collect the necessary information. A total of 96 health facilities, 96 respondents in charge of the health facilities and 162 health workers were participated in the study. Data were analyzed using SPSS version 10.1 statistical package**.** Frequency distribution and percentages were used to present findings. Stepwise aggregation of composite variables and their scores to reach to decision for feasibility were used. Feasibility status was rated as poor, fair, good, very good and excellent based on the attained composite score for the indicator variables.

Result: The composite score calculated for willingness to implement DOTS is fair (52.1), general TB knowledge is very good (73.1). Structural capacity, availability of basic laboratory materials, general TB related practice and manpower as DOTS center were good with 67.3, 63.9, 61.0, and 60.7 scores respectively, resulting the over all feasibility status good (63.0).

Conclusion: Implementation of DOTS in private health facilities is feasible, given appropriate DOTS training, technical assistance and supervision. Piloting of the project in limited areas and appropriate facilities is recommended.

1. INTRODUCTION

According to the WHO, in 2004 an estimated 8.9 million new cases of tuberculosis resulted in 1.7 million deaths, 29% of these cases and 35% of these deaths arose in Africa, home to 11% of the world's population (1). Particularly HIV related tuberculosis in sub-Saharan Africa has emerged the dominant challenge, with its size calling for a response beyond the traditional boundaries of tuberculosis control (1, 2, 3, 4).

In many low income countries, much of the population across all socioeconomic strata turns to individual or institutional private health providers (PPs). Private providers out number public health care providers in some countries and often offer better geographical access and more personalized care than the public facilities. This has led to a growing interest in understanding how PPs could be effectively involved in improving the out-reach of public health programs (3, 5).

The MDG of reducing deaths from TB can be achieved, if TB control efforts approach as closely as possible the global process targets of detecting at least 70% of smear positive TB cases and successfully treating of at least 85% of the detected cases. The current case detection and treatment success rate in Ethiopia is 36% and 70%, respectively (1), and unless the current efforts are intensified with innovative approaches, such as the involvement of private health care providers, the government with its limited resources can't reach the target set by MDG regarding TB control (5,6).

By involving private providers in managing and notifying TB patients, TB programs can particularly increase case detection, reduce diagnostic and treatment delay, with a concurrent reduction in disease transmission. By enlisting Private Providers, TB programs can enhance patient access and acceptance there by improving treatment outcomes, and also moderate the workload on the public sector (7, 8).

Many high burden countries (HBCs) especially the Asian countries have involved to the innovative approach, rapid expansion of DOTS through public private mix, and they are in the state of scaling it up. Few of the HBCs have at least started their pilot project (1, 5).

In Ethiopia, as a result of health sector reform undertaken by the government the National Health Policy and the Health Sector Strategic Plan emphasizes partnership with the private health sector as one of the means to reduce morbidity, mortality and disparities in access to health care.Cognizant of the current situation one of the strategies of the Federal Ministry of Health is commitment to involve the private sector in the control of TB and other infectious diseases. Currently, the Ethiopia's NTP has prepared a National PPM guideline and have involved representatives of private practitioners in development of National TB control policy (8).

Hence, it will be paramount importance to study the feasibility of partnership between the private and public sector (5, 6).This study will try to assess private provider's willingness, training need, institutional capacity and system of referral of TB cases. The result of this study will enable policy makers and health service planners to look for the possibility of partnership with the private sector in the expansion of TB control program.

Therefore, the significance of the study is in filling the mentioned information gap to gain context specific information in the study area to involve private practitioners in the control of TB.

2. LITERATURE REVIEW

World Health Organization (WHO) analysis of epidemiological trends suggests that the TB incidence rate is still raising globally, but prevalence and death rates are falling. Whether the burden of TB can be reduced sufficiently to reach the Millennium Development Goals (MDG) by 2015 depends on how rapidly DOTS programmes can be implemented by a diversity of health care providers, and how effectively they can be adapted to meet the challenges presented by HIV co-infection (especially in Africa) and drug resistance (especially in eastern Europe) (5).

Engaging with the private sector for DOTS is not easy, but it is well justified. Evidence shows that even strong National Tuberculosis Program (NTP) fail to attract a good proportion of TB patients. It is not just the rich; many poor TB patients also seek care from the private sector. Further a large amount of anti-TB drugs are sold on the unregulated retail private market. Irrational, unsupervised drug administration by private providers could escalate drug resistant TB. More over health sector reforms in many countries tend to promote private health care, which makes collaboration essential (5, 9).

Many studies potentiate the idea that a great proportion of patients seek care from private health facilities. In Vietnam half of all TB patients diagnosed in the NTP HCMC (Ho chi Minh City) initially sought help in the private sector. In India half of TB patients are treated privately and India's private sector alone treats a sixth of global TB cases. Fifty percent of cases in Nepal and 36 % of cases in Philippines sought consultation in private sectors. Study conducted in the Eastern part of Ethiopia also reveals that 34% of the study subjects opted for a private provider on their consultation for their current illness while 62% turned to public facilities (10, 11, 12, 13).

Among the areas of the study concern, one is the status of DOTS Knowledge among private practitioners as it is helpful in planning the training needs. From a study conducted in Cambodia, most doctors, (82%) among the studied, reported that TB

treatment requires 8 months and knew the effects of non-compliance become drug resistant (62%), relapse (53%), become seriously ill and die (14%). Pharmacists were less knowledgeable: 47% reported that TB requires 8 months treatment, 25% said 6 months and 24% said a year. Pharmacists were also less knowledgeable on the effects of non-compliance: 56% mentioned drug resistance, 49% relapse (14).

From a KAP study conducted in Bangladesh only 13% of the PPs had the knowledge about DOTS. In Pakistan around 73.3% of doctors were aware of the first line drug regimens and in Kenya 51 (77.1%) did not consider sputum microscopy crucial in patients presenting with prolonged cough or when a chest x-ray was suggestive of TB (15, 16, 17).

With regard to private providers willingness to collaborate with the public sector; a study conducted in Bangladesh shows that 65% of respondents agreed that DOTS could be introduced at their practice if appropriate training and logistics were provided. In Nepal private practitioners were happy to refer patients if they were informed of the location of centers, and once they observed that this was a long term initiative. The Nepal study shows that it took time for partnership to develop and for partners to gain confidence in each other. Once the partnership showed successful outcomes other players expressed interest in becoming involved (15, 7).

In Jijiga, all the respondents agreed that both sectors could collaborate in tuberculosis control. When it comes to possible areas of collaboration between the two sectors 53% responded that the collaboration should be in multiple areas like diagnosis and treatment of tuberculosis, patient referral, reporting and common training and workshops. While five out of thirteen respondents said that, in addition to the above mentioned areas, the private sector can also participate in designing of strategy for TB control. Two responded that collaboration should be limited to patient referral only (13).

As to DOTS Practice among PPs study from Cambodia shows that 2/3rd of doctors provide TB services and knew that DOTS involves the observation of drug intake by a

doctor or nurse, and only half (47%) said they use it for their patients. In Uganda 41% of private clinics saw three or more new TB patients per month and in Bangladesh on average each private practitioner gets 5 TB suspects per month (14, 15, 18).

A KAP study conducted in Pakistan shows that only 58.3% of physicians in the study used sputum microscopy for diagnosis and treatment of TB. Thirty five percent of the study subjects used it as a follow up test. Inconsistent diagnosis and treatment behavior, relying mainly on x-ray is common among the private practitioners. A study on the quality of health care in private clinics in Addis Ababa by Afework S. has revealed that there were various degrees of suboptimal performance in different aspects of care in private clinics with higher suboptimal performance with regard to patient treatment (16, 19).

In Vietnam most of the clinics lacks basic requirements for tuberculosis control and were unlicensed and owned by health workers who were self employed in the private sector on part time basis. Likewise a study in Jijiga, Ethiopia shows that only three of the thirteen (23%) of the clinics had the necessary reagents and facility for AFB microscopy (10, 13).

With regard to Linkages between PPs and the NTPs, studies have repeatedly demonstrated a general lack of collaboration and cooperation between the two sectors .A marked proportion of PPs in Bangladesh do not know the adjoining DOTS centers. In Kenya all the studied Private health care workers (PHCPs) referred TB suspects to the public sector for diagnosis. While in Pakistan 58.3% of the private facilities in the study were referring their patients to specialists. In Ethiopia, Jijiga poor referral between the public and private sectors were one of the reasons for delay of diagnosis and treatment initiation of TB patients (13, 15, 16, 17).

The WHO Public private Mix (PPM) DOTS sub-group reitered those countries that have yet to begin addressing the private sector related issues should at least conduct a situation analysis and, if relevant, start PPM pilot projects. Countries that have PPM-pilot

experiences should analyze existing data and begin developing a national policy and an action plan for scaling up PPM-DOTS in a phased manner (20).

All these evidences suggest that understanding the local context is considered as an essential first step to develop effective and sustainable public private mix for TB control. It is with this rationale that this particular study needs to be conducted.

3. OBJECTIVES

- **General objective**
  - To assess feasibility of implementing DOTS in private health facilities in Addis Ababa.

- **Specific objectives**
  - To assess willingness of private health facility owners to collaborate with the public sector in the control of TB.
  - To assess knowledge of staff working in private health facilities on the basics of TB prevention and control.
  - To assess current practices of private facilities on diagnosis, treatment and referral.
  - To assess structural and manpower capacity of private facilities to provide comprehensive TB prevention and control services.

4. METHODS AND MATERIALS

STUDY AREA

The study was conducted in Addis Ababa, the capital city of Ethiopia. Total population of the city projected from the 1994 census (CSA) is estimated to be 2.9 million, with population density of 5291/km2 and average household size 5.1. According to the 2004 health and health related indicators, the city had 382 private clinics (109 lower, 103 medium, 90 higher, 80 special clinics) and 17 hospitals, the second largest number next to Oromia region. The potential health service coverage by public health facilities only is 77.6% and when it includes the private facilities it is 143.7%. The city had almost 100% DOTS coverage by the public sector, with 91.2% case detection and 79.1 % treatment success rate. No private health facility provides DOTS service till this study period.

STUDY DESIGN

Institution based, cross sectional descriptive study was conducted from November 2005 to June 2006.

SOURCE AND STUDY POPULATION

All private heath facilities in Addis Ababa were the source population. Selected Private health facilities with the following criteria were the study population.

Inclusion criteria - All non-specialized private clinics and hospitals existing in the study area and registered by Addis Ababa City Administration Health Bureau.

Exclusion criteria -Special clinics and hospitals, such as dental, maternity, ENT etc., and facilities that are not registered by the regional health bureau, facilities that are newly opened (less than six months prior to the time of data collection) and clinics owned by NGOs were excluded from the study.

STUDY UNITS AND SAMPLING

Health workers, health facilities and their managers or owners constituted the study unit. One hundred non specialized private clinics and hospitals (34 lower, 32 medium, 29 higher clinics and 5 hospitals) were sampled by stratified random sampling proportionate to size from a list of 302 all level general clinics and hospitals.

SAMPLE SIZE CALCULATION

First it was calculated:

- Based on estimation of proportion from a finite population of size N.

$$n = \frac{no}{1 + (no/N)}$$

$$n = \frac{384}{1 + (384/312)}$$

n=172 (Where, no is the sample from an infinite population 384, calculated considering: p=0.5 and d=5%, and N=312

- There is no similar study which shows the proportion of private facilities that are capable of providing DOTS.
- The calculated sample size was too large and not feasible within the limits of resources available for the study. Therefore, the following rule of thumb was applied;

Sample size calculation was decided based on a suggested rule of thumb (22) in sampling health facilities for quality of care study which states:

If number of units large 500-1000, take a 10% sample. If it is medium size **100-500**, take 20-30% sample and if it is very small, <50, take 30-50% sample.

