

**PROMOTING THE IMPLEMENTATION OF COLLABORATIVE  
TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS  
ACTIVITIES IN ADDIS ABABA, ETHIOPIA**

by

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submitted in accordance with the requirements

for the degree of

**DOCTOR OF LITERATURE AND PHILOSOPHY**

in the subject

**HEALTH STUDIES**

at the

**UNIVERSITY OF SOUTH AFRICA**

**PROMOTER: PROFESSOR BL DOLAMO**

**November 2012**

## DEDICATION

To my late father *WESEN DENEGETU* who considerately sent me to a modern school to join the academic world.

**D E C L A R A T I O N**

I declare that **PROMOTING THE IMPLEMENTATION OF COLLABORATIVE TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS ACTIVITIES IN ADDIS ABABA ETHIOPIA** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.



**AMENU WESEN DENEGETU**

30/11/2012

**Date**

## ACKNOWLEDGEMENTS

I want to acknowledge the following individuals and organizations for their respective contributions to this thesis:

- My earnest and sincere acknowledgment goes to my promoter, Professor BL Dolamo, for her kind-hearted and unreserved guidance, support and encouragement throughout the work of this thesis.
- The administration of UNISA for offering me the students' bursary support, including fund for data collection and processing, for my studies.
- The University of South Africa and Addis Ababa City Administration Health Bureau for offering me the ethical clearances of the study.
- Heads of facilities, coordinators, and healthcare providers for collaborative TB/HIV activities at the study health facilities (Hospitals of *Zewditu Memorial and Menelik II*; Health centres of *Lideta, Yeka, Kazanchis, Nifas-Silk Lafto No-1, Woreda 7, Kality, Bole and Gulele*) for being cooperative during the whole process of data collection in their health facilities.
- My acknowledgement also goes to the overall data collection coordinator, Hanna Kumsa, and the Addis Ababa City Administration Health Bureau TB/HIV collaborative activity regional coordinator, Genet Yoseph, respectively, for their special participation in this study.
- The ten research assistants: Tewodros Ayele, Dejene Megersa, Serkalem Tadesse, Elisabeth Mezigebe, Asnakech Melese, Aster Abera, Asegedech Tadesse, Rukia Mohammed, Zufan Eshetu and Alem Azebata, deserve my cordial acknowledgement; without their dedicated and unprejudiced efforts, this research would have not been realized.
- My acknowledgment has to go also to study participants of TB and/or HIV patients in the study health facilities.
- I acknowledge Dr Andrew Graham for his professional editing of the thesis.
- Last but not least, my special acknowledgement goes to my wife, Roman Kassahun, for her encouragement and assistance of the secretarial work.

# **PROMOTING THE IMPLEMENTATION OF COLLABORATIVE TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS ACTIVITIES IN ADDIS ABABA ETHIOPIA**

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## **ABSTRACT**

This study assessed implementation status of collaborative TB/HIV services in Addis Ababa City Administration aiming to promote better implementation strategies. The study employed mixed research methods and was descriptive. The study design used both quantitative and qualitative data using structured questionnaires and semi-structured interview guides, respectively. The study population for the quantitative design included 1,683 TB/HIV patients from 10 conveniently selected health facilities: *Zewditu* and *Menelik* Hospitals, health centres of *Lideta*, *Yeka*, *Kazanchis*, *NifaSilk-Lafto-No1*, *Woreda-7*, *Kality*, *Bole* and *Gulele*. All the patients who were on their follow-up cares during the data collection period were interviewed. Participants for qualitative design were 1,650 TB/HIV patients for short answered questions; 8 FGDs among patients; interview of 10 TB/HIV care facility coordinators/health workers and one regional TB/HIV care coordinator, all purposively selected. Quantitative data was analysed using SPSS 15.0, while qualitative data were thematically analysed manually.

Majority of HIV patients (92.8%) self-reported that they had been screened for TB; of which, 11.2% were diagnosed for active TB during their follow-up cares. Whereas, 87.1% of TB patients had been offered for HIV test; 79.8% tested; 20.2% tested positive. Knowledge on TB and HIV diseases, transmission and prevention was found to be low. However, participants appreciated the support of the healthcare delivery system in improving their health. Collaborative TB/HIV activities brought

additional on-the-job training for healthcare workers; improved flow of logistics and re-arrangement of infrastructures of facilities. The study revealed that, implementation of collaborative TB/HIV activities in Addis Ababa need boosting.

The study recommends the need for coordinated efforts of all stakeholders for improving implementation of collaborative TB/HIV care services, as identified by this study. The contribution of this study developed pocket-guide for healthcare workers on collaborative TB/HIV care services, which provides guidance in promoting better TB/HIV care.

**KEY CONCEPTS:** City Administration; CPT; HIV chronic care clinic; IPT; Mixed research methodology; TB clinic; TB/HIV collaborative activity.

<b>TABLE OF CONTENTS.....</b>	<b>PAGE N<sup>o</sup></b>
-------------------------------	---------------------------

## **CHAPTER ONE**

### **ORIENTATION TO THE STUDY**

<b>1.1 INTRODUCTION.....</b>	<b>1</b>
<b>1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM.....</b>	<b>3</b>
<b>1.2.1 Addis Ababa City Administration (the research area) .....</b>	<b>6</b>
<b>1.2.2 Source of the research problem .....</b>	<b>8</b>
<b>1.2.3 Background to the research problem.....</b>	<b>10</b>
<b>1.2.4 TB/HIV collaborative activities in Ethiopia and Addis Ababa.....</b>	<b>10</b>
<b>1.2.5 Statement of the research problem .....</b>	<b>12</b>
<b>1.3 AIM OF THE STUDY .....</b>	<b>12</b>
<b>1.3.1 Research purpose.....</b>	<b>12</b>
<b>1.3.2 Research objectives.....</b>	<b>12</b>
<b>1.4 SIGNIFICANCE OF THE STUDY .....</b>	<b>13</b>
<b>1.5 DEFINITION OF KEY CONCEPTS.....</b>	<b>13</b>
<b>1.6 FOUNDATIONS OF THE STUDY.....</b>	<b>14</b>
<b>1.7 RESEARCH DESIGN AND METHODOLOGY .....</b>	<b>17</b>
<b>1.8 ETHICAL CONSIDERATIONS .....</b>	<b>19</b>
<b>1.9 SCOPE AND LIMITATIONS OF THE STUDY.....</b>	<b>20</b>
<b>1.10 STRUCTURE OF THE THESIS .....</b>	<b>20</b>
<b>1.11 CONCLUSION .....</b>	<b>22</b>

## **CHAPTER TWO**

### **LITERATURE REVIEW**

<b>2.1 INTRODUCTION .....</b>	<b>24</b>
<b>2.2 TUBERCULOSIS .....</b>	<b>24</b>
<b>2.3 HUMAN IMMUNODEFICIENCY VIRUS .....</b>	<b>25</b>
<b>2.4 TB/HIV CO-INFECTION .....</b>	<b>26</b>

<b>2.5</b>	<b>CONCEPT OF COLLABORATION .....</b>	<b>28</b>
<b>2.6</b>	<b>THE CONCEPT OF COLLABORATIVE TB/HIV ACTIVITY .....</b>	<b>31</b>
<b>2.7</b>	<b>RATIONALE FOR COLLABORATIVE TB/HIV ACTIVITY.....</b>	<b>31</b>
<b>2.7.1</b>	<b>Mechanisms for Collaboration .....</b>	<b>33</b>
<b>2.7.2</b>	<b>Activities to decrease the burden of TB among HIV patients .....</b>	<b>43</b>
<b>2.7.3</b>	<b>Activities to decrease the burden of HIV in TB patients.....</b>	<b>48</b>
<b>2.8</b>	<b>HIV AMONG TB PATIENTS.....</b>	<b>56</b>
<b>2.9</b>	<b>TB AMONG HIV PATIENTS.....</b>	<b>57</b>
<b>2.10</b>	<b>CONCLUSION.....</b>	<b>58</b>

