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# Assessment of Provider Adherence to TB Evidence-based Standards and Guidelines in Zambia

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**APRIL 2013**

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April 2013

Jhpiego Corporation

University Research Co., LLC

**DISCLAIMER**

The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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# Acronym List

AFB	Acid Fast Bacilli
CTX	Cotrimoxazole
DOTS	Directly Observed Treatment Short course
HBCs	High Burden Countries
IRB	institutional review board
MOH	Ministry of Health
MDR	Multi-Drug Resistance Tuberculosis
NTLP	National Tuberculosis and Leprosy control Program
SS+	Sputum-smear positive
PI	Principle investigator
PS	Permanent Secretary
TB	Tuberculosis
TBIC	TB Infection control
URC	University Research Co., LLC
WHO	World Health Organization

# Executive Summary

## Introduction

This study was undertaken as part of a multi-country study by TB CARE II to determine providers' adherence with evidence based TB standards and guidelines from November-December 2011, in conjunction with the Zambia National Tuberculosis and Leprosy control Program (NTLP). This particular study assesses adherence with TB guidelines in Zambia at national, provincial/district and facility-based levels. Information was gathered from TB managers' perspectives, interviews with providers, provider observations, patient records, and interviews with patients themselves. The findings present information on the level of provider adherence as well as the factors influencing adherence. The report concludes with recommendations that can be used by TB CARE II and national-level TB partners to better target interventions to improve provider adherence to TB standards.

## Objectives

The objectives of the adherence study were to:

1. Generate information on the knowledge and skills of providers to provide "standard" TB services.
2. Measure the extent to which providers follow national and service-delivery standards.
3. Generate information on the existence of systems for maintaining TB service delivery capacity.
4. Generate information on perceptions of quality of care at provider and facility levels.

## Methods

This study had a cross-sectional design that used a combination of quantitative, qualitative and desk review approaches to collect data from NTLP managers at national and district levels; facility managers at district and provincial levels; providers actively screening and treating TB patients/

symptomatics; and TB patients/symptomatics themselves. Data was collected on key indicators in line with the strategic objectives of the study. The study was implemented in four provinces in Zambia with high TB burden settings: Lusaka, Copperbelt, Southern and Eastern provinces. A total of 12 health facilities were reached.

## Findings

- This study revealed inadequate knowledge of TB providers regarding the populations most at risk of TB, TB symptoms, and proper management and treatment of TB, especially children and pregnant women.
- The DOTS strategy is still weak in terms of diagnosis by sputum and observation of treatment.
- Provider observations showed that only 61% explained/followed-up on possible treatment side effects. Similarly, only 64% of TB patients in exit interviews reported having received information on possible side effects of treatment and how to manage these.
- There appeared to be inadequate understanding and implementation/translating of TB policy and guidelines about infection control measures despite it being in place. According to the interviewed TB patients from the exit interviews, about half (52%) were not given information about the need to have family members and close contacts screened for TB.
- There is a gap in addressing childhood TB, diagnostic capacity, Drug Resistant TB, TB/HIV integration and drug supply chain management.
- Overall, the record keeping system was found to be satisfactory.
- Twenty eight percent (7 out of 25 responses) of the health care providers indicated inadequate staff or staff shortage, provider attitude (16%, n=4), lack of materials (12%, n=3) and lack of provider skills (8%, n=2) as the major bottlenecks in provider adherence.

## Recommendations

- The cornerstone of successful TB treatment is early detection of disease, initiation of treatment, and completion of the prescribed treatment. Adherence is affected by many factors, among which are the side effects of medication/treatment. Where TB patients are not given adequate information regarding the possible side effects of treatment and how to manage these, patients are likely to stop taking medication. There is room for improvement in the way information regarding the management of side effects to TB medication and the importance of completing therapy is relayed from providers to TB patients. In addition, there is a need to communicate with patients about the importance of screening TB contacts as well as reinforcing the necessity of treatment adherence and understanding interactions with other medicines.
- Capacity building: There is a need to increase capacity in health providers regarding TB management. Failure to do so may result in treatment failure, relapse, death, and emergence of multidrug resistance tuberculosis (MDR-TB) among TB patients. Health care providers should be trained in using the MOH/WHO modules for TB treatment. They, along with community members themselves, must be trained as TB treatment supporters using specific TB modules so they can assist in identifying and referring TB suspects to health facilities for diagnosis. Dosage charts and simple booklets providing information on TB diagnosis and management should be made available to providers in these areas as well.
- Commodity management, particularly the TB drugs ordering system, needs to be strengthened.
- The implementation of TB Infection Control (TBIC) measures at health facilities and in communities needs to be strengthened if TB infections are to be reduced. Whilst TBIC protocols were introduced in 2010, the implementation has been weak and slow at both the facility and community level.
- There is a need to strengthen commodity management practices, particularly relating to the ordering and distribution of TB drugs, in order to reduce drug stock outs. This can be done by training staff in TB drug management and supply.
- The DOTS strategy is still weak in terms of diagnosis by sputum and observation of treatment. Therefore, there is a need to strengthen the implementation of DOTS strategy to enhance adherence and improve TB treatment outcomes. This will include:
  - Provision of diagnosis algorithms for TB screening
  - Strengthening community involvement in the observation of treatment
  - Strengthening the courier system for sputum from non-diagnostic centres
  - Strengthening community sensitization on the process of TB diagnosis and treatment

## Conclusion

Adherence to national guidelines in the provision of TB services is very critical. This report indicates that there are still gaps which must be addressed in order to improve upon the overall provision of TB services.