- Based on the above suggestion and considering some 3% non response rate, 100 facilities (33.1%) was decided to be included in the survey. The proportion assigned to each stratum is indicated in *Table-1*.

Table-1: Proportion of sample size in private health facilities by their level, A.A.2005/06.

Level of facility	**No of facilities**	**Sample size**	**%**
Lower clinics	104	34	33.1
Medium clinics	98	32	33.1
Higher clinics	88	29	33.1
Hospitals	12	5	41.7*
All levels	**302**	**100**	**33.1**

*Given special consideration for the lower stratum.

VARIABLES

Dependent:

- Status of feasibility to implement DOTS.

Independent:

- Type/level of facility, services available in the facility, status of the person in charge of the facility, Qualification of the respondent.
- Willingness of the private providers, Knowledge and practice of the staffs, Manpower, Institutional/structural capacity of the facilities

DATA COLLECTION

Structured questionnaire was developed after reviewing relevant literatures and using the NTP's DOTS training manuals (23, 24, 25 26, 27, 28, 29). It was repeatedly presented and commented on by senior TB experts.

INSTRUMENTS

Interviewer administered questionnaire - to assess willingness, knowledge, distribution of man power and practices.

Observation checklist – to assess the structural capacity of the health facilities (number, size, ventilation and lighting status of the rooms)

Record review – to collect information about practices on health education, recording and reporting.

DATA COLLECTION PROCEDURE

PERSONNEL

Data were collected by two registered nurses working in St. Peter Tuberculosis hospital, one health officer from the regional health bureau and one MPH student /the primary investigator/. All the team members had prior experience in conducting interview-based surveys. The enumerators were trained both theoretically and practically using a training material prepared by the principal investigator and TB experts, on how to ask permission for participation, the techniques of interview, filling the questionnaire, and on observation techniques. The training on practical session (observation technique) included familiarization of laboratory equipments in St Peter hospital laboratory, measurement of size, ventilation and lighting status of the rooms with special emphasis in decreasing inter observer variability. The instrument was pre tested for clarity and the time it took to complete in private facilities which were not included in the study, and then revised accordingly.

Selection of Respondents:

From each health facility; one facility owner, one general health worker, one laboratory and one pharmacy personnel were selected for interview. The later two were selected only when the respective services were available at the facility. In small clinics if one person is both the owner and the health provider the same person could respond for the owner and the provider sections. In facilities where there are more than one individual with the same profession the person who served longer in the facility was selected.

PROCEDURE

Though the order of data collection depends on the condition of the work load in the facility, contacting and interviewing the person in-charge of the facility was the prior site of data collection, followed by record reviewing with a person knowledgeable of the records assigned by the person in-charge and then interview with health workers. Soon after finishing the interview with the general health worker, examination treatment and waiting rooms were observed, the same to laboratory and drug stores after finishing the interview with the laboratory and pharmacy personnel respectively.

Data collected by interviewer administered questionnaires include; the characteristics of study units/subjects such as level of facility, services available in the facility, status of the person in charge of the facility, qualification of the health provider and feasibility indicator variables such as willingness of the person in charge, current knowledge and practice of the health workers and manpower status of the facility as DOTS center.

Data collected by record reviewing were information about number of; TB suspects examined, TB cases diagnosed, TB cases referred, TB health education sessions and attendees and AFB tests performed and turned positive.

The measurement made during observation of the structural capacity included:
Size of the rooms – area is estimated by measuring length and width of the room using an adult man foot step after a thorough training and exercise of estimation of the observers foot step distance with a measuring tape.

Room ventilation –was measured in terms of window/s size in relation to the floor area, for the degree of operability, position of windows to each other, presence of any resistance to air entry, presence or absence of ceiling and artificial ventilation -by observation through naked eye using observation checklist.

Room lighting – measured for window/s size in relation to the floor area, for presence of direct sunlight at least for part of the day, the presence of resistance to direct sunlight

entry, the color of the wall and ceiling (reflective ness), and presence or absence of artificial lighting -by observation through naked eye using observation checklist.

The qualitative ratings (poor, good, very good) made for the observation findings of the drug stores were based on the following:

Cleanliness: rated as ***poor*** -when any waste material observed in the floor, ***good-*** when the floor is dry mopped, ***very good*** - when the floor is wet mopped.

Shelving: rated as ***poor*** – when largest proportion of the drugs in the store were not shelved, ***good*** -when largest proportion were shelved but not arranged either pharmacotheraputically or alphabetically and ***very good*** – when largest proportion shelved and found arranged either pharmacotheraputically or alphabetically (30).

Observation of the spacing condition was entirely dependent on by subjective judgment of the observer. Spacing was rated as ***poo***r -when the observer judge marked crowding of the drugs on shelves or between the shelves (when he judge poor air movement), ***good*** - when it is some what crowded than usual/ not markedly (when he judge moderate air movement) and ***very good*** -when it is not crowded at all (when he judge there is free air movement).

DATA QUALITY CONTROL

Pre-testing of the survey instruments, training of data collectors, and checking all the questionnaires for errors, completeness and logical consistency at the end of each day, and giving prompt feedback at the spot during the data collection process were the methods employed to ensure the quality of data.

OPERATIONAL DEFINITIONS

Private: refers to private-for-profit health facilities excluding NGOs.

Feasibility: refers to the capability of private facilities to collaborate with the NTPs to provide DOTS in terms of a composite score made up of willingness, knowledge, practice & institutional capacity.

General health workers/GHWs/- refers to professionals in private health facilities who examine /take patient history, physical examination and treat or refer TB patients /suspects accordingly. These are:- medical doctors, health officers, nurses, and health assistants.

PPs -refers to all the technical staffs as well as owners (decision makers) of private health facilities.

PHCPs –refers to all technical staffs in private health facilities.

Institutional capacity: refers to the physical /structural status of the facilities to provide DOTS service. (It considers the number, size, ventilation and lighting status of the rooms).

Rooms with required number/adequate number: when the number of rooms to their facility level is greater than or equal to the Ministry of Health private health facilities licensing guide line criteria.

Rooms with required size/ adequate size: when the size of the rooms to their facility level is greater than or equal to the Ministry of Health private health facilities licensing guide line criteria.

Good lighting - lighting score greater than or equal to the average.

Good ventilation -Ventilation score greater than or equal to the average.

Optimal knowledge -Knowledge score greater than or equal to the average, determined at facility level.

Optimal practice – Practice score greater than or equal to the average, determined at facility level.

Manpower (with regard to DOTS Center):

Treatment center -facility at least with two general health workers

Diagnostic and treatment center-facility with at least - one medical officer (Medical doctor), two general health workers (without including the medical officer), and one laboratory personnel

Paramedics – Health workers other than medical doctors (physicians)

DATA ANALYSIS

Data were analyzed using SPSS version 10.1 Statistical package**.** Frequency distribution and percentages were used to present findings. Stepwise aggregation of composite variables and their scores to reach to decision for feasibility were used considering the relative importance of the dependent variables.

Classification of the overall scoring status for feasibility was done based on the following categorization of the composite scores for the indicator variables:-

Poor	<50
Fair	50-59
Good	60-69
V. good	70-79
Excellent	≥80

Composite score: - the average of the attained percentage of those different subsections of an indicator variable. N.B -As the value of the composite score increases, it indicates that the proportion of facilities with the measured/indicator variable is high in that corresponding facility level. But it is not exactly a proportion.

ETHICAL CONSIDERATION

Ethical clearance was obtained from the Faculty Research and Publication Committee (FRPC) of the Faculty of Medicine, Addis Ababa University, and from the Addis Ababa Regional Health Bureau. Full explanation about the purpose of the study was made to the persons in charge of private health facilities and the practicing health workers interviewed. The respondents were informed of their right to refuse or agree to participate in the study, or discontinue their participation whenever they feel the need. Privacy was maintained during data collection, and confidentiality of the data was assured.

5. RESULTS

Of the total 100 facilities planned to be included in the survey 96 health facilities (response rate 96%) were participated. Of these 33 (34.4%) were lower clinics, 32 (33.3%) medium clinics, 26 (27.1%) higher clinics, and 5 (5.2%) were hospitals.

Among the 96 persons in charge of the facilities, majority 59 (61.5%) were license holders, while 53 (55.2%) were owners and the rest 22 (22.9%) were managers. Of the persons in charge, 33 (34.4%) were both license holders and owners, and three respondents were license holders, owners and managers at the same time.

From the total 162 technical staff interviewed in the survey, 95 (58.6%) were general health workers, 62 (38.3%) laboratory personnel and 5 (3%) were pharmacy personnel. Majority of the respondents in charge of the facilities, 39 (40.6%), were medical doctors, followed by nurses 23 (24%) and health assistants 20 (20.8%). Medical doctors also constitute 45.8% of the owners followed by health assistants and nurses (Table 1).

Out of the total respondents 69 (71.9%) did not belong to the Medical Association of Physicians in Private Practice (MAPPP).

Laboratory services were offered by (64.6%) facilities, X-ray by 18 (18.8%), and pharmacy service was available in 6 (6.3%) of them (Table 2). Out of the 63 medium and higher level clinics expected to have laboratory facility all have the service except one medium clinic, laboratory services are optional for lower and medium clinics.

Table-2: Characteristics of the sampled private health facilities, A.A. 2005/06

Characteristics	Freq.	Percent
Type (level) of health facility		
Lower clinic	33	34.4
Medium clinic	32	33.3
Higher clinic	26	27.1
Hospital	5	5.2
Services available in the institution		
Laboratory	62	64.6
X-ray	18	18.8
Pharmacy	6	6.3
Status of interviewed person in charge		
License holder	59	61.5
Owner	53	55.2
Manager	22	22.9
Qualification of staff in health facility		
Person in charge		
Medical Doctor	39	40.6
Nurse	23	24.0
Health assistant	20	20.8
Non health worker	7	7.3
Health officer	4	4.2
Others	3	3.1
Owner		
Medical Doctor	44	45.8
Health assistant	18	18.8
Nurse	15	15.6
Non health worker	12	12.5
Health officer	4	4.2
Others	3	3.1
General health worker		
MD	52	54.2
Nurse	20	20.8
Health assistant	17	17.7
Health officer	6	6.3
Laboratory personnel		
Sen. Lab.Tech	41	66.1
Jun. Lab. Tech	20	32.3
Other	1	1.6
Pharmacy personnel		
Pharmacist	4	80.0
Senior pharmacy tech.	1	20.0

***Willingness** to participate in treatment (management) of TB patients*

Fifty nine (61.5%) of the facilities render TB diagnosis and referral service, while 37 (38.5%) of the facilities give only referral service. None of the private facilities renders TB treatment service.

Of the total facilities studied 86 (89.6%) expressed willingness to treat TB patients. Among the remaining the reasons for not willing includes shortage of extra rooms, lack of man power, absence of defaulter tracing mechanism, fear of being infected, and unavailability of TB drugs.

Ninety four (97.9%) respondents expressed the opinion that it is possible for the private and public sectors to collaborate. Seventy-five (78.1%) facilities indicated their willingness to provide space and staff for provision of TB treatment services. Areas suggested for collaboration, and the distribution of facilities willing to implement DOTS are shown in Tables 3 and 4, respectively.