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

<b>3.1</b>	<b>INTRODUCTION .....</b>	<b>60</b>
<b>3.2</b>	<b>RESEARCH DESIGN .....</b>	<b>60</b>
<b>3.2.1</b>	<b>Mixed methods research design .....</b>	<b>61</b>
<b>3.2.2</b>	<b>The triangulation design .....</b>	<b>62</b>
<b>3.2.3</b>	<b>Variants of triangulation design .....</b>	<b>64</b>
<b>3.3</b>	<b>THE QUANTITATIVE RESEARCH DESIGN .....</b>	<b>65</b>
<b>3.3.1</b>	<b>Descriptive research design .....</b>	<b>66</b>
<b>3.3.2</b>	<b>Survey research.....</b>	<b>67</b>
<b>3.4</b>	<b>QUANTITATIVE RESEARCH METHODS .....</b>	<b>67</b>
<b>3.4.1</b>	<b>Population and sampling .....</b>	<b>68</b>
<b>3.4.2</b>	<b>Data collection for quantitative study of patients .....</b>	<b>72</b>
<b>3.4.3</b>	<b>Data collection approach and method for patients .....</b>	<b>73</b>
<b>3.4.4</b>	<b>Construction of the questionnaires .....</b>	<b>73</b>
<b>3.4.5</b>	<b>Structure of the questionnaire for patients .....</b>	<b>74</b>
<b>3.4.6</b>	<b>Study population for healthcare providers and/or coordinators.....</b>	<b>74</b>

3.4.7	Structure of the questionnaire for healthcare workers and/or coordinators for TB/HIV care .....	75
3.4.8	Pilot testing of the questionnaire .....	76
3.4.9	Training of the Research Assistants .....	76
3.5	ADMINISTRATION OF THE QUESTIONNAIRE .....	77
3.5.1	Validity and reliability of the questionnaire .....	78
3.5.2	Data analysis for quantitative data .....	80
3.5.3	Data presentation .....	81
3.6	THE QUALITATIVE RESEARCH DESIGN .....	81
3.7	QUALITATIVE RESEARCH METHODS .....	82
3.8	ETHICAL CONSIDERATIONS .....	93
3.8.1	Protecting the participants .....	94
3.8.2	Protecting the right of the Institution .....	94
3.8.3	Scientific integrity of the research .....	95
3.9	CONCLUSION .....	95

## CHAPTER FOUR

### QUANTITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1	INTRODUCTION .....	96
4.2	ADMINISTRATION OF QUESTIONNAIRE .....	96
4.3	RESPONSE RATE .....	97
4.4	DATA ANALYSIS .....	98
4.5	QUANTITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION	100
4.5.1	Data from Patients (TB and HIV patients) .....	100
4.5.2	Descriptive Statistics .....	100
4.5.2.1	<i>Section I: Socio-Demographic Data</i> .....	100
4.5.2.2	<i>Section II: Prevalence of HIV among tuberculosis patients and tuberculosis prevalence among HIV patients</i> .....	110

<b>4.5.2.3</b>	<b><i>Section III: Activities to decrease the burden of TB/HIV</i></b> .....	<b>128</b>
<b>4.5.3</b>	<b>Inferential Statistics</b> .....	<b>140</b>
<b>4.5.4</b>	<b>Data from healthcare providers and/or facility TB/HIV coordinators</b> .....	<b>152</b>
<b>4.6</b>	<b>CONCLUSION</b> .....	<b>154</b>

## CHAPTER FIVE

### QUALITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION

<b>5.1</b>	<b>INTRODUCTION</b> .....	<b>155</b>
<b>5.2</b>	<b>ADMINISTRATION OF INTERVIEW GUIDES</b> .....	<b>156</b>
<b>5.3</b>	<b>RESPONSE RATE</b> .....	<b>157</b>
<b>5.4</b>	<b>DATA ANALYSIS</b> .....	<b>157</b>
<b>5.5</b>	<b>QUALITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION</b> ..	<b>157</b>
<b>5.5.1</b>	<b>Short Answered Interview Questions for Patients</b> .....	<b>158</b>
<b>5.5.2</b>	<b>Interview of TB/HIV Collaborative activity health facility Coordinators</b> .	<b>170</b>
<b>5.5.3</b>	<b>Focus group discussion among patients of TB and HIV</b> .....	<b>175</b>
<b>5.5.4</b>	<b>TB/HIV Policy Implementation in Addis Ababa City Administration</b> .....	<b>191</b>
<b>5.5.4.1</b>	<b><i>Mechanisms for Collaboration</i></b> .....	<b>192</b>
<b>5.5.4.2</b>	<b><i>Activities to Decrease the Burden of TB among PLHIV</i></b> .....	<b>196</b>
<b>5.5.4.3</b>	<b><i>Activities to decrease the burden of HIV among TB patients</i></b> .....	<b>197</b>
<b>5.6</b>	<b>CONCLUSION</b> .....	<b>200</b>

## CHAPTER SIX

### CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

<b>6.1</b>	<b>INTRODUCTION</b> .....	<b>204</b>
<b>6.2</b>	<b>THE AIM AND OBJECTIVES OF THE STUDY</b> .....	<b>204</b>
<b>6.3</b>	<b>RESEARCH DESIGN AND METHOD</b> .....	<b>205</b>
<b>6.4</b>	<b>CONCLUSIONS</b> .....	<b>206</b>
<b>6.4.1</b>	<b>Determine HIV prevalence among TB patients in Addis Ababa</b> .....	<b>206</b>
<b>6.4.2</b>	<b>Determine TB prevalence among HIV patients in Addis Ababa</b> .....	<b>207</b>

6.4.3	Describe implementation status of collaborative TB and HIV care services .....	208
6.4.4	Identify how programme implementation impacts on both TB and HIV patients .....	216
6.4.5	Identify how programme implementation impacts on staff development	221
6.4.6	Describe the programme implementation in relation to infrastructure..	223
6.5	LIMITATIONS OF THE STUDY.....	224
6.6	RECOMMENDATIONS .....	224
6.7	CONTRIBUTION OF THE STUDY .....	233
6.8	IMPLICATIONS OF THE STUDY.....	234
6.9	CONCLUDING REMARKS .....	234

## CHAPTER SEVEN

### COLLABORATIVE TB/HIV CARE SERVICES: A POCKET GUIDE FOR HEALTH WORKERS IN ETHIOPIA

7.1	INTRODUCTION .....	237
7.2	PROCESS OF COMPILING THE POCKET GUIDE.....	237
7.3	APPLICATION OF THE THEORETICAL FRAMEWORK TO THE DEVELOPMENT OF THE GUIDELINES.....	238
7.4	APPLICATION OF THE EXISTING GLOBAL TB/HIV CARE POLICY AND GUIDELINES TO THE COMPILATION OF THE POCKET GUIDE.....	239
7.5	FORMULATION OF A POCKET GUIDE ON COLLABORATIVE TB/HIV CARE SERVICES FOR HEALTH WORKERS IN ETHIOPIA .....	255
7.6	ANALYSIS AND VALIDATION OF THE POCKET GUIDE.....	276
7.7	RECOMMENDATIONS FOR IMPLEMENTATION OF THE POCKET GUIDE	278
7.8	CONCLUSION.....	280
	BIBLIOGRAPHY .....	281

<b>LIST OF TABLES.....</b>	<b>PAGE N<sup>o</sup></b>
Table 1.1: Sources of data, methods of data collection, data type and sampling techniques.....	18
Table 4.1: Response rate for the quantitative study, Addis Ababa City Administration, August 2011.....	97
Table 4.2: Number of Study Participants by health facility and category of disease.....	101
Table 4.3: Proportion of study participants by age group and category of disease.....	102
Table 4.4: Proportion of study participants by Sex and category of disease.....	103
Table 4.5: Proportion of study participants by Marital Status and category of disease.....	104
Table 4.6: Proportion of study participants by Religion and category of disease.....	105
Table 4.7: Proportion of study participants by Ethnicity and category of disease.....	106
Table 4.8: Proportion of study participants by Educational status and category of disease.....	107
Table 4.9: Proportion of study participants by Occupation and category of disease.....	108
Table 4.10: Duration of TB disease and duration since on anti-TB treatment in months.....	110
Table 4.11: How long have you been diagnosed HIV-positive?.....	111
Table 4.12: How long have you been on HAART?.....	112
Table 4.13: Have you ever been tested for HIV before you knew your TB disease or ever been diagnosed for TB before your HIV-positive status?.....	113
Table 4.14: When were you tested for HIV?, TB patients.....	114
Table 4.15: When were you diagnosed with TB before you knew your Positive HIV status?.....	115
Table 4.16: If tested for HIV, how were your results?.....	115
Table 4.17: Which site of TB was that?.....	116