# Introduction

Zambia adopted the WHO-recommended Directly Observed Treatment Short course (DOTS) strategy as its primary approach for tuberculosis (TB) control in 1993. Since the introduction of DOTS, Zambia has made significant progress in the management and fight against TB. Evidence shows that DOTS has contributed to the improvement in cure rates over the past decade from 67% in 2000 to the global target of 85% by 2006.<sup>1</sup> With strong government commitment and an assured supply of anti-TB drugs through the Global TB Drug Facility, Zambia has achieved 100% DOTS coverage, which is the internationally recommended strategy for TB control, and approximately 74% case detection for all forms of TB.

Despite this positive trend, TB continues to be a major health threat in Zambia and is ranked as one of the top 10 causes of morbidity and mortality.<sup>2</sup> The challenges affecting proper tuberculosis control can be attributed in large part to resource-related constraints that have negatively affected control efforts. The HIV/AIDS pandemic has complicated the TB situation<sup>3</sup>; approximately 60-70% of all detected TB cases are also co-infected with HIV. Literature further suggests that Zambia has one of the highest incidence rates of TB per capita in the world. However, Zambia is not listed as one of the 22 High Burden Countries, (HBCs) presumably owing to its relatively small population and the fact that it does not receive the same amount of support as the HBCs for TB control.<sup>2</sup> Others suggest that the non-inclusion of Zambia as one of the HBCs could also be a result of non-reporting of TB to the World Health Organization (WHO) from 1997 to 1999. The non-reporting of TB data was as a result of complete collapse of the NTLP during the healthcare reforms when vertical programmes were abolished

and integrated with general health care services.<sup>4</sup> The Government of Zambia, however, continues to recognize TB as a major public health problem and is committed to its control.<sup>2</sup> As part of this commitment it has established the National TB and Leprosy Control Program (NTLP), which falls under the Directorate of Public Health and Research within the Ministry of Health (MOH). The goal of the Zambian NTLP is to prevent and control TB through the provision of quality diagnostic and treatment services for TB- and TB/HIV-infected individuals at all levels of the health care delivery system.

In an effort to provide quality TB services, the NTLP has developed numerous guidelines and standards to explain the different steps involved in managing TB service delivery, including the National TB Guidelines and the TB Manual. Separate guidelines also exist for adult TB, MDR TB, TB/HIV, TB infection control, and procurement and supply management. Standards on diagnosis and treatment and laboratory manuals have been developed; as well as forms, formats, and a standardized system for record keeping; and systems for supervision, monitoring and evaluation, among others.

However, a recent literature review conducted by the USAID-funded TB CARE II project analyzing provider adherence with evidence-based guidelines and protocols illustrates that provider adherence to TB guidelines still remains a challenge despite the availability of such guidelines in high burden TB countries.<sup>5</sup> Non-adherence can result in treatment failures and increased drug resistance, requiring intensified treatment and additional resources. Non-adherence, and the associated weakness in service delivery, is affected by multiple factors including:

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1 National Tuberculosis Infection Control Guidelines. Zambia.

2 Kapata et al. (2011). Trends in Zambia's tuberculosis burden over the past two decades. *Tropical Medicine and International Health*. 16:11.1404-1409.

3 UNAIDS, 2010.

4 Mwaba P. et al. The relentless spread of tuberculosis in Zambia – trends over the past 37 years (1964-2000). *South African Medical Journal*. 93. 149-152.

5 USAID TB Care II Project. Developing approaches for system wide quality improvement of TB services: approaches and tools to increase provider compliance with TB guidelines. University Research Co., LLC: Final draft September 2011.

lack of coordination between multiple healthcare structures, difficulties procuring drugs,<sup>6</sup> differences in the type of healthcare provider performing the service (i.e. public vs. private),<sup>7,8</sup> lack of detailed policies for MDR-TB management, lack of human resources, poor monitoring and evaluation of guideline implementation, and providers' insufficient knowledge about TB.

A number of tools and approaches have been developed and tested to improve provider adherence to treatment guidelines and thus enhance the quality of TB services offered. However, many of the existing approaches target specific adherence-related blockages (i.e., training to improve provider performance) without linking them to the broader TB systems improvement framework that coherently addresses the barriers that providers face in delivering high quality services. In this context, TB CARE II conducted a study to investigate factors influencing provider adherence with evidence-based TB guidelines. The study was carried out in Bangladesh, Zambia, and Kenya through TB CARE II partners. Findings from the studies will be used to develop a quality improvement manual to help enhance provider adherence with TB clinical and service delivery guidelines.

This report provides a summary of the study carried out by Jhpiego, a partner to TB CARE II, in Zambia. The study assesses adherence with TB guidelines in Zambia at national, provincial/district and facility-based levels from TB managers' perspectives, interviews with providers, provider observations, patient records, and interviews with patients themselves. The findings present information on the level of provider adherence as well as the factors influencing adherence. The report concludes with recommendations that can be used by TB CARE II and national-level TB partners to better target interventions to improve provider adherence to TB standards.

## Objectives

The objectives of the adherence study were to:

1. Generate information on the knowledge and skills of providers to provide "standard" TB services.
2. Measure the extent to which providers follow national and service-delivery standards.
3. Generate information on the existence of systems for maintaining TB service delivery capacity.
4. Generate information on perceptions of quality of care at provider and facility levels.

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6 Ferrara G, Richeldi L, Bugiani M, Cirillo D, Besozzi G, Nutini S, et al. Management of multidrug-resistant tuberculosis in Italy. *Int J Tuberc Lung Dis* 2005; 9(5):507-13. Accessible online through <http://www.ncbi.nlm.nih.gov/pubmed/15875921>.

7 Gidado M, Ejembi CL. Tuberculosis case management and treatment outcome: assessment of the effectiveness of Public-Private Mix of tuberculosis programme in Kaduna State, Nigeria. *Ann Afr Med*, 2009; 8(1):25-31. Accessible online at <http://www.annalsafmed.org/article.asp?issn=1596-3519;year=2009;volume=8;issue=1;spage=25;epage=31;auiast=Gidado>.