Table-3: Suggested possible areas of collaboration by private health facilities, A.A 2005/06

Possible areas of collaboration	**Level of Facility**				Total (n=95)
	Lower (n=33)	Medium (n=32)	Higher (n=25)	Hospital (n=5)	
Treatment of TB	12(36.4)	29(90.6)	24(96.0)	5(100.0)	70(73.7)
Diagnosis of TB	7(21.2)	30(93.75)	24(96.0)	5(100.0)	66(69.5)
Referral of TB suspects	31(93.9)	14(43.8)	11(44.0)	3(60.0)	59(62.1)
Common training and workshop	13(39.4)	17(53.1)	17(68.0)	4(80.0)	51(53.7)
Reporting of cases	12(36.4)	10(31.3)	11(44.0)	5(100.0)	38(40.0)
Referral of cases	4(12.2)	8(25.0)	12(48.0)	4(80.0)	28(29.5)
Participation in M&E*	5(15.1)	6(18.6)	12(48.0)	4(80.0)	27(28.4)
Other	1(3.0)	1(3.1)	5(5.2)	1(1.0)	8(8.4)

M&E*: Monitoring and Evaluation

The result of each variable is displayed as it is. No sum score computation and classification

Table-4: Distribution of private health facilities by willingness to implement DOTS, A.A 2005/06

		Willing	
Type of facility	n	Freq	%
Hospitals	5	5	100.0
Higher clinics	26	16	61.5
Medium clinics	32	15	46.9
Lower clinics	33	14	42.4
All levels	96	50	52.1

Sum score computed from each construct variable and classified based on the median score

Eighty-eight (91.7%) personnel in charge of the facilities preferred the NTP to mediate the collaboration. Thirty-six (37.5%) preferred MAPPP (Medical Association of Physicians in Private Practice), and others suggested NGOs to take the task of mediating.

Knowledge of General Health Workers (GHWs)

Chronic cough, loss of weight, and night sweating were the common signs and symptoms of TB mentioned by 87 (90.6%), 82 (85.4%) and 80 (83.3%), respectively, of the GHWs. The duration of cough suggestive of TB was mentioned to be more than 2-3 weeks, by 62 (64.6%) of respondents.

Eighty-five percent of the GHWs answered that the cheapest and quickest method to diagnose TB is sputum smear microscopy, while twelve (12.5%) replied chest X-ray**.** Seventy-seven (80.2%) of GHWs agreed that it is crucial to do sputum smear examination if a patient suspected of TB has prolonged cough and chest X-ray finding suggestive of TB.

Only 9 (9.4%) knew the sputum collection time (schedule) at the time of diagnosis, '*spot-morning-spot*'. Majority of the GHWs 56 (58.3%) didn't know the time of first follow up sputum smear examination for a patient on re-treatment. Only 13 (13.5%) identified all the three treatment categories recommended by the control program which are:-

Category-I*: Short course chemotherapy for smear positive PTB (Pulmonary Tuberculosis) & seriously ill smear-negative PTB and EPTB (Extra Pulmonary tuberculosis) cases.*

Category-II: *SCC (Short course chemotherapy) for patients previously treated for more than one month with SCC or LCC (Long Course Chemotherapy) and who are still smear-positive.*

Category-III: *SCC for smear-negative PTB, EPTB and TB in children who are not seriously ill.*

Majority of the GHWs were able to list the first line anti-TB drugs even-though some drugs were mentioned more frequently than others. Majority of the GHWs 91(94.8%) agreed with the necessity of supervising TB patients during anti-TB treatment and 82 (85.4%) of GHWs knew drug resistance as one of the consequences of non-compliance.

Overall (aggregate) knowledge by level of facility:

Majority of the private facilities have relatively satisfactory aggregate (overall) knowledge about TB. The composite score of health facilities with satisfactory knowledge was highest among higher clinics 86.2%, and lowest, 48.5%, among lower clinics (Table 5).

Table-5: Facility level knowledge about TB in private health facilities, A.A. 2005/06

Satisfactory knowledge*:	n	Level of facilities				Total
		Lower n=33	Medium n=32	Higher n=26	Hospita n=5	
Laboratory diagnosis	63	**NA	26(81.2)	24(92.3)	5(100)	55(87.3)
TB drugs	63	**NA	19(59.4)	24(92.3)	5(100)	48(76.2)
Laboratory safety measures	63	**NA	24(80.0)	19(73.1)	2(40.0)	45(73.8)
TB treatment	96	15(45.5)	21(65.6)	25(92.6)	4(80.0)	65(67.7)
Clinical diagnosis	96	17(51.5)	15(46.9)	21(80.8)	5(100)	58(60.4)
Composite score		**48.5**	**66.6**	**86.2**	**84.0**	**73.1**

NA: Not applicable
Numbers in parenthesis are percents
* Satisfactory knowledge about TB is defined as *indicated in operational definition.*
**Since part of the questions about knowledge on TB drug and laboratory facilities are not presented to lower clinics, they are not included in calculation of composite score.
Sum score computed from each construct variable and classified based on the median score

Practice about TB care

Fifty nine (61.5%) of the facilities render TB diagnosis and referral service, while 37 (38.5%) of the facilities give only referral service. None of the private facilities render TB treatment service.

A flow chart for the diagnosis of TB was not available in any of the facilities studied. Similarly, a TB standard treatment manual was available in only 9 (9.4%) facilities. In 41 (42.7%) health facilities, the means used to diagnose TB, in addition to patient history and physical examination were by sputum smear microscopy followed by both sputum smear microscopy with X-ray by 20 (20.8%) and ESR at the same time by 6 (6.3%) of them.

In only 20 (20.8%) of the facilities health education is reported to be part of the routine work. However, only one facility was able to present documents regarding the number of

attendants. With regard to educational materials 5 (5.2%) facilities have TB poster, two facilities have TB flip chart, and one facility has audio visual materials. No TB brochures or pamphlets were available in any of the facilities.

Majority of the private facilities, 77 (80.2%), reported that their facility has an agreement /understanding/ with a referral site for TB diagnosis and treatment (the nearest public DOTS center). Seventy-six (79.2%) of the facilities use referral slip when they refer TB patients to another facility for diagnosis and treatment. The main purpose of referral was treatment, 81 (85.3%).

From those 63 facilities that make the diagnosis of TB, in 28 (44.4%) facilities HIV test is offered to suspected TB cases only, while in six (9.5%) of the facilities it is done to all confirmed TB patients. The rest 29 (46%) of the facilities did not offer HIV testing either to confirmed or suspected cases of TB.

Of the 62 facilities with laboratory set up 61 (94.8%) perform sputum microscopy, and in 59 (96.7%) of the facilities the common method of staining AFB was Ziehl- Nelson. For the majority of the facilities 36 (59%), the sputum collection time or schedule for AFB examination was '*morning-morning-morning'*. For 48 (78.7%) of the facilities the method of disposal of infected materials like sputum containers was by burning.

Record review

Only 37 (38.5%) of the facilities have complete and up-to-date recording, and it was possible to observe records of TB patients in 6 (6.3%) of them. General health information was available in 60 facilities, 14 facilities presented a 12-month record, and another 14 facilities presented a 3-month record. In 29 out of 60 facilities, data was obtained by counting a one month record from their registration book.

The average number of patients seen per facility per month was found to be 170 (median) with the range of 13 to 881. Number of total TB suspects seen per month in 8 private health facilities was four, with a range of 0 to 22. The median number of smear positive

and smear negative TB patients per month in private health facilities was 0 and 2 with the range of 0 to 7 and 0 to 31, respectively, in 16 health facilities. Data for extra pulmonary TB was found only in 6 health facilities, which varied from 0 to 1 per month.

The over all TB practice score in this study at facility level is 61 which means it is good. However, when it is seen from specific types of practices, majorities of the facilities were poor in; usage of standard TB manual, health education and general recording/ reporting practices where only 9 (9.4%), 23 (24%) and 38 (39.6%) of facilities have optimal practices, respectively to the above mentioned practices. On the other hand, practices like basic laboratory safety measures, sputum microscopy and laboratory recording and reporting were optimal for the majorities with the following proportion 59 (96.7%), 58 (92.1%) and 50 (82%) respectively. To all level of facilities status of TB practice is good except for lower clinics, which is poor (Table-6).

Table-6: Practices related to management of TB in private health facilities, A.A. 2005/06

****Optimal practices:**	n	**Level of facilities**				Total
		Lower n=33	Medium n=32	Higher n=26	Hospital n=5	
Basic laboratory safety measures	63	NA	30(96.8)*	25(100)*	4(80.0)	59(96.7)
Sputum microscopy	63	NA	30(93.8)	23(88.5)	5(100)	58(92.1)
Lab. recording/reporting	63	NA	22(71.0)	23(92.0)	5(100)	50(82.0)
Drug management	5	NA	NA	NA	4(80.0)	4(80.0)
Referral	96	11(33.3)	28(87.5)	25(96.2)	1(20.0)	68(70.8)
Microscopic quality	63	NA	12(38.7)	19(76.0)	2(40.0)	33(54.1)
Gen. recording/reporting	96	13(39.4)	13(40.6)	9(34.6)	3(60.0)	38(39.6)
Health education	96	8(24.2)	9(28.1)	4(15.4)	2(40.0)	23(24.0)
Usage of standard DOTS manual	96	1(3.0)	4(12.5)	3(11.5)	1(20.0)	9(9.4)
Composite score		**25**	**58.6**	**64.3**	**60**	**61**

NA: Not applicable
Numbers in parenthesis are percents
*Percentage when 'n' differs from the mentioned
** Optimal practice is defined as practice score greater than or equal to the average determined at facility level.
Sum score computed from each construct variable and classified based on the median score

Observation of laboratory facilities and services

In all the 60 health facilities which perform AFB examination, the three reagents used for Ziehel-Nelson staining (Carbol fuchsine, Acid alcohol, and Methyl-blue) were available at the time of the observation. Regarding sputum container, 54 (85.5%) of them have prepared a sputum container from reused photograph-film containers. Funnel and filter paper were available in 15 (24.6%) facilities. However, many laboratory workers said that funnel and filter paper were not regarded important since they use the already reconstituted reagents.

In 38 (62.3%) facilities laboratory request forms were submitted with complete information. Majority of the facilities (86.7%) register AFB results in a laboratory register for general use.

The median number of AFB tests done per month in private health facilities were 4 (which means on average at least 50% of the bacteriology tests ordered were AFB tests) ranging from 0 to 116 tests (zero to 43%). The median number of AFB tests that turned positive were 0, ranging from 0 to 14 tests (zero to 12.1%), where n=45 (Annex 1).

In the hospitals where pharmacy service was available, they reported that FIFO/FEFO (First in first out/First expired first out) is practiced. The drug storage condition of these facilities was observed; regarding to spacing and shelving the situation in 4 out of the 5 hospitals, and the cleanliness of all the stores were very good. In three of the five hospitals bin cards and stock cards were in use and updated regularly. In the remaining two, it was reported to be in use but could not be confirmed.

Structural capacity:

For 38 (39.6%) of the facilities, number of examination rooms were inadequate, where 87.5% of medium clinics and 38.5% of higher clinics lack adequate number of examination rooms.

Concerning the size of rooms in the facilities, 64.5 % of the laboratories, 57.9 % of the treatment rooms, and 24.2 % of the waiting rooms were less than the required size. Medium and higher clinics had most of the laboratory rooms with inadequate size. Medium, lower and higher clinics, respectively, lack 75%, 60.6% and 46.2% of treatment rooms with adequate size (Table 7& 8).

Table-7: Status of number of rooms in private health facilities , A.A. 2005/06.