Table 4.18: Have you started of HIV care and treatment?.....	117
Table 4.19: Have you completed your anti-TB treatment?.....	117
Table 4.20: Have you been offered (self experience) for HIV test now and tested for it during your TB treatment?.....	118
Table 4.21: If tested for HIV, who conducted the test?.....	120
Table 4.22: If tested for HIV, when were you tested in reference to day first diagnosed for TB?.....	120
Table 4.23: If tested for HIV, how were your results?.....	121
Table 4.24: If test results were positive, have you started HIV care and treatment?.....	122
Table 4.25: If patient is tested HIV-positive (before or after TB disease), have you already started HAART?.....	123
Table 4.26: Have you been diagnosed for TB after you knew your HIV-positive status?.....	124
Table 4.27: When were you diagnosed?.....	125
Table 4.28: Which site of TB was that?.....	126
Table 4.29: Treatment completion among those diagnosed for TB.....	126
Table 4.30: Have you already started HAART during your diagnosis for TB?.....	127
Table 4.31: Is HIV testing offered or encouraged (knowledge) at TB clinic, and Is TB screening offered or encouraged at HIV care centres by percent, Addis Ababa City Administration.....	128
Table 4.32: Knowledge about Cotrimoxazole preventive therapy for TB patients and INH Preventive therapy for HIV patients?.....	130
Table 4.33: Do PLHIV who have TB have access to CPT as part of the package of care in the health facilities?.....	131
Table 4.34: Do PLHIV who do not have active TB have access to IPT as part of the package of care in the health facilities?.....	133
Table 4.35: Have you ever been treated with Cotrimoxazole preventive therapy among PLHIV?.....	134
Table 4.36: Have you ever been provided with IPT?.....	136

Table 4.37: If you were taking or currently under CPT, from where did/do you collect the drug?.....	138
Table 4.38: If you were taking or currently under IPT, from where did/do you collect the drug?.....	139
Table 4.39: Association of selected variables with Ever had been tested for HIV before diagnosed for TB among TB patients in Addis Ababa City Administration, July 2011. n=826.....	140
Table 4.40: Association of selected variables with Ever had been offered for HIV test during TB treatment among TB patients in Addis Ababa City Administration, July 2011. n=834.....	141
Table 4.41: Association of selected variables with is HIV testing offered at TB clinics among TB patients in Addis Ababa City Administration, July 2011. n=834.....	142
Table 4.42: Association of selected variables with 'Is screening for TB offered at HIV clinics among HIV patients' in Addis Ababa City Administration, July 2011. n=819.....	143
Table 4.43: Association of selected variables with Ever had been provided with CPT at TB clinics among TB patients in Addis Ababa City Administration, July 2011. n=834.....	144
Table 4.44: Association of selected variables with Ever had been provided with IPT at HIV clinics among HIV patients in Addis Ababa City Administration, July 2011. n=849.....	145
Table 4.45: Association of selected variables with Ever had been diagnosed for TB before HVI positive among HIV patients in Addis Ababa City Administration, July 2011. n=843.....	146
Table 4.46: Association of selected variables with Ever had been diagnosed for TB after HIV-positive among HIV patients in Addis Ababa City Administration, July 2011. n=849.....	147
Table 4.47: Association of selected variables with Knowledge about CPT among TB/HIV patients in Addis Ababa City Administration, July 2011. n=834.....	148

Table 4.48: Association of selected variables with Knowledge about IPT among TB/HIV patients in Addis Ababa City Administration, July 2011. n=849.....	149
Table 4.49: Association of selected variables with Ever had been tested for HIV before diagnosed for TB among TB patients in Addis Ababa City Administration, July 2011. n=826.....	150
Table 4.50: Association of selected variables with Ever had been diagnosed for TB after HIV-positive for HIV patients in Addis Ababa City Administration, July 2011. n=849.....	151
Table 4.51: Association of selected variables with Ever had been diagnosed for TB before HIV-positive for HIV patients in Addis Ababa City Administration, July 2011. n=843.....	152
Table 4.52: Socio-demographic characteristics of TB/HIV collaborative activity health facility coordinators and TB/HIV care providers, Addis Ababa City Administration. n=10.....	152
Table 5.1: Response rate for the qualitative study, Addis Ababa City Administration, August 2011.....	157
Table 7.1 Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services...	241

<b>LIST OF FIGURES.....</b>	<b>PAGE N<sup>o</sup></b>
Figure 1.1: Map of Africa showing the location of Ethiopia.....	6
Figure 1.2: Map of Ethiopia by regional administration.....	6
Figure 1.3: Map of Addis Ababa City by Sub-City (The Research Site).....	8
Figure 1.4: Conceptual framework for Provision of collaborative TB and HIV care services.....	17
Figure 2.1: Monitoring and Evaluation Framework.....	42
Figure 3.1: Triangulation design: Convergence Model.....	65
Figure 4.1: Age Group of Participants by Category of disease, Addis Ababa, August 2011.....	102
Figure 4.2: Proportion of study participants by sex and category of disease (4.2a-TB Patients, 4.2b-HIV Patients), Addis Ababa August 2011.....	103
Figure 4.3: Proportion of study participants by marital status and category of disease, Addis Ababa August 2011.....	104
Figure 4.4: Proportion of study participants by religion and category of disease (4.4a-TB Patients, 4.4b-HIV Patients), Addis Ababa August 2011.....	105
Figure 4.5: Proportion of study participants by Ethnicity and category of disease..	107
Figure 4.6: Proportion of study participants by Educational Status and category of disease.....	108
Figure 4.7: Proportion of study participants by Occupation and category of disease.....	109
Figure 4.8: Duration of TB disease and duration of treatment in Percent, TB patients.....	111
Figure 4.9: Proportion of patients diagnosed for TB for HIV patients and tested for HIV for TB patients before diagnosed for the current disease.....	113
Figure 4.10: Started Care and Treatment by Percent, TB patient.....	117
Figure 4.11: Have you been offered for HIV test and tested for it now during your TB treatment by Percent, TB patients (offered vs tested)?.....	119
Figure 4.12: Started HIV care and treatment by Percent, TB/HIV patients.....	122

Figure 4.13: Started HAART by Percent, TB patients.....	123
Figure 4.14: Ever been diagnosed with TB after knowing HIV status by Percent, HIV patients.....	124
Figure 4.15: Site of TB disease by Percent, HIV patients.....	126
Figure 4.16: Started HAART by Percent, TB patients.....	127
Figure 4.17: Is HIV testing offered or encouraged at TB clinics and Is TB screening offered at HIV care Clinics by Percent.....	129
Figure 4.18: Knowledge of Cotrimoxazole Preventive Therapy for TB patients and INH Preventive Therapy for HIV patients by Percent, Addis Ababa City Administration, August 2011.....	131
Figure 4.19: Ever been treated with CPT by Percent, HIV patients.....	134
Figure 4.20: Ever been treated with IPT by Percent, TB/HIV patients.....	136
Figure 4.21: Clinic where CPT was re-filled in Percent, TB/HIV patients.....	138
Figure 4.22: Clinic where IPT was re-filled by Percent, HIV patients.....	139

**LIST OF ANNEXURES**

Annexure A	Certificate of clearance from the university of South Africa health studies research and ethics committee
Annexure B	Letter of ethical clearance from the Addis Ababa city administration health bureau
Annexure C	Letter of permission from Addis Ababa Health Bureau
Annexure D	Covering letter accompanying interviewer administered questionnaire
Annexure E	The Consent Form
Annexure F	Interviewer-administered questionnaire for TB patients
Annexure G	Interviewer-administered questionnaire for HIV patients
Annexure H	Interview questionnaire for TB/HIV care facility coordinators and healthcare providers
Annexure I	Focus group discussion guide for TB patients
Annexure J	Focus group discussion guide for HIV patients
Annexure K	Interview questionnaire for Regional (Addis Ababa Health Bureau) Coordinator for collaborative TB/HIV care

## LIST OF ACRONYMS AND ABBREVIATIONS

<b>AIDS</b>	Acquired Immunodeficiency Virus
<b>ANC</b>	Antenatal Care
<b>AOR</b>	Adjusted Odds Ratio
<b>ART</b>	Anti Retroviral Therapy
<b>CD4</b>	Cluster Difference 4, a type of white blood cell that fights infection.
<b>CDC</b>	Centres for Disease Control and Prevention in Atlanta, Georgia (USA)
<b>CI</b>	Confidence Interval
<b>CPT</b>	Cotrimoxazole Preventive Therapy
<b>CSA</b>	Central Statistical Authority
<b>DOTS</b>	Directly Observed Treatment, Short course
<b>EDIR</b>	A non-formal organization
<b>EHAPCO</b>	Ethiopian HIV/AIDs Prevention and Control Office
<b>EHNRI</b>	Ethiopian Health and Nutrition Research Institute
<b>EPI</b>	Expanded Programme on Immunization
<b>EPI INFO</b>	Is public domain statistical software for epidemiology developed by Centres for Disease Control and Prevention in Atlanta, Georgia (USA).
<b>FDRE</b>	Federal Democratic Republic of Ethiopia
<b>FGD</b>	Focused Group Discussion
<b>FHAPCO</b>	Federal HIV/AIDS Prevention and Control Office, Ethiopia
<b>FMOH</b>	Federal Ministry of Health, Ethiopia
<b>FNA</b>	Fine Needle Aspiration
<b>FP</b>	Family Planning
<b>HAART</b>	Highly Active Antiretroviral Therapy
<b>HC</b>	Health Centre
<b>HCT</b>	HIV Counselling and Testing
<b>HCW</b>	Health Care Worker
<b>HIV</b>	Human Immunodeficiency Virus
<b>HMIS</b>	Health Management Information System
<b>IC</b>	Infection Control, Tuberculosis
<b>ICF</b>	Intensified Case Finding, Tuberculosis
<b>IMCI</b>	Integrated Management of Childhood Illnesses