8 Hussain A, Mirza Z, Qureshi FA, Hafeez A. Adherence of private practitioners with the National Tuberculosis Treatment Guidelines in Pakistan: a survey report. *J Pak Med Assoc* 2005; 55(1):17-9. Abstract online at <http://www.ncbi.nlm.nih.gov/pubmed/15816690>.

# Study Design and Data Collection Methods

## Study Design

This study had a cross-sectional design that used a combination of quantitative, qualitative and desk review approaches to collect data from NTLN managers at the national, provincial and district levels; facility managers; providers actively screening and treating TB patients/symptomatics; and TB patients/symptomatics. Data was collected on key indicators in line with the strategic objectives of the study. At the national level, TB managers were purposively selected to ensure adequate representation from those in charge of TB decision making and supervision.

The study was undertaken as part of a multi-country study by TB CARE II to determine providers' adherence with evidence based TB standards and guidelines from November-December 2011, in conjunction with the NTLN.

## Sampling

The sampling frame was divided into different strata according to province and/or type of health care facility. Purposive sampling was employed in selecting the districts and the facilities based on TB case incidences.

The study was implemented in four provinces in Zambia which have a high TB burden setting: Lusaka (38% of the total TB notifications in the country), Copperbelt (22%), Southern (12%) and Eastern (5%). In each province, three facilities were selected purposively

based on two major categories: a health facility with: (1) a TB diagnostic and treatment center in a provincial capital and (2) a high volume diagnostic site (sites with more than 20 slides per day). All facilities involved in this survey were public health facilities. The selection of provinces and facilities was also made in consultation with the NTLN coordinators based on the TB burden setting. A total of 12 health facilities were included in the study as shown in Table 1.

Among the different facilities, study participants were chosen using convenience sampling for the interview-administered questionnaire. This was based on who was available at the time of the interview. As for the chart audits, samples were chosen by systematic sampling from two cohorts for the past year (November 2010 to November 2011). Each cohort provided 50% (13) of the total required sample per facility and a total of 26 charts were assessed per facility.

## Data collection

The instruments for the study consisted of six tools administered to the target populations. These included: interviewer-administered questionnaires for NTLN and district/regional managers, facility managers, and exit-interviews with TB patients and suspects; self-administered questionnaires for providers; provider observations; and chart review audits to determine how well patient data was recorded for managing TB patients. Descriptions of

Table 1. Facilities sampled

Province	District	Facility
Lusaka	Lusaka	Chawama, Kanyama and George Clinic
Southern	Livingstone	Maramba Clinic
	Choma	Shampande clinic
	Mazabuka	Mazabuka District Hospital
Eastern	Chipata	Kapata Clinic
	Katete	St. Francis Hospital
	Petauke	Petauke District Hospital
Copperbelt	Ndola	New Masala Clinic
	Kitwe	Chimwemwe and Buchi Small Clinic

each assessment tool, the study populations, and sample sizes are listed in Table 2.

The tools were in English and based on internationally accepted standards for health services. They were adapted by the Jhpiego Zambia office to reflect relevant standards developed by the Ministry of Health and were pre-tested before being administered (questionnaires were not translated).

## Training of data collectors

To ensure the collection of high quality data, the field team was recruited on the basis of previous field work experience. Five data collectors were selected, and each participated in a two-day training meeting, organized to ensure that they understood the purpose of the study and the data collection tools. The Zambia

Jhpiego Monitoring and Evaluation (M&E) unit facilitated the training. The entire study was managed by the principal investigator (PI) and the Co-PI, who saw to it that all aspects of the research were implemented according to the study guidelines.

Prior to data collection, a pre-test was conducted at Matero Clinic in Lusaka Province to assess the practicality of the questions being asked in the tools.

## Ethical Considerations

This study was submitted and approved by ERES Converge Research Ethics Committee in Zambia. In addition, an approval letter was obtained from the Permanent Secretary's (PS) office at the MOH concerning the implementation of the study in each of the selected districts.

Table 2. List of Tools Used in the Study

Name of tool	Purpose of tool	Study population	Sample size
<b>NLP and District/ Regional Assessment Tool</b>	<ul style="list-style-type: none"> <li>Assess potential barriers to provider compliance including available and updated guidelines; mechanisms of forecasting, procurement, and distribution of drugs; staff training; supervision and monitoring; and capability of laboratories to perform TB tests</li> </ul>	Managers at the NLP and in select provinces/districts	6
<b>Facility Assessment Tool</b>	<ul style="list-style-type: none"> <li>Assess availability of basic inputs to provide quality services, including TB services (whether integrated or standalone); equipment; staff; and basic consumables (drugs, syringes, etc.); availability of policies/guidelines; case detection activities</li> <li>Assess quality of patient records and commodity logistics issues</li> <li>Assess current referral processes at facilities that do not provide TB and/or related services (diagnostics, treatment and/or follow-up)</li> </ul>	Facility manager (TB clinics)	10
<b>Chart Audits</b>	<ul style="list-style-type: none"> <li>Patient medical records/TB register/TB notification: Determine how well patient data is being recorded for managing TB patients</li> </ul>	Patient charts	312
<b>Provider Self-Administered Tool</b>	<ul style="list-style-type: none"> <li>Assess provider knowledge about key TB guidelines, norms and protocols</li> <li>Assess potential barriers to provider compliance</li> </ul>	Public health care providers actively screening and treating TB patients/suspects	20
<b>Provider Assessment Tool</b>	<ul style="list-style-type: none"> <li>Measure provider compliance with TB standards and standards of interpersonal communication and counseling</li> </ul>	Public health care providers actively screening and treating TB patients/suspects	32
<b>Patient Satisfaction Tool</b>	<ul style="list-style-type: none"> <li>Determine patient satisfaction with the quality of care provided</li> </ul>	TB patients; TB suspects	160

The study protocol was also initially approved by URC's institutional review board (IRB) to ensure that the research adhered to the appropriate ethical and moral principles; namely through providing participants information about the purpose of the study, ensuring their absolute confidentiality and privacy, and collecting informed consent.