Type of rooms	Facilities with required number of rooms				
	Lower n=33	Medium n=32	Higher n=26	Hospital n=5	Total n=96
Waiting	33(100)	32(100)	25(96.2)	5(100)	95(99.0)
Examination	33(100)	4(12.5)	16(61.5)	5(100)	58(60.4)
Treatment	32(97)	32(100)	25(96.2)	5(100)	94(97.9)
Composite score	**99**	**70.8**	**84.6**	**100**	**85.8**

Numbers in parenthesis are percents
Classified based on the licensing criteria

Table-8: Status of size of rooms in private health facilities, A.A. 2005/06.

Type of rooms	Facilities with required room size				
	Lower n=33	Medium n=32	Higher n=26	Hospital n=5	Total n=96
Waiting	27(81.8)	27(84.4)	14(56.0)	4(80.0)	72(75.8)
Examination	23(69.7)	28(87.5)	25(96.2)	5(100)	81(85.3)
Treatment	13(39.4)	8(25.0)	14(56.0)	5(100)	40(42.1)
Laboratory	NA	10(31.3)	8(32.0)	4(80.0)	22(35.5)
Drug store	NA	NA	NA	3(60.0)	3(60.0)
Composite score	**63.6**	**57.1**	**60.1**	**84.0**	**59.7**

NA: Not applicable
Numbers in parenthesis are percents
Classified based on the licensing criteria

Proportion of facilities with good ventilation status ranges from 53 (55%) for examination rooms to 62 (64.6%) for waiting rooms out of the total. There is marked ventilation problem in lower clinics examination and treatment rooms, in that it is only

33.3% of the examination rooms and 48.5% of the treatment rooms were with good ventilation status. Poor lighting status was observed in 45 (46.9%) of the treatment rooms, 27 (43.5%) of laboratories, and 35 (36.5%) of waiting rooms (Table 9 & 10).

Table-9: Status of ventilation of rooms in private health facilities, A.A. 2005/06.

Type of rooms	Facilities with good ventilation				
	Lower n=33	Medium n=32	Higher n=26	Hospital n=5	Total n=96
Waiting	18(54.5)	19(59.4)	20(79.6)	5(100)	62(64.6)
Examination	11(33.3)	18(56.3)	21(80.8)	3(60.0)	53(55.2)
Treatment	16(48.5)	23(71.9)	15(57.7)	2(40.0)	56(58.3)
Laboratory	NA	16(51.6)	14(53.3)	5(100)	35(55.6)
Drug store	NA	NA	NA	3(60.0)	3(60.0)
Composite score	**45.4**	**59.8**	**67.9**	**72**	**58.7**

NA: Not applicable
Numbers in parenthesis are percents
Sum score computed from each construct variable and classified based on the median

Table-10: Status of lighting of the rooms in private health facilities, A.A. 2005/06.

Type of rooms	Facilities with good lighting				
	Lower n=33	Medium n=32	Higher n=26	Hospital n=5	Total n=96
Waiting	17(51.5)	21(65.6)	18(69.2)	5(100)	61(63.5)
Examination	19(57.6)	28(87.5)	22(84.6)	1(20.0)	70(72.9)
Treatment	16(48.5)	20(62.5)	14(53.8)	1(20.0)	51(53.1)
Laboratory	NA	19(61.3)	13(52.0)	3(60.0)	35(55.6)
Drug store	NA	NA	NA	4(80.0)	4(80.0)
Composite score	**52.5**	**69.2**	**64.9**	**56**	**65**

NA: Not applicable
Numbers in parenthesis are percents
Sum score computed from each construct variable and classified based on the median

The overall structural capacity observed in the study is rated good (composite score 67.3) (to all facilities and for the all observed entities). (Table-11).

Table-11: Aggregated Institutional capacity score by level of facilities, A.A. 2005/06.

Composite score for	Level of Facilities				
	Lower n=33	Medium n=32	Higher n=26	Hospital n=5	Total n=96
Number of rooms	**99.0**	**70.8**	**84.6**	**100.0**	**85.8**
Size of rooms	**63.6**	**57.1**	**60.1**	**84.0**	**59.7**
Ventilation	**45.4**	**59.8**	**67.9**	**72.0**	**58.7**
Lighting	**52.5**	**69.2**	**64.9**	**56.0**	**65.0**
Aggregated institutional capacity composite score	**65.1**	**64.2**	**69.4**	**78.0**	**67.3**

Majority (63.9%) of the facilities with laboratory setup have basic laboratory materials for sputum microscopy. (Table-12)

Table-12: Availability of laboratory materials needed for TB microscopic examination in private health facilities, A.A, 2005/06.
/Sum score computed and classified based on the median/

Type of facilities	**n**	Facilities with standard laboratory materials for sputum microscopy.	
		Freq	%
Medium	31	22	71.0
Higher	25	13	52.0
Hospital	5	4	80.0
Total	61	39	63.9

Description of the materials observed is found in annex-2

Man Power:

Seventeen (27.9%) private facilities with laboratory set-up have laboratory staff that had on the job training on AFB. Eighty-one (86.2%) interviewed general health workers, 46 (74.2%) laboratory personnel, and all the pharmacy personnel have no in-service or pre-service training related to TB within the past three years.

As to the man power capacity for DOTS center it is indicated in Table-12 that 16 (16.7%) of the facilities were capable of being a diagnostic and treatment center and 67 (69.8%) treatment center (Table-13).

Table-13: Private health facilities with required man-power to function as DOTS center, A.A 2005/06.
/Classified based on the criteria used to the public sector, experts opinion/

Facilities with required man-power	Level of facility				
	Lower n=33	Medium n=32	Higher n=26	Hospital n=5	Total
Diagnostic and treatment center	NA	NA*	11 (42.3)	5(100)	16(51.6)
Treatment center	24(72.7)	14(43.8)	24(92.3)	5(100)	67(69.8)
Composite score	**72.7**	**43.8**	**67.3**	**100**	**60.7**

NA: Not applicable
Numbers in parenthesis are percents
*Since lab facility is optional for medium clinics

Overall feasibility status of the health facilities to implement DOTS:

Overall feasibility status score (to the 4 indicator variables and to all level of health facilities), is good (63.4). Lower clinics had poor (45.3), medium clinics fair (59), higher clinics very good (70.4) and hospitals had excellent feasibility status (80.5) (Table-14).With status of feasibility (rating) for the indicator variables as follows:

-General TB knowledge	Very good	(73.1)
-Structural capacity	Good	(67.3)
-Laboratory materials	"	(63.9)
-General TB related practice	"	(61.0)
-Manpower as DOTS center	"	(60.7)
-Willingness to implement DOTS	Fair	(52.1)

Table-14: Status of feasibility of DOTS by level of facility in private health institutions, A.A 2005/06

Indicators	Level of facilities with their composite scores				
	Lower c.	Medium c.	Higher c.	Hospital	Total
Willingness to implement DOTS	42.4	46.9	61.5	100	52.1
Knowledge	48.5	66.6	86.2	84	73.1
Practice	25	58.6	64.3	60	61.0
Structural capacity	65.1	64.2	69.4	78	67.3
Overall composite score (4Is)	**45.3**	**59.0**	**70.4**	**80.5**	**63.4**
Manpower	72.7	43.8	67.3	100	60.7
Laboratory materials	NA	71	52	80	63.9
Overall composite score (6Is)	**50.7**	**58.5**	**66.8**	**83.7**	**63**

4Is =Out of the 4 indicator variables (i.e. Willingness, Knowledge, Practice and Institutional capacity)
6Is=Out of the 6 indicator variables (i.e. All including manpower and laboratory materials)

6. DISCUSSION

Willingness

Results of this study indicate that private health providers are willing to collaborate with the public sector in the control of TB in general. Proportion of facilities willing to implement DOTS strategy increased as the level of facilities increased; where majority of lower clinics agree to identify TB suspects, medium and higher clinics to diagnose and treat, and hospitals to diagnose, treat and supervise treatment.

However, with regard to areas of collaboration willingness to implement DOTS, seen from (willingness to supervise treatment, retrieve defaulters, to notify cases and participation in training and monitoring) found lesser than treatment of Tb, diagnosis of TB and referral of suspects, where these areas were the first top three areas of collaboration suggested. The difference in the areas of collaboration by different level of facilities could partly be attributed to the difference in knowledge and institutional capacity (physical structure).

The pre-conditions set by the respondents for collaboration to occur were, training of health workers by 80 (80.3%), provision of drugs 70 (72.9%) and strong referral linkage by 50 (52.1%). This study agrees with earlier studies (7,14, 15) in that a great proportion of private facilities were willing to collaborate if appropriate training, logistics and strong referral linkages were available.

Knowledge

The study revealed that facility level knowledge (The combined Knowledge status of the three types of technical staffs; the GHW, laboratory and pharmacy personnel interviewed in their specific level of health facility they work, represents that specific facility level TB knowledge.

Majority of the facilities have relatively satisfactory facility level Tb knowledge. The composite score (i.e. the score which condense different areas of TB knowledge scores in

to one) was highest among higher clinics 86.2, and lowest 48.5 among lower clinics and 73.1 for all level of facilities.

Proportion of facilities with relatively satisfactory Knowledge on laboratory diagnosis was found better (87.3 %) than other knowledge areas assessed, and proportion of facilities with satisfactory knowledge on clinical diagnosis was the least (60.4%).
The reason for such difference is unclear but it may be due to the presence of laboratory staffs that got DOTS training while they are working in the public sector and the longer service year of the GHWs lacking in-service or pre-service training about DOTS.

While majority of the private health workers have general TB knowledge such as the suspect sign and symptoms of tuberculosis, the classification of TB and consequences of poor treatment adherence, their knowledge on DOTS was little. Only 9.4% of the GHWs knew the sputum collection time (schedule) at the time of diagnosis. Majority of them 58.3% didn't know the time of first follow up sputum smear examination for a re-treatment case and only 13.5% identified the treatment categories recommended by the control programme. The revealed TB-DOTS knowledge gap may be because majority of the GHWs (84.4 %) have no in-service or pre-service training about DOTS and partly it is also due to the inaccessibility of DOTS training that is usually given by the NTLP to public health care providers. Over and above the absence of formal TB treatment service in private health facilities may be the reason.

It is promising that 77(80.2%) of the general health workers and 53(86.9%) of the laboratory personnel knew and have the attitude that it is crucial to do sputum examination for a patient with prolonged cough and chest X-ray finding suggestive of tuberculosis. This finding differs from the Kenya's finding, where majority 51(77.1%) of the respondents did not consider sputum examination crucial for such patients. This might be due to the difference in qualification of respondents, where almost all (96%) of the Kenya's respondents were paramedics (they were diploma holders in clinical medicine, nurses and nurse aides), while in this study 59.4 percent were paramedics

(nurses, health assistants, laboratory personnel, pharmacy personnel and health officers) (17).

Majority of GHWs 82 (85.4%) knew drug resistance as one of the effects of non-compliance. This finding has similarity with Cambodia where majority 62% of doctors indicated drug resistance (14).

Practice

Facility level TB practice

The composite score was 61(good) to all levels of facilities, where highest score was among higher clinics 64.3(good), and lowest 25(poor) among lower clinics.

The relatively optimal TB practice on usage of standard DOTS manual, health education and general recording and reporting were the three areas of practices found with poor practice status. On the other hand, practices on basic laboratory safety measures, sputum microscopy and laboratory recording and reporting were the top three areas with a relatively excellent practice status at a facility level. The reason why practices on laboratory diagnosis area were better than the others is unclear, but it may be due to that, it is the key area of making money where there is special emphasis in monitoring the work done.