<b>INH</b>	Isoniazid, anti-TB drug
<b>IPT</b>	INH Preventive Therapy, Tuberculosis
<b>LRTIs</b>	Lower Respiratory Tract Infections
<b>MDR-TB</b>	Multi-Drug Resistant Tuberculosis
<b>NACP</b>	National AIDS Control Program
<b>NGO</b>	Non-Governmental Organization
<b>NTP</b>	National TB Program
<b>OAU</b>	Organization of African Union
<b>PITC</b>	Provider Initiated Testing and Counselling for HIV
<b>PLHIV</b>	People Living with HIV
<b>PMTCT</b>	Prevention of Mother to Child Transmission of HIV
<b>PPM</b>	Public Private Mix, for TB control programme
<b>PPS</b>	Probability Proportional to Size
<b>SD</b>	Standard Deviation
<b>SPSS</b>	Statistical Package for Social Sciences Study
<b>STI</b>	Sexually Transmitted Infections
<b>TB</b>	Tuberculosis
<b>THAC</b>	TB/HIV Advisory Committee
<b>TST</b>	Tuberculin Skin Test
<b>UNAIDS</b>	United Nations for AIDs Programme
<b>UNISA</b>	University of South Africa
<b>URTIs</b>	Upper Respiratory Tract Infections
<b>VCT</b>	Voluntary Counselling and Testing for HIV

# CHAPTER ONE

## ORIENTATION TO THE STUDY

### 1.1 INTRODUCTION

The global spread of human immune deficiency virus (HIV), particularly in sub-Saharan Africa, has been accompanied by a major increase in the number of new cases of tuberculosis (TB) (Global Fund to Fight AIDS, TB, and Malaria [GFATM], 2011). According to the 2010 report of the United Nations Programme for AIDS (UNAIDS), TB had killed an estimated 1.68 million people, including 0.38 million TB patients who were also HIV-positive (UNAIDS, 2011a). According to World Health Organisation (WHO), in the same year (2010), 350,000 people were estimated to have died of TB and HIV co-infection globally, in addition to the 1.1 million people who died from TB alone (WHO, 2011a). Those people who have HIV infection as well as TB when they die, that is TB and HIV co-infection, are internationally reported as having died of HIV infection (WHO, 2010b). In total, an estimated 1.8 million people died of HIV infection in 2010 (UNAIDS, 2010a). In addition, there were an estimated 8.8 million new cases of active TB worldwide in 2010, of which 1.1 (13%) million were estimated to have been among people living with HIV. The proportion of TB and HIV co-infection was highest in Africa, accounting for 82% of TB cases among people living with HIV (WHO, 2011a).

Effective case detection and treatment of TB should therefore be a priority for HIV programmes (Njosing, 2006), to prevent, diagnose, and treat TB in people living with HIV, their families and the communities (WHO, 2008a). According to the WHO policy on collaborative TB/HIV activities (WHO, 2012a), collaborative TB/HIV management is essential to ensure that HIV-positive TB patients are identified and treated appropriately, and to prevent TB in HIV-positive people. These activities include:

- Establishing mechanisms for collaboration between TB and HIV programmes
  - Coordinating bodies, Joint TB/HIV planning, monitoring and evaluation, HIV surveillance among TB patients
- For HIV-positive people, intensified TB case-finding (ICF), and for those without active TB, isoniazid (INH) preventive therapy (IPT) and infection control (IC) in healthcare and congregate settings

- For TB patients; HIV testing, care and support, HIV prevention and for those TB patients infected with HIV, Cotrimoxazole preventive therapy (CPT) and antiretroviral therapy (ART).

Statistics show that very few countries in sub-Saharan Africa are fully implementing the Directly Observed Treatment Short-Course (DOTS) strategy for TB treatment, achieving country-wide coverage and global WHO targets of 70% case detection rate and 85% cure rate (WHO, 2003). However, these statistics do not take into account the increased TB mortality in high HIV prevalent populations to accurately determine the performance of a DOTS programme. Collaborative TB and HIV care and prevention rely on full implementation of the DOTS strategy as part of wide-ranging HIV care and support programmes as well as collaborative TB and HIV programme activities. These activities must not only be acceptable, feasible, and affordable but also part of a strengthened national health service. The emphasis on collaborative TB and HIV activities should be the logical progression of an effective national DOTS programme, as stated in the WHO Guideline (WHO, 2003) for the implementation of collaborative TB and HIV programme activities.

According to a baseline study on collaborative TB/HIV activities in Kinshasa, Congo, by Amanda, Annelies, Sabue, Marie, Nikki, Frieda, Valentin and Etienne (2008:137), most of the surveyed health facilities are providing activities to decrease the burden of TB/HIV. Some HIV activities were implemented in 58% of TB clinics and the majority of health facilities had at least one healthcare worker (HCW) trained in either HIV counselling or testing. Experience from Tanzania regarding collaboration of TB and HIV programmes show that TB case detection among people living with HIV (PLHIV) increased more than threefold and TB treatment was integrated in home-based care by non-governmental organizations [NGOs] (Wandwalo, Kapalata, Tarimo, Corrigan & Morkve, 2004:109).

Regional as well as national research on assessment of the implementation status of all activities of collaborative TB/HIV in Ethiopia is limited. However, research on specific activities from the collaborative TB/HIV care activities has been carried out at various regions of the country. For example, a study by Degu, Aschalew and Bernt (2007:4) on acceptance of voluntary counselling and testing for HIV (VCT) among TB patients in Southern Ethiopia shows that 73% were willing to be tested and 58% of those willing accepted the test. The overall acceptability rate was 35%, with 20.6% HIV-positive. In another study in Addis Ababa, a cross-sectional survey of blood samples was made

from smear positive pulmonary TB patients for HIV testing. Of the 236 blood samples collected, 107(45.3%) were HIV-positive (Demissie, Lindtjørn & Tegbaru, 2000:277). All these studies showed a strong link between the two diseases and the need to urgently prioritise the strengthening of collaborative activities. A close follow up of the status of collaboration nationally and regionally is equally important for programme improvement.

This research work will explore the implementation status of collaborative TB and HIV care activities for mutual benefit to enable the general health service to deliver interventions to control HIV-related TB and TB-related HIV cases under Addis Ababa City administration. The study was facility based, cross sectional, and employed mixed method research design. Interview was done on HIV chronic care clinic attendees and TB treatment clinic attendees. In addition, in-depth interviews among patients and healthcare providers were conducted. This was supplemented with focus group discussions among TB/HIV patients and interview of coordinators of collaborative TB/HIV activity at regional and health facility levels.

## **1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM**

An east African country, Ethiopia is the most populous landlocked country in the world, and with a surface area of 1,127,127 square kilometres is bordered by Eritrea to the north, Djibouti and Somalia to the east, Kenya and Somalia to the South, and Sudan and South Sudan to the West (see Figure 1.1, below). The country is divided into nine ethnically based regions (*Afar, Amhara, Binshangul-Gumuz, Gambela, Hareri, Oromiya, Somali, Tigray, and Southern National Nationalities and Peoples' Region [SNNPR]*) and two city administrations (*Dire-Dawa and Addis Ababa*). There are 817 *Woredas* (districts) across all 11 regional administrations (Figure 1.2, below), each of which is further divided into *Kebeles*, the smallest administrative units. The total population of the country for 2012 was estimated at 84,040760 (projected from Summary and Statistical Report of the 2007 Population and Housing Census Results, Central Statistical Authority of Ethiopia [CSA], 2008:11), with an annual growth rate of 2.6%.

The major health problems remain largely preventable communicable diseases and nutritional disorders. Despite major progress in the last one and half decades, Ethiopia's population still faces a high rate of morbidity and mortality and the health status remains relatively poor (Federal Democratic Republic of Ethiopia [FDRE], 2010:3). The most recent vital health indicators (2007/08) show a life expectancy of 54 years (53.4 years

for male and 55.4 for female), an infant mortality rate of 59/1000, and an under-five mortality rate of 88/1000 (FDRE 2012:109).