## Data analysis

The primary data collected was analyzed using SPSS version 19 for Windows. The data was analyzed using descriptive statistics. Preliminary data analysis was done manually, focusing on the information required in the study and with the aim of generating both qualitative and quantitative information. Content analysis of the information gathered from the key informants (NTLP and facility managers) and observations was also done manually by summarizing, categorizing, and drawing comparisons of the thematic areas generated. Similarly, verbatim reporting was also used where appropriate. Data cleaning was performed prior to the actual analysis of the data sets.

# Results

This section presents the results of the study. The findings are structured by strategic objective, as described in the approved protocol.

## Objective 1: Generate information on the knowledge and skills of providers to provide “standard” TB services

Adequate knowledge regarding infection control, diagnosis and a proper prescription written by a health provider is as important as treatment adherence by the patient.

The self-administered provider questionnaire targeted 54 health care providers working in the TB settings. However, due to limited staff available at the time of the survey, only 37% (20) of the targeted respondents were reached. Lusaka had the highest number (7) of providers responding to the questionnaire followed by Katete and Petauke with three respondents each. Ndola and Chipata had two, whilst in Choma, Mazabuka and Livingstone only one provider per facility was reached.

### Knowledge and awareness of TB

The provider assessments revealed TB providers’ knowledge of populations most at risk of TB, TB symptoms and the diagnosis and management of TB across all facilities visited was generally poor.

In multiple choice questions on TB knowledge, health care providers in the TB setting were asked which categories of people were at high risk of TB infection. Only half (50%, n=10) of the respondents indicated that people living with HIV, children under the age of 5 years, and people living in poverty were at high risk of TB after infection with *M. tuberculosis*.

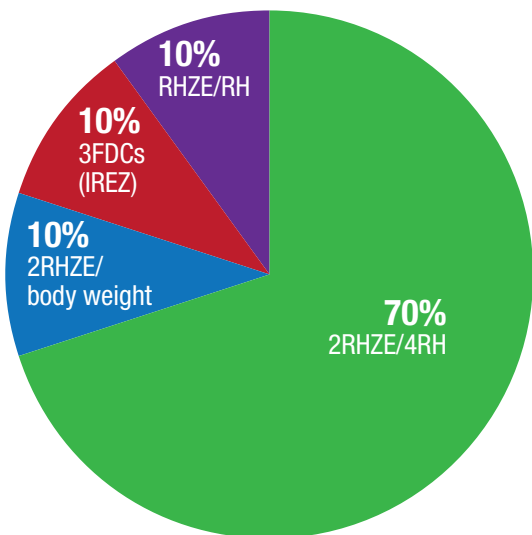
In terms of TB transmission, providers were asked how TB is transmitted. Almost all (94%) providers reported that they were aware that TB is transmitted through the air when a person with TB coughs or sneezes. However, one respondent representing 6% of the total indicated that TB is also transmitted through handshakes as well

as the air when a person with TB coughs or sneezes. When asked to identify common TB Symptoms, 40% (8 out of 20) were unable to correctly indicate chest pains, fever, cough and weight loss.

### TB case detection, diagnostic and treatment standards

The first step in the TB surveillance process is to identify suspected or confirmed TB cases. TB disease should be considered when a patient presents with a persistent cough (lasting for 2 or more weeks) or other signs or symptoms compatible with TB disease (for example, blood stained sputum, night sweats, weight loss, or fever).<sup>9</sup> When asked which test is used to confirm a case of pulmonary TB, more than half (54%, 14 out of 26 responses<sup>10</sup>) of the interviewed health care providers correctly identified sputum smear examination. Another 19% considered chest radiographs, and 4% reported that a positive tuberculin test was confirmatory of a case of pulmonary TB. In a question relating to clinic-specific diagnostic practices, 20% of respondents also

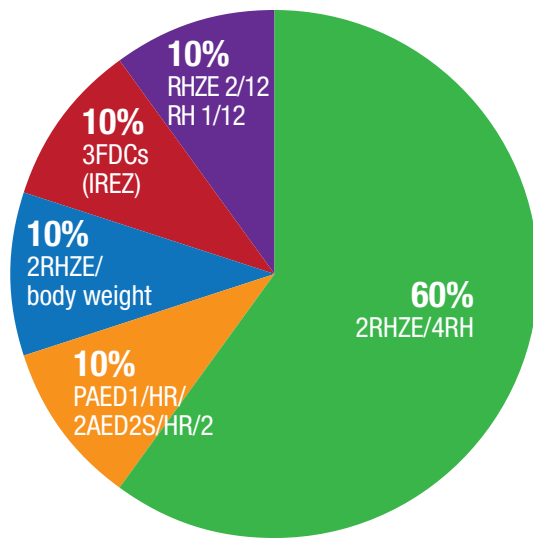
Figure 1. Standard Treatment Protocols – Adults



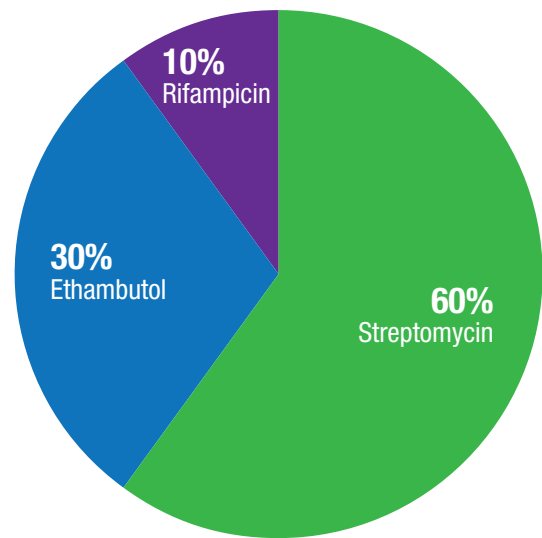
9 Centers for Disease Control and Prevention.