Majority of the facilities 77 (80.2%) in this study reported that their facility has an agreement/understanding with referral site, the nearest public DOTS center, for TB diagnosis and treatment and 76 (79.2%) of the facilities use referral slip when referring TB suspects/patients. This study differs from a study conducted in Bangladesh which showed that a marked proportion of private providers do not know the adjoining DOTS center. It coincides with the Kenya's finding where all the PHCPs referred TB suspects to the public sector for diagnosis. Study conducted in the eastern part of Ethiopia showed that one of the reasons for delay in diagnosis of TB patients was poor referral between the private and public sectors. In these regard different countries have exhibited different experience, in Pakistan 58.3% of the private providers were referring their patients to specialists (13,15 ,16,17).

It is promising that 61 (94.8%) facilities with laboratory set-up used to perform sputum microscopic examination and for 59 (96.7%) the familiar method of staining AFB is Ziehel-Nelson method. The finding of this study with regard to laboratory equipments and reagents availability is in contrast with the Jijiga's and Vietnam's finding, in that, majorities, 63.9%, facilities with laboratory setup have basic laboratory materials for sputum microscopy and all the facilities rendering AFB examination have all the three reagents; Methyline blue, carbon fuchsin and Acid alcohol. Whereas study done in the eastern part of Ethiopia, Jijiga, showed that only three of the thirteen facilities, 23%, had the necessary facility and reagents for AFB microscopy (10, 13, 31)

For vast majority of the facilities their method of disposal of infected used materials like sputum containers is by burning. In almost all facilities incinerator was observed, and majorities reported that it is part of the requirement that they usually asked before getting their license.

No facility is found to use a flow chart for diagnosis of TB. Only in 9 (9.4%) facilities a TB standard manual is observed, this finding coincides with the Uganda's and Somalia's finding where only 24% of all clinics adhered to WHO recommended guidelines in Uganda, and in Somalia TB patients were treated in the private sector but few doctors follow national treatment guideline (18,32).

The absence of health education materials and activity as part of routine work reflects the palpable fact that private for profit health provider's primary focus - making profit for the service they deliver to the sick patients, has great influence on such concern. It also reflects the absence of communication between the two sectors and weak social mobilization work with the NTP side.

A properly organized management information system is a useful tool for programme planning, monitoring and evaluation. In this regard majority of the observed private health facilities in this study were poor in recording and reporting of their health service

information. A few facilities have data recorded, however, the majorities do not compile some of the data recorded and in few of them where compiling is observed, the report is not complete and up-to-date. Most of the facility in charges reported that no concerned body asks their report on timely basis. It was easy to understand that there is lack of strong system in the area. There was also a difference in the recording and reporting formats between facilities which is a call for standardization. This issue may not be a great problem for the future in implementing DOTS in private health facilities because this is one of the strongest areas of the national tuberculosis control programme.

Structural capacity

The finding of this study showed that poor ventilation and inadequate size of rooms were problems in the majority of the facilities, almost half of all types of the rooms including the waiting area particularly examination and laboratory rooms with regard to ventilation, and laboratory and treatment rooms with regard to size have the problem. Higher proportion of poor ventilation status was observed in lower clinics. This could be attributed to the initial purpose of their design and construction in that almost all private health facilities observed were previously residential houses and later used as a health facility.

Based on the Ministry of Health guideline set for private health facilities licensing criteria, the number of rooms was found better than any other structural capacity. But for medium clinics it was found much lower than all other level of health facilities, in that only 12.5% of them have the required number of examination rooms. This could be due to the licensing criteria in that the number of rooms expected from medium clinics was almost the same to the higher clinics.

Except for treatment rooms, lighting status of the rooms in this study was good in general.

Man power

As to the man power capacity for DOTS center 16 (16.7%) of the facilities were capable of being a diagnostic and treatment center and 67 (69.8%) a treatment center. And 28%

of the private facilities with laboratory set-up were found having at least one laboratory staff that had on the job training on AFB examination. This is an indication for utilizing the untapped resources which is the main objective of the partnership. On the other hand 86% of the interviewed GHWs and 74% of the laboratory personnel and all the pharmacy personnel have no in-service or pre- service training related to TB within the past three years, an indication to the necessity of training need.

Overall feasibility status of the health facilities to implement DOTs is good in general, with poor, fair, good and best status to lower medium, higher clinics and hospitals. Status of feasibility of the indicator variables was good to all, except the general TB knowledge which was very good.

STRENGTHS AND LIMITATIONS OF THE STUDY

Strengths

This study is the first of its kind in the study area and has operational and public health relevance. The study shows knowledge and practice of health professionals at facility level. For the sake of operational use of this study over all feasibility of PPM-DOTS is shown /calculated as a summary value of all indicators.

To avoid a social desirability bias and avoid effect of interpretation difference to the willingness indicator variable ('willingness to implement DOTS'), the scoring is computed from different variables; Willingness to supervise treatment, to retrieve defaulters, to notify cases and to participate in training and monitoring. Usage of the median value while classifying the findings during the scoring has avoided the influence of extreme values not to result in misclassification.

The study has combined different observation criteria that are applicable to the local context in observing ventilation and lighting status of the rooms.

Limitations

Despite maximum effort, as in any observation method of data collection, inter-observer bias is inevitable. The fact that the study lacks a qualitative aspect for further inquiry on the attitude of private facility owners and the non inclusion of users for their opinion about PPM were the major limitations of the study. The non inclusion of public health facilities for comparison purpose is also regarded as the other limitation of the study.

7. CONCLUSIONS

1. Private health providers have high willingness to diagnose and treat TB patients and to collaborate with the public sector in the control of TB. But willingness to implement DOTS (supervising treatment, retrieving defaulters, case notification, training, and monitoring) is not as high as for the treatment and collaboration.

2. Compared with the other countries, Knowledge of the health workers in this study revealed that they have better knowledge on TB diagnosis and treatment but their knowledge on the internationally used treatment strategy (DOTS) is inadequate. Very good proportions of facilities have relatively satisfactory TB knowledge as a facility. The proportion was highest among higher clinics, and lowest among lower clinics.

3. In private health facilities, generally there is poor recording and reporting practice, particularly the general recording and reporting (laboratory recording and reporting was relatively better than the general). Routine health education service and health education materials are not available and there is no usage of standard DOTS manual and Tb diagnosis flow chart in the private health facilities.

4. The awareness of the nearest referral site and the usage of referral slip, usage of Ziehel-Nelson method for AFB staining, and their method of disposal of infected used materials by almost all the facilities were the favorable practices in the study.

5. There are basic laboratory materials for AFB microscopic examination in most of the facilities. But the status of microscope slide they use and the registration of AFB results in a laboratory register for general use has to be the focus for improvement.

6. There is inadequate ventilation almost to all kinds of the rooms and problem of inadequate size of rooms particularly to laboratory and treatment rooms. Lower clinics share the higher proportion of poor ventilation status. Whereas, number of rooms required and lighting status were found better to the majorities.

7. Many facilities (more than half) have a man power capacity to be used as a Tb treatment center, but as a diagnostic and treatment center only few facilities from higher clinics and all the hospitals found capable.

8. In light of the need to TB/HIV collaboration for the control of both diseases in populations with high HIV prevalence, the finding in this study with regard to provider initiated HIV counseling and testing needs further effort on the area.

9. In general implementation of DOTS in private health facilities is feasible in A.A.

8. RECOMMENDATION

Since the extent of willingness varies in accordance with the areas of collaboration continuous and frequent discussions between the two sectors must be made to deal on different areas that make the collaboration true, effective and sustainable (Conducting active dialogue before and throughout the project by establishing coordination structures and mechanisms to all stakeholders).

Awareness creation on the area to all stakeholders is mandatory , such as, in terms of creating an opportunity to private health workers to get basic and refresher DOTS training. The need for strong social mobilization work, to the NTCP side so that health education materials will be accessed to the private providers. Public health providers will be aware and convinced of this new theme so that they do their best for successful implementation.

The existence of poor recording and reporting practice requires a strong system/mechanism that can assure standardized record of health data and complete and timely report with the provision of standard formats, due technical assistance and supportive supervision from the NTP side to build capacity.

PPM-DOTS strategies must be adapted and implemented by the NTP to involve the public sector health care providers (Advocacy work has to be done), to strengthen and formalize the referral linkage, to build trust between the two sectors, and to make the collaboration in general effective.

Piloting the project in limited areas and appropriate level of facilities; paying consideration to the structural and manpower capacity of the facilities particularly to the ventilation status and size of the rooms.

Conducting operational research for the feasibility of implementation of integrated TB/HIV care in the private health sector is recommended.

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Annex 1: Median number of laboratory tests done per month in private health facilities by the year 2005, A.A. 2005/06. (n=37)

Laboratory tests:	Median	Range	
		Min	Max
Hematology	117	1	2143
Urinalysis	108	17	429
Parasitology	94	20	438
Serology	75	0	917
Bacteriology	8	0	267
Total	423	88	4009

*Multiple modes present, the least displayed.

The median number of bacteriology test from the total laboratory tests was 8, which is 1.9% ranging from 0 to 267 tests, that is ranging from zero to 6.7% where n=37.

Annex 2: Laboratory materials observed:

Microscope
Slides
Slide boxes
Sputum containers
Diamond pencil
Sticks or loop
Filter paper
Staining rack
Sprit lamp
Fuel for sprit lamp
Lens tissue
Water supply
Balance
Cotton
Forceps
Labeling material for sputum container
Wooden rack for drying
Funnel

Annex 3: Scoring

[NB. The scoring shown on two ways are for the questions of multiple response types and those shown in one way only were for the questions of only one response type, for the later case the score for the correct answer is shown in the scoring, i.e. score one and above.

Ser.no	New Variable	Source Variable, (Question presented for)	Score
1	**Knowledge on clinical diagnosis**	The suspect sign and symptoms of TB, (General health worker) ✓ Cough > 2-3 weeks duration ✓ Haemoptysis ✓ Weight loss ✓ Night sweats ✓ Tiredness ✓ Chest pain ✓ Low grade fever ✓ Poor appetite	Yes no 3 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0
2	**Knowledge on laboratory diagnosis**	The cheapest and quickest method to diagnose pulm.TB.(GHW, lab. personnel) ✓ Sputum smear microscopy No. of sputum specimens required to diagnose Pulm.TB.(GHW, Lab personnel) ✓ Three Cruciality of sputum examination for a TB suspect with prolonged cough and chest x-ray suggestive of TB.(GHW, Lab personnel) ✓ Yes Reasons for AFB examination.(GHW, Lab personnel) ✓ For Dx ✓ For follow up Sputum collection time (schedule) at the time of diagnosis.(GHW, Lab personnel) ✓ Spot morning spot	Yes 1 1 1 Yes no 1 0 1 0 1
3	**Knowledge on TB treatment**	The time when a new smear positive pulmonary Tb. patient have a first follow up sputum examination.(GHW) ✓ At the end of the 2nd month The time when a re-treatment patient have a first follow up sputum examination.(GHW)	1 1