Following changes of government in 1991, the health policy was the first of its kind in the country and was among a number of political and socio-economic transformation measures that were put in place. This was followed by the formulation of four consecutive phases of comprehensive health sector development plans (HSDPs), the first phase of which was implemented in 1996/97. Both were the result of critical reviews and scrutiny of the nature, magnitude and root causes of prevailing and newly emerging health problems. The core elements were democratisation and decentralisation of the healthcare system, development of its preventive, promotive and curative components, assurance of accessibility for all segments of the population and the promotion of private sector and NGOs participation in the health sector (FDRE-MOH, 2010).

The recently implemented business processing re-engineering (BPR) of the health sector has introduced a three-tier delivery system characterised by a first level of a *Woreda*/district health system, comprising a primary hospital (with population coverage of 60,000-100,000 people), health centres (1 for 15,000-25,000) and their satellite health posts (1 for 3,000-5,000), connected by a referral system. A primary hospital, health centres, and health posts form a primary healthcare unit with each health centre having five satellite health posts. The second level in the tier is a general hospital with population coverage of 1-1.5 million people; and the third a specialised hospital that covers a population of 3.5-5 million (FDRE-MOH, 2010).

The Federal Ministry of Health of Ethiopia (FMOH) and the Regional Health Bureaus (RHBs) focus more on policy matters and technical support while *Woreda* health offices have basic roles of managing and coordinating the operation of a district health system under their jurisdiction (FDRE-MOH, 2010:4). Regions and districts have RHB and district health offices respectively for the management of public health services at their levels. RHBs and *Woreda* health offices share decision-making processes, decision powers, duties and responsibilities.

The development of the HSDP IV is based on the main health problems of the country, with HSDP specifically focussing on TB, HIV, malaria, and nutritional disorders. Particularly, interventions to curb the dual burden of TB and HIV have been given special attention for the development of the HSDP IV. Ethiopia's HIV epidemic status is generalised and mainly heterogeneous, with marked regional variations. HIV prevalence ranges from 0.9% in Southern Ethiopia to 6.5% in the Gambella region, the western part

of the country. There is also wide urban - rural variation in HIV prevalence, with urban areas estimated to have a prevalence of 4.2% compared to 0.6% in rural areas (FDRE, 2012). The first case of HIV in Ethiopia was reported in 1984, since when it has become a major public health concern, leading the government to declare a public health emergency in 2002 (USAID-E, 2012).

According to the recent Ethiopian HIV/AIDS progress report, the national epidemiologic trend of HIV prevalence over the past eight years seemed to be stable. Nevertheless, the prevalence appears to be declining in both urban and rural areas. Data from antenatal clinics showed that the HIV prevalence among pregnant women had declined from 4.9% in 2001 to 2.6% in 2009. However, the report outlined the most at risk individuals and segments of the population affected by the epidemic: semi-urban and small market town residents, females of younger age groups, HIV discordant couples, commercial sex workers, the uniformed and long distance truck drivers (FDRE, 2012).

In 2011, the estimated adult HIV prevalence in Ethiopia was 1.5 percent (National AIDS Resource Centre [NARC-E], 2012a). Although the epidemic is currently stable, HIV remains a major development challenge for Ethiopia. Poverty, food shortages, and other socio-economic factors amplify its impact. According to a recent report of Ethiopian NARC, approximately 789,960 Ethiopians were living with HIV in 2011, with 53,831 individuals having died as a result of infection with the virus in the same year (NARC-E, 2012a).

TB is prevalent in Ethiopia, ranking the country as seventh among the world's 22 worst burdened countries, and one of the top three in Africa (WHO, 2011a). The annual incidence rate of all forms of TB cases was estimated at 378 per 100,000 population while incidence rate of smear positive cases was 163 per 100,000. The prevalence of all forms of TB was estimated at 579 per 100,000 (WHO, 2009b). According to the Ethiopian Millennium Development Goals (MDGs) Progress Report (United Nations Development Program-Ethiopia [UNDP-E], 2010), the TB case detection rate for the country was only 34% and the death 92 per 100,000 people for 2007.

Ethiopia adopted the Directly Observed Treatment Short course (DOTS) strategy in 1991, since then, coverage has expanded to 95 percent of the population. The country has increased health service coverage to 89.6% in 2009/10 and recent data shows significant progress in relation to TB detection (UNDESA Statistics cited in UNDP-E, 2010). A recent global TB report for Ethiopia (WHO, 2011a) revealed that TB killed an estimated 39,000 people in 2010, with annual prevalence of 394 cases per 100,000 and

a case detection rate of 72 per 100,000. A report by UNDP-E (2010) outlined challenges and feasible recommendations for increasing TB case detection in Ethiopia. Among others, training of TB care staff and strengthening coordination of implementing agencies were pointed out. Hence, gaps in diagnostic capacity and weak partnership coordinating mechanisms, weak planning and implementation capacity at regional level and weak diagnostic laboratory services at health facility levels ought to be addressed.

The current global health policy to deal with the dual burden of TB and HIV is targeting the two diseases in one spot, that is tackling HIV should include tackling TB as a major killer of PLHIV. Tackling TB should include tackling HIV as the most potent force driving the TB epidemic (WHO 2002:16).



**Figure 1.1:** Map of Africa showing the location of Ethiopia (Adapted from Worldatlas [s.a])



**Figure 1.2:** Map of Ethiopia by regional administration (Adapted from Wikipedia 2012)

### 1.2.1 Addis Ababa City Administration (the research area)

Addis Ababa is the capital city of Ethiopia, the largest city in the country with an estimated total population of 3,755,192, of whom 47.6% are males and 52.4% female (projected from 2007 CSA), with a population growth rate of 2.1% (CSA, 2008:9). As a chartered city, Addis Ababa has the status of both city and region (City Administration), and is the base for the African Union and its predecessor, the Organization of African Union (OAU). It also hosts the headquarters of the United Nations Economic Commission for Africa (UNECA) and numerous other continental and international organisations. Addis Ababa is therefore often referred to as "the political capital of Africa", due to its historical, diplomatic, and political significance for the

continent (United Nations Economic Commission for Africa [UNECA] 2012, cited in Wikipedia 2012). The city is populated by diverse ethnic and religious people from the other regions of Ethiopia, and the country has as many as 80 ethnic groups speaking at least 80 different languages belonging to various religious groups. Administratively, the city is divided into ten sub-cities and has 116 *Woredas*/districts (Figure 1.3, below).

In the City Administration there are 50 hospitals, of which five are regional (under Addis Ababa Health Bureau), four federal (under Federal Ministry of Health), one specialised central referral (under Addis Ababa University), three other governmental hospitals (two defence force and one police), three NGOs and 34 private. In addition, there are 30 health centres in the city (Federal Ministry of Health of Ethiopia [FMOH], WHO-Ethiopia, Central Statistics Agency of Ethiopia [CSA] and the Health Metrics Network [HMN], 2007).

The Addis Ababa City Administration health bureau (AACAHB), often called Addis Ababa Health Bureau (AAHB), administers five hospitals, one regional laboratory, one health science collage, 10 sub-city health offices and 27 health centres. In addition, there are more than 464 private clinics, 262 pharmacies and 244 drug shops. More than 46 NGOs with 51 projects are working in the city on different health activities. The potential health services coverage of Addis Ababa in 2010 was not more than 36%, with one public health centre to 40,000 populations (AACAHB, 2011).

According to the single point HIV estimate of 2007, the adult HIV prevalence for Addis Ababa for 2011 was estimated at 9.2%, of whom 7.3% were male and 11% female. Consequently, women accounted for 59% of the HIV-positive population in the city (FMOH, 2007a). The cumulative number of PLHIV enrolled in chronic HIV care clinics at end of 2010 was 99,875. A total of 10,362 active TB cases had been detected in the same year in the city, of whom 87.7% (9,084) were tested for HIV. Of these, 25.1% (2,277) were found co-infected with HIV (AACAHB, 2011). In 2011/12, a total of 10,362 TB cases have been diagnosed in the city. Large number of TB cases (1,185. or 11.4%) were diagnosed from HIV care and treatment centres in the same year (AACAHB, 2011). In Addis Ababa, 35 government health facilities and 40 private health facilities offer anti-TB treatment, however, case detection for TB in Addis Ababa is 63%, lower than the WHO target of 70% (The Integrated Regional Information Networks [IRIN], 2012).

According to personal communication with coordinator of AAHB TB/HIV collaborative activity, all the health centres and hospitals administered by the City Administration

Health Bureau diagnose and treat active tuberculosis cases routinely. The hospitals have all TB diagnostic facilities, including Fine Needle Aspiration (FNA) and x-ray, whereas the health centres perform sputum microscopy only. This is because of resource limitation to avail all diagnostic facilities and trained health workers at all of the health facility levels (Genet, 2011).