10 This is a multiple response, meaning each respondent selected more than one option.

**Figure 2. Standard Treatment Protocols – Children**



**Figure 3. STB treatment not to be used in pregnant women**



included symptomatic algorithms as a tool used in diagnosing TB patients in their respective clinics.

In Zambia, TB patients are treated under two different treatment protocols for adults and children. If anti-TB drugs are taken incorrectly or irregularly the patient will not be cured and drug resistance may develop. The standard drug combination for adults under Category 1 (one) include 2RHZE/4RH whilst those for children under pediatric category 1 (one) also include 2RHZE/4RH. As a proxy measure of provider adherence with TB standards, 10 facility managers were asked to mention standard treatment protocols for TB in both adults and children. Figure 1 and Figure 2 show the responses for both adults and children's treatment protocols, respectively.

More than 60% (n=7) of the facility managers correctly mentioned the TB treatment protocols for both adults and children.

Health care providers were asked mention the combination of first line anti-TB drugs to be used. The survey results show that almost all providers correctly mentioned the combination of the first line anti-TB drugs as Isoniazid, Rifampin, Pyrazinamide and Ethambutol. The providers were also asked to identify from a list the type of TB drugs that are not supposed to be included in the treatment of pregnant women. Each provider was free to select more than one response. The study findings revealed that more than half (60%, 12 out of 20) of the

providers reported that streptomycin should be avoided in the treatment of pregnant women with pulmonary TB. This response corresponds to literature suggesting that streptomycin should not be used during pregnancy because of the risk of toxicity to the unborn child. It should be noted that 40% (8 out of 20) of the providers reported Ethambutol (30%, n=6) and Rifampicin (10%, n=2) should instead be excluded in the treatment of pregnant women with pulmonary TB as shown in Figure 3.

Whilst 40 percent (n=8) of providers in the self-assessment did not know that streptomycin should not be used in pregnant women, findings from the chart audits showed that the majority (97%) prescribed TB drugs correctly. To further check on how providers prescribe treatment to TB patients or suspects, 32 providers were observed at the time of the survey. The survey results show that all 32 providers prescribed Isoniazid and Rifampicin which are the core drugs in TB treatment as shown in Table 3.

According to the national guidelines, the two drugs should be given throughout the duration of TB treatment. This applies to both TB patients in category 1 and 2. The additional prescription of Pyrazinamide and Ethambutol to the two core drugs indicated that the TB patients in this case were in an intensive phase of the TB treatment course. Based on the drugs prescribed, the survey findings indicate that the health

**Table 3.** Exclusion of TB drugs in the treatment of pregnant women

Drugs Prescribed		n=32	%
Isoniazid	Yes	32	100
Rifampicin	Yes	32	100
Pyrazinamide	Yes	30	93.8
	No	1	3.1
	n/a	1	3.1
Ethambutol	Yes	25	78.1
	No	6	18.8
	n/a	1	3.1
Streptomycin (N=30)	Yes	4	13.3
	No	16	53.3
	n/a	10	33.3

providers observed and prescribed drugs in line with the national guidelines. Streptomycin was only prescribed for patients in category 2.

Almost all providers (95%) in the self-administered questionnaire also reported that they follow-up and treat side-effects or adverse reactions of TB patients. Furthermore, all providers (100%, n=32) reported that they follow the WHO protocols when treating TB patients and that they were aware of key TB guidelines, norms and protocols. However, whilst all the providers indicated that they had readily available guidelines/protocols, provider observations showed that only 66% had readily available

TB diagnosis and treatment guidelines/screening tools (WHO DOTs) at the time of the observation.

#### Potential barriers to provider adherence

When providers were asked their opinions about the causes of provider non-adherence to TB guidelines in the self-administered questionnaire, inadequate staff/or staff shortage was found to be the highest cause (28%, n=7), followed by provider attitude (16%, n=4), lack of materials (12%, n=3), and lack of provider skills (8%, n=2). Only one provider indicated that lack of guidelines and standards was a contributing factor to non-adherence (see Table 4).

**Table 4.** Reasons for non-adherence to TB standards

Reasons of non-adherence	Responses		Percent of Cases
	N	Percent	
Lack of provider skills	2	8%	20%
Lack of materials	3	12%	30%
Lack of drugs	2	8%	20%
Lack of guidelines	1	4%	10%
Provider attitude	4	16%	40%
Lack of providers	7	28%	70%
Issues surrounding switch	2	8%	20%
Lack of supervisory support	2	8%	20%
Other	2	8%	20%
<b>TOTAL</b>	<b>25</b>	<b>100%</b>	<b>250%</b>

11 The Tuberculosis Behavioral and Social Science Research Forum Proceedings: Planting the Seeds for Future Research, Atlanta, Georgia, 2003.



## Objective 2: Measure the extent to which providers follow national and service-delivery standards

### Service delivery

Information provision: Health communications can be used to share information on TB with the general public, local communities, patients and contacts, as well as providers. Research has demonstrated that misconceptions regarding TB along with the stigma associated with this disease persist today, suggesting the continuing need to increase knowledge and awareness of TB through effective channels of communication.<sup>11</sup>

To determine patient satisfaction with the quality of care provided by health care providers, TB patients were interviewed representing 88% coverage of the targeted TB patients. Almost all (79%, 126 out of 157)

of the interviewed TB patients reported having received information/or education about TB and why it is important to continue the TB treatment (92%, n=141). Additionally, more than 80% (n=128) of the TB patients reported that they were provided with information regarding the signs and symptoms of TB, and how it is spread. In contrast, only 64% (n=97) of the TB patients interviewed reported having received information on possible side effects of treatment and how to manage these. Where TB patients are not given adequate information regarding the possible side effects of treatment and how to manage it, patients are likely to default medication. Almost all (98%) TB patients were advised to take an HIV test across all the facilities visited.