		✓ At the end of the 3rd month Classification of TB recommended by the control programme.(GHW) ✓ Smear positive pulm.Tb ✓ Smear negative pulm.Tb ✓ Extra pulm. Tb. Number of treatment categories recommended by the control programme. .(GHW) ✓ Three	 Yes no 1 0 1 0 1 0 1
4	**Knowledge on TB drugs**	Anti Tb drugs used in DOTS you know (GHW, Pharm.personnel) ✓ H ✓ R ✓ Z ✓ E ✓ S Consequences of poor treatment adherence. (GHW, Pharm.personnel) ✓ Emergence of drug resistance ✓ Relapse of the disease ✓ Deteriorating health and death ✓ Increased risk of TB transmission Reagents used in Ziehl-Nelson staining (Lab.personnel) ✓ Carbol fuchsin ✓ Methyl blue ✓ Acid alcohol Necessity of supervision of Tb patients when they are in anti-Tb treatment. (Pharm.personnel) ✓ Strongly agree ✓ Agree	 Yes no 1 0 1 0 1 0 1 0 1 0 Yes no 1 0 1 0 1 0 1 0 1 0 1 0 1 0 2 1
5	**Knowledge on safety measures**	Appropriate site for sputum production by patients (Lab.personnel)	

		✓ lab ✓ latrine ✓ waiting room ✓ open air The position of the technician in relation to the window when smearing sputum specimen. (Lab.personnel) ✓ Standing by the side	Yes no 0 1 1 0 0 1 1 0 1
6	**Usage of standard DOTS manual and flow chart diagnosis of TB.**	Using flow chart for the diagnosis of TB. ✓ Yes, observed Presence of standard treatment manual (the NTP) in the facility. ✓ Yes, observed	 1 1
7	**Practice on sputum microscopy**	Sputum examination is performed in the facility (Lab.personnel) ✓ Yes Sputum collection time (schedule) at the time of diagnosis.(Lab personnel) ✓ Spot morning spot Their familiar method of staining AFB. (Lab.personnel) ✓ Ziehl Nelson	 1 1 Yes no 1 0
8	**Practice on safety measures**	Where do patients produce sputa (Lab.personnel) ✓ lab ✓ latrine ✓ waiting room ✓ open air How they used to dispose infected used materials, like sputum containers (Lab.personnel) ✓ By burning ✓ By burning after boiling ✓ By burning after disinfecting	 Yes no 0 1 1 0 0 1 1 0 Yes seen 1 1 1
9	**Practice on microscopic**	Microscope slide used for AFB examination (Lab.personnel)	

	quality	✓ Always new	1
10	**Practice on H.E**	Health education part of the routine work in the facility.(GHW) ✓ Yes Presence of Health education document. (GHW) ✓ Yes observed Presence of educational materials on Tb. (GHW) ✓ Flip chart ✓ Brochure/pamphlet ✓ Poster ✓ Audiovisual	1 1 Yes seen 1 1 1 1
11	**Practice on drug management**	FEFO/FIFO practiced (Pharm.personnel, Store) ✓ Yes Storage condition(Pharm.personnel, Store) ✓ Space ✓ Shelving ✓ Cleanliness Bin/stock card used for drugs (Pharm.personnel, Store) ✓ Bin card ✓ Stock card Bin/stock cards updated regularly (Pharm.personnel, Store) ✓ Yes seen	1 G V.g 1 2 1 2 1 2 Yes seen 1 1 1
12	**1-Practice on recording and reporting (General)**	Presence of report of all patients (Personnel in charge or other appropriate person) ✓ Yes, observed complete and up to date Presence of report of TB patients (Personnel in charge or other appropriate person) ✓ Yes seen	1 1

	2-Practice on recording and reporting (laboratory)	Lab. requests are submitted with complete information (Lab.personnel) ✓ Observed complete AFB results recorded in: (Lab.) ✓ Lab register specific for AFB ✓ Lab register for general use Laboratory register for AFB is complete and legible (Lab.) ✓ Observed complete Laboratory results are sent back to the OPD within 2 working days (Lab.personnel) ✓ Yes	1 2 1 1 1
13	**Practice on referral**	Having understanding with the nearest referral site for Tb diagnosis and treatment. ✓ 1.Yes Usage of referral slip. ✓ 1.Yes, referral slip observed	1 1
	Willingness to implement DOTS strategy	To collaborate with the public sector in the control of TB. ✓ Yes To collaborate with the following roles: ✓ Supervising treatment ✓ Retrieve defaulters ✓ Case notification ✓ Training ✓ Monitoring To provide space and staff ✓ Strongly agree ✓ Agree To provide sputum slides for external quality assurance ✓ Yes	1 YesNo 1 0 1 0 1 0 1 0 1 0 1 1 1

Annex-4: The standard used to measure the number and size of rooms observed.

(Based on the Ministry of Health, Federal Democratic Republic of Ethiopia Ministry of Health Licensing of Private Clinics Second Amended Directive, MOH August 2002.)

No of rooms	Type of facility			
	Small c.	**Medium c.**	**Higher c.**	**Hospital**
Waiting room	1	1	1	Prepared space
Examination	1	2	2	3
Treatment	1	1-2	1-2	3
Laboratory		1	1	1
Store				1

Size of rooms (m2)	Type of facility			
	Small c.	**Medium c.**	**Higher c.**	**Hospital**
Waiting room	10-20	15-20	25-45	Prep space
Examination	9-12	9-15	9-15	11.2
Treatment	9-15	10-20	10-20	9.8
Laboratory		12-15	15-15	11.2
Store				30

Annex-5: Questionnaire to conduct assessment of TB care in Private Health Facilities, Addis Ababa.

Introduction to the Interviewer

[At each of your visits, Please greet and make respondent at ease. Ensure as much privacy of the respondent as possible. You can use a separate room or a quite place the respondent prefers. Then, notify to the respondent that this study is being carried on in the city, with the objective to make an assessment of Private Health Facilities capacity to be involved in TB care. Read all the information in the informed consent.

After you discussed the necessary information and obtained his/her full consent, continue to complete the questionnaire. If the candidate refuses to participate in the study despite adequate discussion and explanation, or the respondent is not available in three visits, fill your reason on your visit (response) status checklist format and go to the next facility.

For each question, make a circle around the number that corresponds to the answer, fill the blanks with the answers, or put a figure (number) as appropriate. Carefully read and follow the instructions indicated in each part and for each questions, observations and record review**.]**

N:B Notes in square brackets [ ] are for use by the interviewer only.

Informed consent

"Good day. My name is _____. I am here on behalf of the *AAUMF, Department of community Health and the NTP* [Show a letter of permission written from the A.A. Regional Health Bureau]. We are conducting assessment of TB care in general private health facilities. We are visiting hospitals and clinics throughout the *capital city*, Addis Ababa and your facility is one among the randomly selected health facilities to be included in the survey.

The purpose of this study is to make an assessment of private health facilities capacity to be involved in TB care (Feasibility of Public-Private-Mix DOTS). *Public- Private- Mix DOTS is one of the strategies for the rapid expansion of TB care.* The questions are designed to assess the willingness of the private health facility owners or managers, the knowledge and practice of the health providers and the institutional capacity as well as the existence of functioning referral system. The outcome of the study will help to determine feasibility of Public-Private Mix and pre conditions for the partnership.

We would like to assure you confidentiality of the data collected. We will not be referring to individual facilities in our report, but rather are looking at the overall picture for all facilities of the same type. The data collected won't be used for purposes other than what I mentioned now. I expect the interview will take about 20-25minutes with you 15-20 minutes with the general health worker, about 30 minutes with laboratory personnel and around 10 minutes with a pharmacy personnel (the later two if the service available) . Your honest and genuine participation is highly appreciable and very important to attain the study objective.

The information you provide us is extremely important and valuable, as it will help the NTP and the private health facilities in understanding areas and ways of collaboration for the rapid expansion of TB care. However you and your staff have all the right not to answer to the interview. Refusal to participate or to answer any specific question will have no effect on benefits or services of the facility and interviewees.

Do you have any questions thus far?
May I proceed? 1. Yes , 2. No, Thank you any way. Have a nice day.

Section-I Institutional Profile

[This section is preferably filled in by interviewing the **owner/license-holder/manager]**

Name of the health facility_____
Sub city _____ Kebele_____ **QRE Code no** _____
Name of interviewer _____
Date of interview _____

No.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	Status of the respondent [Multiple response possible]	1. License holder 2. Owner 3. Manager 4. Other	
102	What is the qualification of the respondent?	1. Medical Doctor 2. Health officer 3. Nurse 4. Health assistant 5. Non health worker 6. Other (specify)_____	
103	If the respondent is not the owner, what is the qualification of the owner?	1. Medical Doctor 2. Health officer 3. Nurse 4. Health assistant 5. Non health worker 6. Other (specify)_____	
104	Do you belong to the Medical Association of Private Service Providers (MAPPP)?	1.Yes 2. No	
105	Type of the health facility	1.Small clinic 2.Medium clinic 3.Higher clinic 4.Hospital	
106	Year of establishment of the facility [Ethiop. Calendar]	_____E. C.	
107	Does this facility have the following?		
107.1	Pharmacy	1.Yes 2.No	
107.2	Laboratory	1.Yes 2.No	
107.3	X-ray	1.Yes 2.No	

108	Human resource at the facility:	Total No. Full timers Part timers	
108.1	Specialist, Lung	_____ _____ _____	
108.2	Internist	_____ _____ _____	
108.3	General practitioner	_____ _____ _____	
108.4	Health officer	_____ _____ _____	
108.5	Senior clinical nurse	_____ _____ _____	
108.6	Senior public health nurse	_____ _____ _____	
108.7	Junior clinical nurse	_____ _____ _____	
108.8	Junior public health nurse	_____ _____ _____	
108.9	Health assistant	_____ _____ _____	
108.10	Lab technician: Senior____	_____ _____ _____	
108.11	Junior____	_____ _____ _____	
108.12	Pharmacist	_____ _____ _____	
108.13	Pharmacy tech: Senior____	_____ _____ _____	
108.14	Junior____	_____ _____ _____	
108.15	Druggist_____	_____ _____ _____	
108.16	X-ray technician	_____ _____ _____	
108.17	Env.Health worker: Diploma	_____ _____ _____	
108.18	BSc	_____ _____ _____	
108.19	Support staff	_____ _____ _____	
109	On average how long do health workers stay in the facility?	_____month(s)	
110	Is there contractual agreement between the health workers and the facility?	1. Yes 2. No	

Now I will have some questions related to issues of willingness to collaborate with the public sector in TB control.