**Figure 1.3:** Map of Addis Ababa City by sub-city (The Research Site). (Adapted from AACAHB, 2011)

In the following sub-sections; sources of the research problem, global and national (Ethiopian) background information about TB/HIV collaborative activities implementation and statement of the research problem are described.

### 1.2.2 Source of the research problem

According to the TB/HIV implementation guideline of the Federal Democratic Republic of Ethiopia Ministry of Health (FDRE-MOH), the high burden of HIV presents a serious threat to the control of TB. The unprecedented size of the epidemic of HIV-related TB demands collaborated TB and HIV programmes actions at all levels. The two diseases (TB and HIV) have strong ties in high HIV prevalence populations, with TB a leading cause of morbidity and mortality, and HIV driving the TB epidemic, particularly in sub-Saharan Africa (FMoH, 2007b). Evidence shows that there is no decline in growth in the

number of deaths due to TB among HIV-positive in most Africa countries (Olalekan, Ismail, Khalid & Mubashir 2009:65).

TB, a chronic bacterial infection, causes more deaths worldwide than any other infectious disease. It is spread through the air and usually infects the lungs, although other organs are sometimes involved. Some 2 billion people, one-third of the world's population, are infected with the TB organism, mycobacterium tuberculosis, though most do not develop active TB. However, in people with weakened immune systems, especially those infected with the human immunodeficiency virus (HIV, the cause of AIDS), TB organisms may overcome the body's defences, multiply, and cause active disease. Each year, 8 million people worldwide develop active TB and three million die (The foundation for better healthcare [FBHC], 2012).

People living with HIV, representing over 10% of annual TB cases, are up to 37 times more likely to develop TB disease than those who are HIV negative (WHO 2010a). However, although HIV increases the likelihood of progression from latent TB infection to active TB disease, it is not known whether HIV infection increases the risk of infection if exposed to TB bacteria (Centres for Disease Control and Prevention [CDC], 2005). Globally, in 2010, TB accounted for nearly one in five deaths among HIV-positive people (WHO 2010a).

Recent reports continue to show up the major public health threat posed by the dual epidemics of TB and HIV. According to D'Arminio, Sabin, Phillips, Sterne, May, Justice, Dabis, Grabar, Ledergerber, Gill, Reiss and Egger (2005:416), TB is now the most frequent life-threatening opportunistic disease among people living with HIV, including those receiving ART, and is a leading cause of death, posing a significant threat to the gains made in scaling up prevention, care and treatment programmes. The emergence of ever more dangerous strains of multidrug-resistant TB strains, including extensively drug resistant TB, represents a critical threat to global health and security.

HIV testing for TB patients is a critical entry point to interventions for both treatment and prevention. A major reason for promoting HIV testing in TB patients is to facilitate provision of Cotrimoxazole preventive therapy (CPT) and ART to HIV-positive patients (FMoH, 2007b). According to a previous global TB report (WHO, 2008b), this seems to be working. In absolute terms, the improvement in provision of CPT and ART is much more marked. Based on the findings from WHO technical report (WHO, 2008b), in 2006 alone, 146,586 HIV-positive TB patients were treated with CPT in 46 countries that collectively accounted for 75% of the global number of HIV-positive TB cases, and

66,601 started ART. However, some studies showed that, there is low acceptability of HIV testing among TB patients. For example, a study carried out in Southern Ethiopia showed that the low acceptability of HIV counselling and testing among TB patients poses a challenge to the scale up of TB/HIV collaborative efforts (Degu et al., 2007:4).

### **1.2.3 Background to the research problem**

Despite the availability for decades of highly efficacious treatment, TB remains a major global health problem. In 2010, there were an estimated 8.5-9.2 million cases and 1.2-1.5 million deaths, including deaths from TB among HIV-positive people (WHO, 2011:3). TB is the second leading cause of death from infectious disease worldwide, after HIV, which caused an estimated 1.8 million deaths in 2008 (WHO, 2011:3). Many countries have seen an increase in TB case fatality rates and up to a fourfold rise in their TB caseload, even those few countries with well-organized national TB Programmes (WHO/UNAIDS, 2007; WHO/SEARO, 2003). This suggests that TB control will not make much headway in HIV prevalent settings unless HIV control is also achieved.

Data from the recent global AIDS report (WHO, UNAIDS and UNICEF, 2011) showed that, globally, an estimated 34 million people were living with HIV at the end of 2010, including 3.4 million children less than 15 years. The same report showed, 2.7 million new HIV infections in 2010, including 390,000 among children less than 15 years. Of the estimated 34 million people living with HIV, about one third were estimated to have concomitant latent infection with *Mycobacterium tuberculosis*.

In Africa, which suffers the highest rates of both diseases, TB is a leading cause of HIV-related death. Nelson Mandela said: "We cannot win the battle against AIDS unless we also fight TB" (WHO, 2004g). Ethiopia is one of the countries worst affected by the TB/HIV co-epidemic, with the WHO Global TB Report (WHO, 2011a:95) estimating that 15% of HIV tested TB patients in Ethiopia were HIV-positive, while routine data from 2006/07 estimated that 31% of TB patients were HIV-positive (FMOH, 2008).

### **1.2.4 TB/HIV collaborative activities in Ethiopia and Addis Ababa**

Ethiopia established its TB/HIV Advisory Committee (THAC) in 2004, consisting of stakeholders from the TB and HIV programmes. Major partners, including bilateral donor organisations, research institutions, academic institutions, and professional

associations represented the committee. THAC provides technical and policy guidance to the FMOH and other partners (FMoH, 2007b). TB/HIV collaborative activity was initiated in Ethiopia in 2004 (Ethiopian HIV Prevention and Control Office (EHAPCO and World Bank, 2008) as a pilot project in six hospitals and three health centres (one hospital and one health centre from Addis Ababa City Administration). After brief supervision of these pilot sites and with the intention of expansion, the collaborative activities were expanded to more than 450 health facilities (hospitals and health centres) in 2005/06 alone. Key activities during the piloting project at all the sites included HIV testing of TB patients, provision CPT for HIV-infected TB patients, referral to HIV-related care, TB screening and referral for HIV-infected clients attending VCT clinics. These pilot sites had served as an important testing ground for developing training materials, reporting formats, referral systems, implementation guidelines, and standard operating procedures.

According to the recent report (EHAPCO and World Bank, 2008), the percentage of TB patients who received HIV counselling and testing in Ethiopia had increased to more than 80% in most health facilities. TB/HIV patients are referred to HIV care and ART units where they get the appropriate treatment for opportunistic infections, prophylaxis, and ART, if eligible. Patients seen at HIV care clinics are also screened for TB and referred to TB clinics for treatment if diagnosed with active TB. However, the referral system was not well developed between the TB care and HIV caregivers and the follow-up system was not strong. In addition, it was not known what percentages of TB/HIV patients who required the services actually received it. The gap between what is supposed to happen in service delivery and what is actually happening may be wide (EHAPCO and World Bank, 2008). Following the evaluation of the pilot sites, collaborative TB/HIV care services are being implemented widely in most of the governmental health institutions (FMoH, 2005).

Collaborative TB/HIV care services started in two health facilities in Addis Ababa (a hospital and a health centre) as part of the national pilot sites in 2004, since when the number has increased dramatically. According to the 2011 annual performance report of Addis Ababa health bureau, PLHIV are receiving a package of care services that includes clinical HIV management and psycho-social support, i.e., counselling and home-based care across the continuum. During the reporting period (2010/2011), at least 50 health facilities from both public and private sectors were accredited to provide

full packages of the HIV care services. The cumulative number of PLHIV enrolled in chronic HIV care clinics was 99,875 (AACAHB, 2011).

### **1.2.5 Statement of the research problem**

TB is a common, treatable HIV-related disease and a leading killer of PLHIV, consequently there is a strong need for close collaboration between HIV and TB programmes. This is necessary to implement the WHO's recommended directly observed treatment short course (DOTS) strategy for TB control and to improve care for people with HIV and TB. However, analysis of national TB and HIV programmes, and emerging experience from collaborative TB/HIV sites shows there are many unexploited potential synergies between TB and HIV programme objectives and activities (WHO, 2003). National as well as sub-national information for the implementation status of TB/HIV collaborative activities in Ethiopia is very limited. Therefore, this research project will evaluate the programme implementation of collaborative TB and HIV activities at public health facilities in Addis Ababa, Ethiopia.

## **1.3 AIM OF THE STUDY**

The purpose of this study and objectives are discussed in this section.