### Persons with presumptive TB

In the absence of positive sputum smears for Acid Fast Bacilli (AFB), at the primary care level, most cases of pulmonary tuberculosis are diagnosed through clinical diagnoses.<sup>12</sup> This means that in some cases, patients are diagnosed with TB disease on the basis of their signs and symptoms, even if their specimen does not contain *M. tuberculosis*. During the survey, 32 providers were observed providing services to TB suspects. Table 5 illustrates how these suspects were identified. While the majority (62%, n=18) used coughing for more than three weeks as a proxy indicator for TB suspects, all of the outlined parameters shown in the Table below are primary screening criteria for TB.

Although all the above parameters were considered as primary criteria for TB suspicion, only 13% (4) of the providers were observed asking suspected TB patients about all five parameters as shown in Table 6.

Table 5. Diagnosis of TB

	Frequency	Percent	Valid Percent
<b>Close Contact with Active TB patient</b>			
yes	6	18.8	20
no	14	43.8	46.7
n/a	10	31.3	33.3
<b>Cough for More than 3 Weeks</b>			
yes	18	56.3	62.1
no	3	9.4	10.3
n/a	8	25	27.6
<b>Fever</b>			
yes	15	46.9	57.7
no	5	15.6	19.2
n/a	6	18.8	23.1
<b>Weight Loss</b>			
yes	14	43.8	53.8
no	5	15.6	19.2
n/a	7	21.9	26.9
<b>Fatigue/Tiredness</b>			
yes	11	34.4	42.3
no	8	25	30.8
n/a	7	21.9	26.9

Table 6. Number of criterion used in identifying TB suspects

No. of TB suspect <sup>13</sup> criterion used	Frequency	Percent
None	14	43.8
2	5	15.6
3	2	6.3
4	7	21.9
5	4	12.5
<b>Total</b>	<b>32</b>	<b>100.0</b>

12 Clinical diagnosis of smear-negative pulmonary tuberculosis in low-income countries: the current evidence. 2003 May; 3(5):288-96.

13 Person with presumptive TB.

## Screening of TB contacts

It is a recommended practice that household contacts are screened for symptoms of disease and Isoniazid preventive therapy (i.e. daily Isoniazid for at least 6 months) is offered to children aged less than 5 years along with all HIV-infected children. This is because young children living in close contact with a source case of smear-positive pulmonary TB are at particular risk of TB infection and disease. The risk of infection is greatest if contact is close and prolonged, such as that which an infant or toddler has with a mother or other caregivers in the household. The risk of developing disease after infection is much greater for children under 5 years than it is for children aged 5 years or older. Only about half (52%) of the interviewed TB patients reported that they were given information about the need to have family members and close contacts screened for TB so as to reduce the risk of infection. A similar question was included in the provider observation tool which assessed whether the patient was advised that their immediate contacts (children) should be screened for TB. Less than one-third (31%) of the observed providers, suggested to the TB patient that their immediate contacts be screened for TB.

## Communication - TB treatment

Provider observations showed that almost all providers are asking about ongoing TB treatment (94%, n=30). Most providers are also asking about previous treatments received (75%, n=24) and about other medications the patient is taking (72%, n=23). The majority also explained the treatment regimen (88%, n=28) and reinforced the importance of treatment adherence (84%, n=27). Sixty one percent (19) of the health providers explained/ followed-up on possible treatment side effects (see Table 7).

## Objective 3: Generate information on the existence of systems for maintaining TB service delivery capacity

### Systems

Accurate record-keeping on all individual patients, maintenance and regular reporting are minimum requirements that must be met by all staff involved

Table 7. TB treatment

	n=32	Percent (%)
<b>Did the provider check whether patient is under treatment for TB and taking the regular treatment?</b>		
yes	18.8	20
no	43.8	46.7
<b>Did the provider ask the patient about previous treatments received for their current symptoms (from other practitioners/healers)?</b>		
yes	24	75.0
no	7	21.9
n/a	1	3.1
<b>Did the provider ask about other medications patient is taking?</b>		
yes	23	71.9
no	9	28.1
<b>Did the provider explain the treatment regimen?</b>		
yes	28	87.5
no	4	12.5
<b>Did the provider explain about possible treatment side effects/follow-up on possible side effects? (n=31)</b>		
yes	19	61
no	12	38.7

in TB control services.<sup>14</sup> A total of 312 chart audits were conducted across all the sampled facilities to determine the quality of patient records. The findings indicated that record keeping was well maintained and confidentiality was observed. Six (6) structured interviews were also held with NTLN managers at provincial and district levels to assess potential barriers to provider TB-related adherence including setting of performance targets; available and updated guidelines, TB registers, and TB/MDR TB notification systems; mechanisms for forecasting, procurement, and distribution of drugs; capability of laboratories to perform TB tests; staff training; supervision and monitoring; and mechanisms of obtaining patient feedback. Six (6) facility managers were also interviewed using a questionnaire at facility level to assess the availability of basic inputs to provide quality services, including TB services; TB/MDR TB drugs; TB focal persons; availability of policies/guidelines;

14 The National Tuberculosis and Leprosy Programme: TB Manual, 2010.

turn-around times for lab results; TB registers; TB/MDR notification systems; infection control policies; supervision and monitoring systems.