111	What services are given for TB suspects in your health facility?	1. Referral only 2. Diagnosis only 3. Diagnosis and referral 4. Diagnosis , treatment and referral 5. Other (specify)_____ _____	
112	If no treatment service, do you want to treat TB patients in your health facility?	1. Yes ----------► 2. No	114
113	Please would you tell me the reason why you do not want to treat TB patients in your health facility?	1.Drugs not available to private service providers 2.Fear of being infected 3.Service not attractive (in monetary	

	[Multiple response possible]	terms) 4.Absence of defaulter tracing mechanism 5. Other (specify)_____ _____	
114	Is it possible for the private and government sectors to collaborate in tuberculosis control?	1.Yes 2. No ----------► 3. Other(specify)_____	117
115	What possible areas of collaboration (partnership) do you suggest? [You can read the list] [Multiple response possible]	Collaboration in: 1. Referral of suspects 2. Diagnosis of TB 3. Treatment of TB 4. Referral of cases 5. Reporting of cases 6. Common training and workshops 7. Participation in monitoring and evaluation of TB control 8. Other (specify)_____ _____ _____	
116	Which role do you like to be involved in? [You can read the list] [Multiple response possible]	1. Identify TB suspects 2. Sputum microscopy 3. Making diagnosis 4. Prescribing treatment 5. Supervising treatment 6. Retrieve defaulters 7. Case notification 8. Training 9. Monitoring 10. Other (specify)_____	
117	Are you willing to implement the DOTS strategy used by the National TB control program to control TB?	1. Yes ----------► 2. No 3. Undecided	119
118	If no to Q. 117, Please would you tell me your reasons for unwillingness?	_____ _____ _____ _____ _____	

119	If yes to Q. 117, are you willing to collaborate with the public sector in the control of TB?	1. Yes 2. No ----------► 3. Undecided	127 &128 only(Sec-I)
120	What pre-conditions do you propose before engaging into the partnership? [Multiple response possible]	1. Provision of drugs, lab. supplies & formats 2. Referral linkage 3. Training of health workers 4. Review meetings 5. Other (specify)_____ _____	
121	If the national TB programme provides technical assistance, anti TB drugs, laboratory supplies and formats, would you provide space and staff dedicated to TB care in your facility?	1. Strongly agree 2. Agree 3. Disagree----------► 4. Strongly disagree----------►	127 127
122	Are you wiling to make your facility one of the DOTS centers and display a signboard "DOTS CENTER'	1. Yes 2. No 3. Un decided	
123	Are you willing to send your staff for training (which takes one week)?	1. Yes 2. No ----------► 3. Un decided	125
124	Which categories of health workers in this facility do you think need training on TB care? [Multiple response possible]	1. Medical Doctors, Health officers 2. Nurses 3. Lab personnel 4. Pharmacy staff 5. Other (specify)_____	
125	Are you willing to send your staff for review meetings that will be held twice a year for three days? [Multiple response possible]	1. Yes 2. No 3. Un decided	
126	Will you co-operate for regular supportive supervisions that will be conducted by the National Tuberculosis Programme?	1. Yes 2. No 3. Un decided	
127	Do you report patients treated in this facility? **[Check for the report]**	1. Yes, observed, complete and up-to-date 2. Yes, observed, complete but not up-to-date 3.Yes, observed, incomplete and not up-to-date	

		4. Yes reported, but not seen 3. No	
128	Do you report TB cases diagnosed/ treated in this facility? **[Check for the report]**	1. Yes, observed 2. Yes, not seen 3. No	
129	If no to ques.128 .are you willing to submit reports of TB patients attended by this facility?	1. Yes 2. No 3. Un decided	
130	Are you willing to assign a person for recording and reporting?	1. Yes 2. No 3. Un decided	
131	If TB diagnosis and treatment is made available free of charge in your facility, do you think that it brings fall in your earnings?	1. Yes 2. Depends 3. No 4. Don't know.	
132 132.1 132.2	Are you willing to provide the following TB care services free of charge? Diagnostic service Treatment service	 1.Yes 2. No 3.Undecided 1.Yes 2. No 3.Undecided	
133	Are you willing to provide sputum smear slides for External Quality Assurance?	1.Yes 2. No 3. Undecided	
134	Do you prefer NTP or other DOTS agency (mediator) like NGO, MAPPP to facilitate PPP? [Multiple response possible]	1.NTP 2. MAPPP 3.Others (specify)_____ _____	

[Thank your respondent for the time and help provided and proceed to the next respondent asking the owner (the previous respondent) to facilitate to you.]

Record Review

[To be done with a health worker from the facility who is **Knowledgeable** about the following records of the facility**]**

135	Total number of patient seen during the year 1997. [Please record number of months of data represented in the bracket in a situation where a full year of data is not available]	Total_____( )	
136	Causes of visits to the facility in the last one year (the ten top diseases) [Leave this, if the data are not readily available]	Disease Number of pts 1._____ _____ 2._____ _____ 3_____ _____ 4._____ _____ 5_____ _____ 6._____ _____ 7._____ _____ 8._____ _____ 9._____ _____ 10._____ _____ Total _____	
137	Total number of TB suspects examined in the year 1997.	Total_____( )	
138	Total number of TB cases diagnosed in the year 1997.	Sm. +ve Sm.-ve EPTB Total _____ _____ _____ ( )	
139	Total number of TB cases referred in the year 1997.	Total_____ ( )	

Section- II Interview with a general health worker

[This section is targeted at clinical officer (MD, Nurse or others) assigned at the OPD who examines patients routinely]

N.B [Don't forget to read the instruction and ask verbal consent from the interviewee]

Dear Colleague.

My name is_____ I am here on behalf of the AAUMF, DCH and NTP to conduct inventory of TB care in private health facilities to assess feasibility of Public-Private-Mix (PPM-DOTS). Your facility is one among randomly selected health facilities to participate in this study.

We would appreciate your assistance in responding to this questionnaire. The information you provide me is confidential and will not be shared with any one else with out your consent. No one including your supervisor will know what you tell me.

The information you provide me is extremely important and valuable, as it will help the NTP and the private health facilities in understanding areas and ways of collaboration for the rapid expansion of TB care. However, you have all the right not to respond to questions.

Name of the health facility_____ **QRE Code no**_____
Sub city _____ Keble _____
Name of interviewer _____
Date of interview _____

No.	QUESTIONS	CODING CATEGORIES	GO TO
201	What is your educational status?	1.Diploma 2. BSc. 3.MD 4.MD+Speciality 5.Other (specify)_____	
202	Qualification of the general health worker	1. Medical Doctor 2. Health officer 3. Nurse 4. Other (specify)_____	
203	Year of graduation with current qualification	_____E.C.	
204	How long are you providing service in this facility?	_____Month(s)	
205	Have you received pre service /in service training on subjects related to TB diagnosis and treatment in the past three years?	1. Yes, in service training 2. Yes, pre service training 3. Both pre & in service training 4. No	

206	If TB diagnosis is done in your facility, what tool (in addition to patient history and physical examination) do you use to diagnose TB suspects? [Multiple response possible]	1. Sputum smear microscopy 2. X-ray 3. Both sputum microscopy and X–ray. 4. Other (specify)_____	
207	Do you use a flow chart for the diagnosis of TB in your health facility? **[Check the presence]**	1. Yes, observed 2. Yes, reported, not seen 3. No	
208	Is there a standard treatment manual (the NTP) in the facility? **[Check the presence]**	1.Yes, observed 2. Yes, reported, not seen 3. No	
209	Do you clearly tell diagnosis of TB patients short after it is confirmed?	1. Yes 2. No	
210	When patients are told clearly about their diagnosis of TB, (after it is confirmed) how do most patients react to it?	1. Acceptance 2. Confusion 3. Worried 4. Denial 5. Others (specify)_____	
211	Is health education part of the routine work in the facility?	1. Yes 2. No ----------►	214
212	If yes to Q. 211 is there document regarding the number of attendants? **[check the presence]**	1. Yes, observed 2. Yes, reported, not seen 3. No	
213	If yes to quest. No. 212 how many sessions (average) per month deal with TB? [Take the recent 3 months and divide by 3]	_____sessions	
214	Do you have the following educational materials on TB? 1. Flip chart 2. Brochure/pamphlet 3. Poster 4. Audio visual **[Check the presence]**	Yes seen / Reported, not seen / No 1 2 3 1 2 3 1 2 3 1 2 3	
215	Does this clinic/unit have an agreement/understanding with a referral site for TB diagnosis and treatment (the nearest DOTS providing facility)?	1.Yes 2. No 3. Patient not referred----------►	218
216	When you refer the patient to another facility for TB	1. Yes, referral slip observed	

	diagnosis/treatment, do you use a referral slip? **[If** referral slip is used, ask to see it**]**	2. Yes, referral slip not observed 3. No, patient sent with medical chart/record 4. No, call to give information on client 5. Other (specify)_____	
217	What is/are the reason (s) for referral? [You can read the list] [Multiple response possible]	1. Lab diagnosis 2. X-ray 3. Clinical 4. Treatment (DOTS) 5. Other (specify)_____	
218	Do you offer HIV testing to confirmed TB patients?	1. Yes, to all patients 2. Yes, to suspected patients only 3. No	
[Read the following to the respondent before you directly present the questions from No 219-233] Now I will have some questions related to TB care, majority of the questions may not be expected to be answered correctly from a health worker who had no training on DOTS. But the questions have great relevance in assessing the training need and I want to tell you again that the information is confidential and has no effect on the facility or the staff member.			
219	How do you identify a TB suspect from all other patients seeking care in your facility?(the suspect sign and symptoms of TB) [Multiple response possible] [Don't read responses]	By suspecting any person who presents with 1. Cough > 2-3 weeks duration 2. Haemoptysis 3. Weight loss 4. Night sweats 5. Tiredness 6. Chest pain 7. Low grade fever 8. Others (specify)_____ _____ _____ _____	
220	What test do you think is the cheapest and quickest method to diagnose pulmonary tuberculosis in a TB suspect?	1. Sputum culture 2. Sputum smear microscopy 3. Chest X-ray	

		4. Tissue biopsy 5. Tuberculin test 6. Other (specify)_____	
221	How many sputum specimen(s) is/are required to diagnose pulmonary TB?	1.One 2.Two 3.Three 4.Other (specify) _____	
222	For a TB suspect case with prolonged cough and chest X-ray suggestive of TB, is sputum examination crucial for such a patient?	1. Yes 2. Depends 3. No 4.Don't know	
223	What are the main reason(s) that AFB examination is done (ordered)? [Multiple response possible]	1.for diagnosis 2.for follow up 3.other (specify)_____	
224	Would you please tell me the sputum collection time (schedule) at the time of the diagnosis? [Don't read the list]	1. Spot-morning-spot 2. Morning-spot-morning 3. Spot-morning-morning 4. Morning-spot 5. Other (specify)_____ 6. Sputum smear not done 7. Don't know	
225	When do you think a new smear positive pulmonary TB patient should have a first follow up sputum examination?	1. At the end of the 2nd month 2. At the end of the 3rd month 3. At the end of the 5th month 4. At the end of the 7th month 5. Other (specify)_____ 6. Don't know	
226	When should a *re-treatment* patient have a first follow up sputum examination?	1. At the end of the 2nd month 2. At the end of the 3rd month 3. At the end of the 5th month 4. At the end of the 7th month 5. Other (specify)_____ 6. Don't know	

227	Would you mention the classification of TB recommended by the control programme? [Don't read the list] [Multiple response possible]	1.Smear positive pulmonary TB 2.Smear negative pulmonary TB 3. Extra pulmonary TB 4. Other (specify)_____ 5. Don't know	
228	Can you tell me the number of treatment categories recommended by the control programme?	1. 2 2. 3 3. 4 4. Other (specify)_____ 5. Don't know	
229	Which anti TB drugs used in DOTS treatment do you know? Please list what you can remember [Don't read the list] [Multiple response possible]	1. Isoniazid (H) 2. Rifampicin (R) 3. Pyrazinamide(Z) 4. Ethambutol (E) 5. Streptomycin (S)	
230	Is it necessary to supervise TB patients on anti TB treatment?	1.Yes, I strongly agree 2.Yes, I agree 3. No, I disagree 4.No, I strongly disagree	
231	What do you think are the consequences of poor treatment adherence? [Multiple response possible]	1. Emergence of drug resistance 2. Relapse of the disease 3. Deteriorating health and death. 4. Increased risk of TB transmission 5. Other (specify)_____	
232	Is it important to keep complete record of TB patients/suspects?	1. Yes 2. No	
233	If yes to Quest. No 232, why do we need it? [Multiple response possible]	1. Defaulter tracing 2. Contact tracing 3. Follow up 4.To determine drug requirement 5. Other (specify)_____ _____	

[Thank your respondent for the time and help provided and now proceed to complete your room observation check list for the **waiting**, **examination** and **treatment rooms]**

Section- III Interview with laboratory personnel

[This section is preferably filled in by interviewing head of senior personnel in the laboratory]
N.B [Don't forget to read the instruction and ask verbal consent from the interviewee]

Dear Colleague.