### **1.3.1 Research purpose**

The purpose of this study was to provide guidance in promoting the implementation of collaborative TB/HIV care activities in Addis Ababa and to increase knowledge of healthcare workers in this area of practice.

### **1.3.2 Research objectives**

The research objectives that guided this study are to:

- determine HIV prevalence among TB patients in Addis Ababa.
- determine TB prevalence among HIV patients in Addis Ababa.
- describe implementation status of collaborative TB and HIV care services.

- identify how programme implementation impacts on both TB and HIV patients.
- identify how programme implementation impacts on staff development.
- describe the programme implementation in relation to infrastructure.
- recommend to policymakers and practitioners the technical basis to guide the implementation of collaborated TB/HIV activities based on findings of this study.

#### 1.4 SIGNIFICANCE OF THE STUDY

Despite the limited information so far, Ethiopia has implemented the TB/HIV collaborative activities based on the interim policy since 2005. It is expected that this will generate further evidence to build on phased implementation of collaborative TB and HIV activities at a country level.

#### 1.5 DEFINITION OF KEY CONCEPTS

The following concepts are used frequently in this study:

**Collaboration:** this is to perform interconnected activities in partnership or in joint effort.

**Tuberculosis (TB):** is an infectious disease caused by *Mycobacterium tuberculosis*, a rod shaped bacillus called “acid-fast” due to staining characteristics in laboratory. Occasionally, the disease can also be caused by *Mycobacterium bovis* and *Mycobacterium africanum*.

**Human immunodeficiency virus (HIV):** a virus that affects the human body’s defence cells, resulting in exposure to different opportunistic infections. To date there is no cure for HIV.

**TB/HIV collaboration:** both TB and HIV care providers collaborate for prevention, care, and treatment of patients who have TB and/or HIV through referral linkage and teamwork.

**TB/HIV co-infection:** infection with both TB and HIV.

**Isoniazid preventative therapy (IPT):** Isoniazid preventative therapy can be given to individuals with latent or dormant TB infection in order to prevent progression to active TB disease. It is very important to make sure the person does not already have active TB before beginning IPT therapy. Isoniazid is given daily as self-administered therapy

for six to nine months. Since HIV-infected people could develop TB before antiretroviral therapy is prescribed, and since there is no evidence against combined use, use of antiretroviral drugs does not prohibit the use of Isoniazid preventative therapy (Open Society Foundation, 2006).

**Cotrimoxazole preventive therapy (CPT):** Cotrimoxazole preventative therapy is promoted by WHO and UNAIDS for the prevention of several secondary bacterial and parasitic infections in eligible adults and children living with HIV in Africa. TB patients are eligible for this therapy (Open Society Foundation, 2006).

## **1.6 FOUNDATIONS OF THE STUDY**

TB and HIV are global public health problems with considerable mutual interaction. Globally, TB is a leading killer of PLHIV. HIV is the leading force driving the TB epidemic in countries with a high HIV prevalence (WHO, 2003). Given the close interaction between the TB and HIV epidemics, the global Stop TB Partnership established the TB/HIV Working Group in 2001 to coordinate and promote interventions to decrease the burden of HIV-related TB. The Working Group developed a global TB/HIV strategic framework (WHO, 2002) and supportive guidelines for implementation (WHO 2003) that need to be adapted in each WHO region. Subsequently, an interim policy on collaborative TB and HIV activities was developed (WHO, 2004d). These materials were adopted nationally by most countries.

### **1.6.1 Meta-theoretical assumptions**

This research, as stated in the design section, combines both qualitative and quantitative methods. For the former, grounded theory research was applied, which according to Strauss and Corbin (1990) uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon. A descriptive mode of grounded theory provides rich detail about a phenomenon (Burns & Grove, 2007) and answers such questions as “What is going on TB/HIV collaborative activity in Addis Ababa?”; “How are TB/HIV collaborative activities organised”; “What are the roles of the healthcare system in the programme”; “What are the main activities implemented for joint TB and HIV care services?”; and “What does a TB or HIV patient benefit in a particular healthcare setting?” In this study, randomly selected health facilities will be

assessed for the implementation status of collaborative TB/HIV care services at their normal service delivery settings. The clinical settings to be assessed include HIV chronic care clinics and TB clinics in the study health facilities. In both of these clinics, descriptive and explorative assessment will be conducted regarding case detection and management of both TB and HIV diseases, and further analysed within the theoretical dimensions.

### **1.6.2 Conceptual framework**

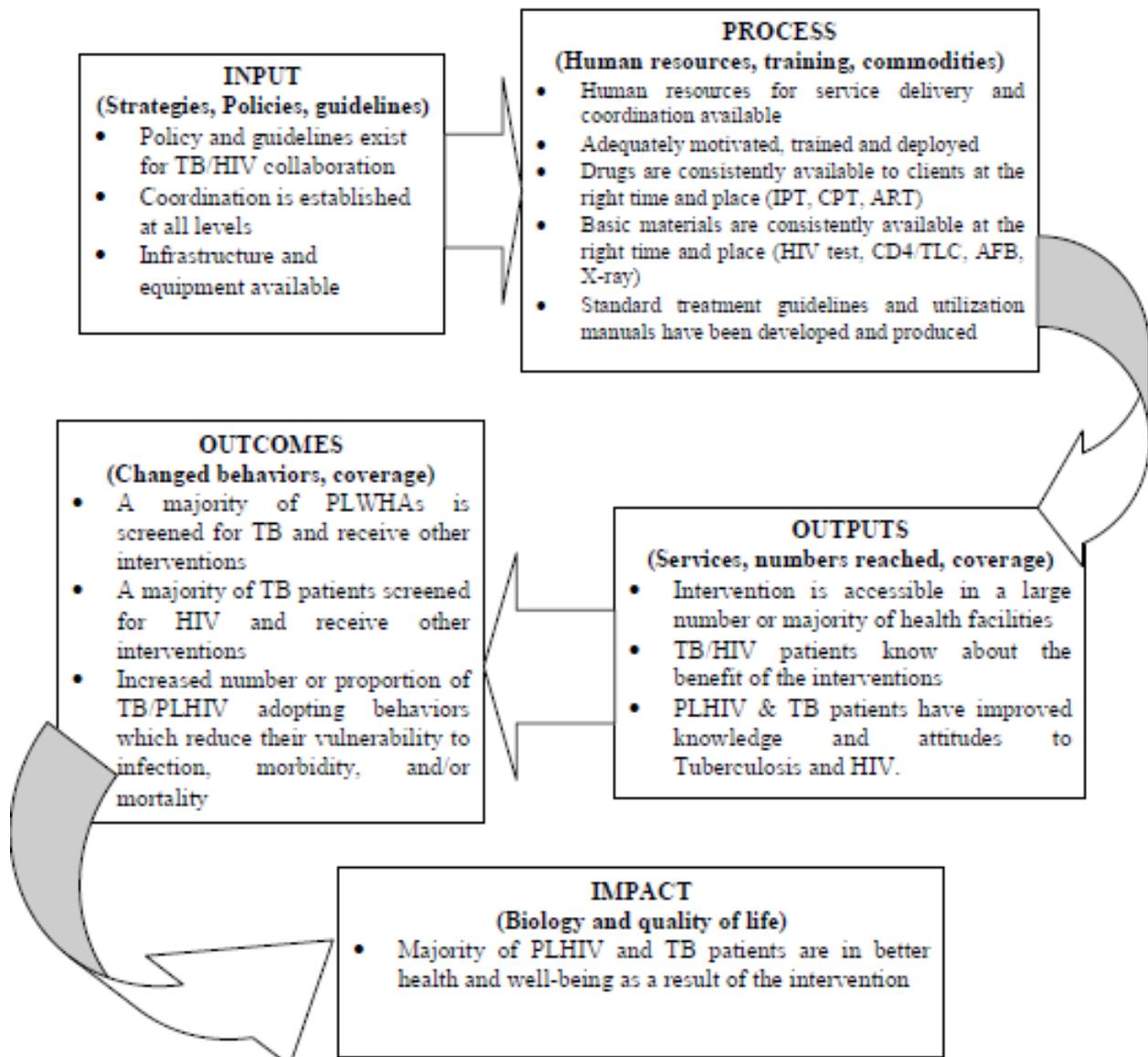
According to the WHO interim policy (WHO, 2004d:2), collaborative TB/HIV activities are essential to ensure that HIV-positive TB patients are identified and treated appropriately, and to prevent TB in them. These activities include establishing mechanisms for collaboration between TB and HIV programmes (coordinating bodies, joint TB/HIV planning, monitoring and evaluation and HIV surveillance) for HIV-positive people; intensified TB case finding; and, for those without active TB, IPT; infection control in health-care and congregate settings; HIV testing for TB patients; and, for those TB patients infected with HIV, Cotrimoxazole preventive therapy and ART. Therefore, the provision of collaborative TB/HIV care services conceptual framework was adapted from Kerrie (2010). Figure 1.4 (below) explains the various steps from input to impact of collaborative TB/HIV care service implementation.