### Annual performance targets

All (6) of the TB managers at district levels revealed that the NTLP establishes annual performance targets. However, only half of them reported that they have been reaching the set targets.

### TB registers/TB MDR notification system

The NTLP recording and reporting system consists of standardized cards, registers and reports. According to the TB manual, the forms used in the recording system include the TB Suspect Register, confirmed TB Registers and other data collection forms.<sup>15</sup> The MOH uses the Health Information Aggregated form 2 (HIA2) which aggregates all program areas including TB for reporting on a quarterly basis. Copies of the HIMS forms remain on site as official records. Findings from the chart audits to determine the quality of TB recordings are outlined in Figure 4.

Overall, the record keeping system was found to be satisfactory and was organized and updated. However, scheduling follow ups, recording symptoms and the existence of a contact tracing mechanism were found to be poor or not done at all.

### Availability of TB drugs

Seven out of ten of the facilities managers interviewed reported that they never experienced any shortages of TB drugs, co-trimoxazole (CTX), ART, or any other drugs in the past three months prior to the survey. However, the 30% that experienced drug shortages indicated that TB drugs in particular had run out at some point in the three months prior to this survey.

### Guidelines

Availability of policies/guidelines is very critical in the provision of TB services as they are used as the reference point for service providers. According to the survey findings, all facility managers at district

Figure 4. Chart reviews

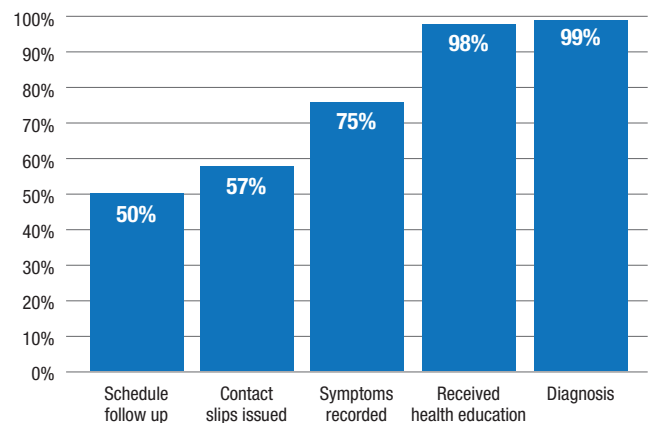
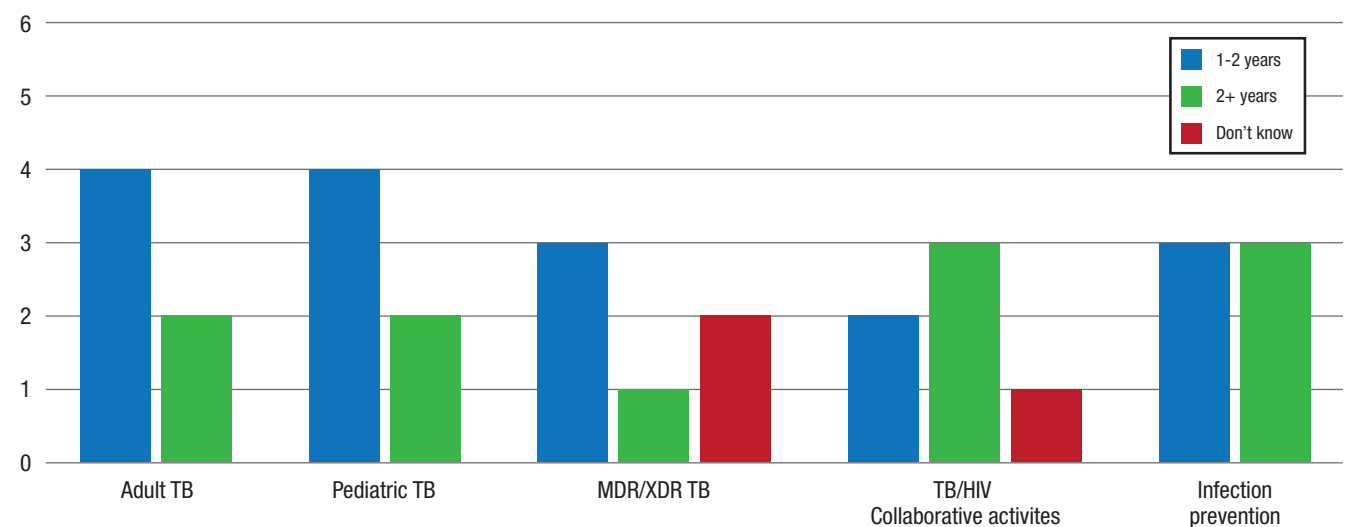


Figure 5. Updating of Guidelines



<sup>15</sup> TB Laboratory Request Form for Microscopy, TB Laboratory Request Form for Culture and Drug susceptibility testing, Laboratory Register for Microscopy, Laboratory Register for Culture and Drug susceptibility testing, TB Patient Identity Card, treatment Card, Health Facility TB Register, TB Transfer Form, Quarterly Report on TB Case Registration, Quarterly Order Form For TB Drugs at Health Facility, Quarterly Report On TB/HIV Activities, Quarterly Report On TB Outcomes, Laboratory demand and supply form, Laboratory quarterly report, Prophylaxis register, and Reference laboratory register.

levels reported that they had all guidelines in place including: Adult TB, Pediatric TB, MDR/XDR TB, TB/HIV, and infection prevention guidelines. The majority of the NTLP managers interviewed indicated that these guidelines were last updated between 1 to 2 years prior to the survey, as shown in the chart below. There was no mention of the mobile/vulnerable group's guidelines available in the facilities as this does not exist in Zambia.