My name is_____ I am here on behalf of the AAUMF, DCH and NTP to conduct inventory of TB care in private health facilities to assess feasibility of Public-Private-Mix (PPM-DOTS). Your facility is one among randomly selected health facilities to participate in this study.

We would appreciate your assistance in responding to this questionnaire. The information you provide me is confidential and will not be shared with any one else without your consent. No one including your supervisor will know what you tell me.

The information you provide me is extremely important and valuable, as it will help the NTP and the private health facilities in understanding areas and ways of collaboration for the rapid expansion of TB care. However, you have all the right not to respond to questions.

Name of the health facility_____ **QRE Code no**_____
Sub city _____ Kebele _____
Name of interviewer _____
Date of interview _____

No.	QUESTIONS	CODING CATEGORIES	GO TO
301	What is your educational status?	1.Diploma 2. BSc. 3.MD 4.MD+Speciality 5. Other (specify)_____	
302	Qualification of the interviewed laboratory personnel	1. Senior lab. Technician 2. Junior lab technician 3. Other (specify)_____	
303	Year of graduation with current qualification	_____E.C.	
304	How long are you providing service in this facility?	_____month(s)	
305	Have you received pre service /in service training on subjects related to AFB microscopic examination in	1. Yes, in service training 2. Yes, pre service training 3. Both pre & in service training	

	the past three years?	4. No	
306	Do you perform sputum smear examination?	1.Yes 2.No----------►	401
307	Please tell me the sputum collection time (schedule) at the time of the diagnosis? [Don't read the list]	1. Spot-morning-spot 2. Morning-spot-morning 3. Spot-morning-morning 4. Morning-spot 5. Other (specify)_____ 6. Sputum smear not done 7. Don't know	
308	Where do patients produce sputa? [Multiple response possible]	1.In the laboratory 2. In the latrine 3. In the waiting room 4. In the open air 5.Other (specify)_____	
309	What familiar method of staining acid-fast bacilli do you use?	1. Gram stain 2. Ziehl-Nelson 3. Other (specify)_____	
310	How do you dispose infected used materials like sputum containers? **[Try to confirm]** 1. By burning 2. By burning after boiling 3. By burning after disinfecting 4. By burial 5. By burying after boiling 6. By burying after disinfecting 7.Other (specify)_____ _____ [Multiple response possible]	Yes seen / Reported, not seen / No 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3	

311	Please would you list the reagents used in Ziehl- Nelson staining technique? [Multiple response possible]	1. Carbol fuchsin 2. Methyline blue 3. Acid alcohol 4. Immersion oil 5. Other (specify)_____	

312	When smearing specimen near by the window, what do you think it should be the position of the technician?	1. Facing the window 2. Standing by the side 3. Standing opposite to the window 4. Other (Specify)_____	
313	What test do you think is the cheapest and quickest method to diagnose pulmonary tuberculosis in a TB suspect?	1. Sputum culture 2. Sputum smear microscopy 3. Chest X-ray 4. Tissue biopsy 5. Tuberculin test 6. Other (specify)_____	
314	How many sputum specimen(s) is/are required to diagnose pulmonary TB?	1.One 2.Two 3.Three 4.Other (specify) _____	
315	For a TB suspect case with prolonged cough and chest X-ray suggestive of TB, is sputum examination crucial for such a patient?	1. Yes 2. Depends 3. No 4.Don't know	
316	What are the main reason(s) that AFB examination is done (ordered)? [Multiple response possible]	1.for diagnosis 2.for follow up 3.other (specify)_____	
Now I am going to ask you if you have various types of equipment or supplies, registers, reports, formats, laboratory records and if they are in working order. Then I need to see the items so that I can completely fill in this questionnaire.			
317 **317.1**	Microscope: Type and number (functional) **[After you check the presence]**	 1. Binocular ____ 2. Mono-ocular____	
318	Lab supplies		
318.1	Microscope slide used for AFB examination in the facility	1. Always new 2. Always reused 3. Sometimes new some times reused. 4. Most of the time new sometimes reused 5. Most of the time reused, some times new	
		YES, SEEN REPORTED, NOT SEEN	

318.2	Reagents for AFB staining available 1.Carbol fuchsin 2.Acid alcohol 3. Methyline blue 4. Immersion oil **[Check the presence]**	Always Available / Sometimes Shortage / Always Available / Sometimes Shortage / No 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5	
319	Materials available	Yes, seen / Yes, reported, not seen / No	
319.1	Slides	1 2 3	
319.2	Slide boxes	1 2 3	
319.3	Sputum containers	1 2 3	
319.4	Diamond pencil	1 2 3	
319.5	Sticks or Loop	1 2 3	
319.6	Funnel	1 2 3	
319.7	Filter paper	1 2 3	
319. 8	Staining racks	1 2 3	
319. 9	Sprit lamp	1 2 3	
319.10	Fuel for sprit lamp	1 2 3	
319.11	Lens tissue	1 2 3	
319.12	Water supply	1 2 3	
319.13	Balance	1 2 3	
319.14	Cotton	1 2 3	
319.15	Forceps	1 2 3	
319.16	Labeling material for sputum container	1 2 3	
319.17	Wooden rack for drying	1 2 3	
320	Laboratory request form, register, reports		
320.1	1. NTP approved laboratory request forms are used in the facility? 2. Other laboratory request forms are used	1 2 3 1 2 3	
320.2	Laboratory request forms are submitted with complete information?	Observed complete / Observed incomplete 1 2	
320.3	AFB results are recorded in	1.Laboratory register specific for AFB record 2**.** Laboratory register for general use----------► 3. Not recorded---------- ------►	320.5 320.5
320.4	Laboratory register for AFB is	Observed / Observed	

	properly complete and legible?	complete incomplete 1 2	
320.5	Laboratory results are sent back to the OPD within two working days?	1. Yes 2. No	
321	Laboratory Staff training		
321.1	Is there any staff member who had on the job training on AFB microscopy?	1. Yes 2. No _____	
322	Total number of laboratory tests performed in the last one year [Good approximation is acceptable] [Please record number **of months** of data represented **in the bracket**, in a situation where a full year of data is not available]	1. Bacteriology_____ ( ) 2. Haematology_____( ) 3. Serology_____ ( ) 4. Urinalysis_____( ) 5. Parasitology_____( ) Total_____( )	
323	Total number of AFB tests performed in the last one year [Accurate number needed]	Total_____ ( )	
324	Total number of AFB tests turned positive [Accurate number needed]	Total_____ ( )	

*[Now complete your room observation checklist for the **laboratory room]**

Section - IV Interview with pharmacy personnel

[This section is preferably filled in by interviewing head of senior personnel in the pharmacy]

N.B [Don't forget to read the instruction and ask verbal consent from the interviewee]

Dear Colleague.

My name is_____ I am here on behalf of the AAUMF, DCH and NTP to conduct inventory of TB care in private health facilities to assess feasibility of Public-Private-Mix (PPM-DOTS). Your facility is one among randomly selected health facilities to participate in this study.

We would appreciate your assistance in responding to this questionnaire. The information you provide me is confidential and will not be shared with any one else with out your consent. No one including your supervisor will know what you tell me.

The information you provide me is extremely important and valuable, as it will help the NTP and the private health facilities in understanding areas and ways of collaboration for the rapid expansion of TB care. However, you have all the right not to respond to questions.

Name of the health facility_____ **QRE Code no**_____
Sub city _____ Kebele _____
Name of interviewer _____
Date of interview _____

No.	QUESTIONS	CODING CATEGORIES	GO TO
401	What is your educational status?	1.Diploma 2. BSc. 3.MD 4.MD+Speciality 5. Other (specify)_____	
402	Qualification of the interviewed pharmacy personnel	1. Pharmacist 2. Senior pharmacy tech 3. Junior pharmacy tech 4. Nurse 5. H/Assistant 6. Other (specify)	
403	Year of graduation with current qualification	_____E.C.	
404	How long are you providing service	_____month(s)	

	in this facility?		
405	Have you received pre service /in service training on subjects related to anti-TB drug management in the past three years?	1. Yes, in service training 2. Yes, pre service training 3. Both pre & in service training 4. No	
406	Is FEFO/FIFO practiced with consideration for expiry dates?	1. Yes 2. Depends 3. No 4.Don't know	
407 407.1 407.2 407.3	How is the storage condition Space Shelving Cleanliness	 1. Poor 2. Good 3. Very good 1. Poor 2. Good 3. Very good 1. Poor 2.Good 3.Verygood	
408 408.1 408.2	Is stock/bin card used for drugs? **[Check the presence]** 1. Bin card 2. Stock card	Reported Yes seen not seen No 1 2 3 1 2 3	
409	If yes, are they updated regularly? [**Check for it**]	Reported Yes seen not seen No 1 2 3	
410	Which anti TB drugs used in DOTS treatment do you know? Please list what you can remember [Don't read the list] [Multiple response possible]	1. Isoniazid (H) 2. Rifampicin (R) 3. Pyrazinamide(Z) 4. Ethambutol (E) 5. Streptomycin (S)	
411	Is it necessary for TB patients to take treatment under supervision of health worker?	1.Yes, I strongly agree 2.Yes, I agree 3. No, I disagree 4.No, I strongly disagree	
412	What do you think are the problems of poor treatment adherence? [Multiple response possible]	1. Emergence of drug resistance 2. Relapse of the disease 3. Deteriorating health and death. 4. Increased risk of TB transmission 5. Other (specify)_____	

*[Now complete your room observation checklist for the **Pharmacy room]**

[Extend your gratitude to all interviewee in general and the owner/License holder/manager, in particular]

Approved by the supervisor:
Name_____
Signature_____Date_____

Room observation checklist

[To be done with a **knowledgeable staff** about the health facility **site being assessed]**

Name of the health facility_____ QRE **Code no**_____
Sub city _____ Kebele _____
Name of interviewer _____
Date of interview _____

Ser. No	The observed entity	Waiting area (room)				Examination room				Treatment room				Laboratory	Pharmacy
1	**No. of rooms**	_____				_____				_____				____	____
2	**Size of the room** LxW=___(m2)	Room no.				Room no				Room no				Room no	Room no
		1	2	3	4	1	2	3	4	1	2	3	4	1	1
3	**Ventilation status** of the room(s)	Y(1) N(2) NA* (0)	Y(1) N(2) NA* (0)	Y(1) N(2) NA* (0)	Y(1) N(2 NA* (0)	Y(1) N(2)	Y(1) N(2)	Y(1) N(2)	Y(1) N(2	Y(1) N(2)	Y(1) N(2)	Y(1) N(2)	Y(1) N(2	Y(1)N(2)	Y(1)N(2
	a. Size of the window >or = 10% of the floor area														
	b. Windows facing each other [1]														

NA*=Not applicable=0 Y=Yes=1 N=no=2

	c. No permanent object near to window that prevents free air movement														
	d. Ceiling present														
	e. Artificial ventilation present														
	f. Windows are operable at least 30-40%														
	Total (x/5)														
4	**Lighting status** of the room(s)														
	a. Size of the window >or = 10% of the floor area														
	b. Presence of direct sunlight at least for part of the day														
	c. The sky area visible at that point (window not faced with a poor reflective object)														
	d. Wall and ceiling are reflective in color (white or light yellow or light blue)														
	e. Artificial lighting is present														
	Total (x/5)														

NA*=Not applicable=0 Y=Yes=1 N=no=2