## Objective 4: Generate information on perceptions of quality of care at provider and facility levels

### Quality of service

In order to understand client satisfaction, 160 TB patients were interviewed. The majority (76%, n=121) indicated that the services they received were good, whilst 18% (29) rated the quality of service received as medium with a few (6%, n=9) reporting that the quality of service received was not good. It was also interesting to note that of the TB patients interviewed, most (91%) reported that the providers treated them with respect and most (89%) indicated that providers listened to their concerns and let them ask questions. Generally, this shows that the patients were satisfied with the services being rendered to them across all the facilities visited. Ninety-six percent (96%) of the interviewed TB clients were happy with the service provided to them: 26% (40) reported that they were happy because of the way they were treated with respect in a very friendly manner; 16% (25) reported they were happy because of the drugs that they received for free; and 36% (56) reported that they were happy with the health education they received. Others reported the attitude of HCWs was good (9%, n=14) whilst only a few responded that there was nothing good (6%, n=9) at all. All of these factors are essential in providing quality service to TB patients. Patients did report, however, that the worst part of their visits was time spent in the facility as it could take a long time to be seen by a health care provider, causing frustration.

### Provider interaction

The results of the provider observations reveal that provider-patient interactions were very good. Most (94%) of the providers warmly greeted patients and introduced him/herself, and all looked at the client from time to time. Seventy-seven percent encouraged

the patients to ask questions and almost all (97%) providers treated the patient with respect. It was also encouraging to note that all providers used words that were easy to understand by the patients.

### Capacity building

Provision of training to TB providers is very crucial to ensure quality TB services. According to the survey findings, each facility had an average of two TB staff available in TB clinics. Twenty one percent (4 out of 19) of the interviewed facility managers in sampled facilities reported that their TB health care provider staff had been attending TB related refresher courses once every year. This is considered as the best practice in terms of refresher trainings. Forty two percent (8) indicated that their staff attend trainings once every quarter whilst others (26%, n=5) reported they were unsure of how often their staff attends TB refresher courses. Commonly offered trainings included: DOTS implementations, general management, IPT trainings, management of TB cases and TB infection control, and a refresher course on new TB guidelines and performance assessment.

### Supervision

For the proper functioning of the TB programme, it is essential that there is regular supervision at all levels of health service delivery. Supervision is considered to be an integral component of a TB control program as it contributes positively to the provision of quality TB services and reinforces any previous training that may have been received. Supervision at all levels should include: checking if national TB management guidelines are being followed, identifying weaknesses and addressing them, and providing opportunities for strengthening the program through technical support. The TB manual suggests that supervision should be done on a monthly basis at the district level. According to the survey findings, half (50%, n=5) of the interviewed providers reported that supervision is mostly done on a monthly basis, while 40% (n=4) of them reported that this was done on a quarterly basis.

### Treatment outcome

Early case finding and adequate treatment of TB patients is the cornerstone of TB control. Therefore the aim of treatment is to cure TB patients in order to prevent further transmission of TB in the communities and to prevent death from active TB or its late effects. In this survey, chart reviews and other survey tools were used to measure the treatment outcome of TB

patients/symptomatics for one year prior to the survey. Information from 312 chart reviews indicated that 40% of TB patients tested sputum positive at entry. The cure rate ranged between 78% and 86%, with highest being in the Southern province and the lowest in the Eastern province.

### **Provision and quality of DOTS support**

The main intervention for TB control is standardized short-course chemotherapy provided under direct observation at least in the initial phase of treatment for all identified smear positive TB cases. According to TB patients interviewed, not every TB patient was connected to a treatment supporter. Forty-three percent of the TB patients (43%) were connected to a treatment supporter. The main support received under DOTS included: Adherence support, collection of drugs, spiritual (through home visitations), and general health talks. Ninety-five percent (95%) of those TB patients who responded indicated that they were happy with the services they were receiving under DOTS.

# Recommendations

The results of this study clearly indicate a need to address the gaps in knowledge and practice in order to prevent errors in the diagnosis and management of TB moving forward. The following are some of the recommendations based on the study findings:

- As previously noted, the cornerstone of a successful TB treatment is early detection and adherence to medication. However, adherence is affected by many factors, among which are the side effects of medication/treatment and availability of drugs. In the event that side effects of medication emerge, TB patients who have not been given adequate information will likely stop treatment. Therefore, we must do more in providing the necessary information to TB patients regarding the management of side effects and TB medication. In addition, there is a need to communicate with patients about the need to screen TB contacts as well as reinforcing the importance of treatment adherence and interactions with other medicines.
- Capacity building: There is a need to increase capacity in health providers regarding TB management. Failure to do so may result in treatment failure, relapse, death and emergence of multidrug resistance tuberculosis (MDR-TB) among TB patients. Health care providers should be trained in using the MOH/WHO modules for TB treatment. They, along with community members themselves, must be trained as TB treatment supporters using specific modules so they can assist in identifying and referring TB suspects to health facilities for diagnosis. Dosage charts and simple booklets providing information on TB diagnosis and management should be made available to providers in these areas as well.
- Strengthen the implementation of TB Infection control (TBIC) measures at both health facilities and in the communities if TB infections are to be reduced. Whilst the TBIC was introduced about 2 years ago (2010), the implementation has been weak and slow at both facility and community level.
- There is a need to strengthen commodity management practices, particularly relating to the ordering and distribution of TB drugs, in order to reduce drug stock outs. This can be done by training staff in TB drug management and supply and strengthening technical support visits to facilities.
- The DOTS strategy is still weak in terms of diagnosis by sputum and observation of treatment. Therefore, there is a need to strengthen the implementation of DOTS strategy to enhance adherence and improve TB treatment outcomes. This will include:
  - Provision of diagnosis algorithms for TB screening
  - Strengthening the community involvement in observation of treatment
  - Strengthening the courier system for sputum from non-diagnostic centres
  - Strengthening community sensitization on the process of TB diagnosis and treatment



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