The input step uses concepts as listed, from experience and knowledge, resulting in the development of strategies, policies and guidelines on collaborative TB/HIV care services. Based on this, policy for TB/HIV collaborative activity was developed, strategies with indicators were set and a coordinating body (WHO Stop TB partnership) established. The activities were planned to be implemented on the existing infrastructure and available health facility resources. In the process, human resource in-service trainings were conducted for service delivery, staff members were given roles and responsibilities, necessary commodities were availed (drugs, lab reagents and other supplies), protocols were set, guidelines were produced and distributed, and infrastructures re-arranged to make the services ready. In addition, advocacy and social mobilisation was conducted to gain the support of all stakeholders. After the initial two steps the services were ready for the TB and HIV patients, whereby patients start consuming the services to see an output. The interventions become available to large number of clients, or the majority of health facilities start implementing the services as

routine. TB and HIV patients understand the benefit of dual interventions, and patients gain improved knowledge and attitude for collaborative TB/HIV care services.

The fourth involves outcomes, with the majority of TB and HIV patients benefitting from each of the packages of care delivered to each of TB and HIV chronic care clinics for patients. For example, the majority of PLHIV screened for TB received necessary interventions, and the majority of TB patients tested for HIV enrolled on appropriate preventive, care and support interventions. An increased number or proportion of TB/HIV patients adopted behaviour which reduced their vulnerability to infection, morbidity and mortality associated to TB and HIV.

The last and most important step of the process is to attain sustained change at holistic or larger community level, that is impact. In this stage, the concern is with biological change and improvement in quality of life of the general community. As the result of effective implementation of TB/HIV collaborative activities, the majority of TB and HIV patients attain better quality of life and wellbeing, thus becoming productive citizens (Figure 1.4). Therefore, this research follows the basic concepts outlined in this framework.



**Figure 1.4:** Conceptual framework for Provision of collaborative TB and HIV care services  
(Adapted from Kerrie [2010]).

## 1.7 RESEARCH DESIGN AND METHODOLOGY

Different methodologists at various instances (Burns & Grove, 2007:38; Polit & Beck, 2008:66; Saunders, Lewis & Thornhill, 2009:136) define research design similarly as the detailed map of how a certain study is planned to be conducted with the advantage of controlling over certain factors that can interfere with the desired outcomes and for overcoming the difficulties encountered during the research processes. On the other hand, Creswell and Plano-Clark (2007:58) state that research design is a procedure for collecting, analysing, interpreting, and reporting data in a study. According to Mouton (2001:56), research methodology is the research process and the kind of tools and

procedures used. This study used mixed research methodologies to collect data from the participants, and was descriptive.

Mixed methodology is an approach where both quantitative and qualitative research methods are used at the same time or in a series of studies (Creswell, Plano-Clark & Garrett, 2008:66). In order to achieve the study objectives and ensure that the research process was logical, two different study populations (patients and healthcare providers), as well as four different methods of sampling and data collection were used (see Table 1.1, below). This was done in order to achieve methodological triangulation, which ensured the validity and trustworthiness of results (Polit & Beck, 2008:309). A detailed discussion about the research design and methodologies is given in Chapter 3.

**Table 1.1:** Sources of data, methods of data collection, data type and sampling techniques

<b>Data Source</b>	<b>Data collection method</b>	<b>Type of data</b>	<b>Sampling</b>
Patients (TB and HIV)	Interviewer administered questionnaire	Quantitative	Probability
Patients (TB and HIV)	Interview guide	Qualitative	Non-probability
Patients (TB and HIV)	FGD guide	Qualitative	Non-probability
TB/HIV care providers	Interview guide	Qualitative	Purposive
Coordinators of TB/HIV care (HF and regional)	Interview guide	Qualitative	Purposive

### 1.7.1 Quantitative study

Quantitative research design was used to collect data from exit interviews of both TB and HIV patients (clients) from the health facilities. In addition, quantitative data from healthcare providers was collected. The data was collected using an interviewer-administered questionnaire, in which the participants were asked to respond with answers in a structured manner. The data was cross-checked for completeness, coded, and entered into a computer using the Statistical Package for Social Sciences (SPSS) version 15.0. The researcher cleaned and analysed the data, using the same version of SPSS (SPSS, 2006). Statistical calculations were made for both descriptive and inferential statistics, and the results presented in the form of graphs and tables (see Chapter 4).

### **1.7.2 Qualitative study**

For triangulation purposes, qualitative research design has been used to collect data from both clients (TB and HIV patients) and healthcare providers for the TB/HIV collaborative service provision at health facilities and coordinators at health facility and regional level for the TB/HIV collaborative activities. The data obtained using qualitative methods, mostly expressed in non-numerical terms, although sometimes it was transformed into numerical variables. The healthcare providers from the study facilities and coordinators of TB/HIV care at facility and regional health bureau were purposively selected for inclusion (Chapter 5).

### **1.7.3 Design validity and reliability of quantitative data**

Validity and reliability are two important notions for determining the suitability of the research instrument or tool. These are appropriately dealt with to check for suitability of the research designs as described in detail in Chapter 3.

### **1.7.4 Trustworthiness of the data obtained from qualitative sources**

The researcher in this study used credibility, transferability, dependability and confirmability constructs to ensure trustworthiness of the study findings. The details of these four constructs are discussed in Chapter 3.

## **1.8 ETHICAL CONSIDERATIONS**

Based on the scientific principles of research ethics, the researcher followed and fulfilled the following ethical standards during the study.

- Approval was obtained from the Research and Ethics Committee at the Department of Health Studies of UNISA and from the Addis Ababa City Administration Health Bureau (ACAHB) Ethical Committee (Annexure A and B).
- A support and permission letter from the ACAHB was obtained addressing all study health facilities (Annexure C).
- In addition, the participants were provided with all the relevant information regarding the details of the study and its benefits (Annexure D).

- Informed written consent was obtained from each of the study participants who participated in the study (Annexure E).
- Privacy and confidentiality of the study participants was maintained during each of the data collection processes.
- The researcher respected the work of other scholars by proper citation and acknowledgement of all sources of information. In addition, the researcher reported what the data revealed but not what the researcher wanted to achieve. Hence, maximum care has been employed to minimise distortion of data at any moment during data collection, entry, and presentation (detailed in Chapter 3).

## **1.9 SCOPE AND LIMITATIONS OF THE STUDY**

The scope of this study may be taken as a baseline for nationwide study as no similar study has previously been conducted at national or sub-national level. In addition, the country may adopt the TB/HIV collaborative activities towards a more reliable approach as it will be possible to compare findings with countries under implementation of the TB/HIV collaborative activities. The findings from this study will be used as an input in the planning and implementation of TB/HIV collaborative activities, which ultimately contribute to better national achievement of the MDGs regarding HIV and TB control.

As a limitation, the study was carried out in one administration (Addis Ababa), so the findings may not be generalised to the whole country. Private health facilities were not included, which may introduce recall bias as the study demanded previous health and disease conditions. The study did not consider those who died prior to the study while they had been enrolled in the care and treatment of TB/HIV collaborative activities, which may impose incidence-prevalence bias. However, the study findings are reliable, valid, and trustworthy, having used mixed methods and large sample size (Chapter 6).

## **1.10 STRUCTURE OF THE THESIS**

The configuration of the research report is made with seven interlinked chapters. Each preceding chapter was procedurally based on the research activities and subsequent chapters constructed on the preceding chapters' foundation to deliver inter-linked information with a logical order. The content of each logical chapter is described below:

**CHAPTER ONE:** In this chapter, the *Orientation to the Study* is described in various sections. In essence, this started with introduction of the research topic, TB/HIV collaboration, co-existence of the two diseases, co-infection and collaborative activities. The research problem, aims and significance of the study, foundations for the study, research design and method in brief, scope and expected limitations of the study were outlined. In addition, operational definitions of key concepts are described.

**CHAPTER TWO:** In this chapter, the *Literature Review* is described under relevant sections. The focus is on reviewing available literatures on TB/HIV collaborative activities globally, regionally and at local level, for detailed understanding of the existing body of knowledge on the research topic. Basic introductory information about TB, HIV and collaborative TB/HIV interventions are stated. The concept of collaboration in general and in relation to TB/HIV collaborative activities are described. A rationale for collaborative TB/HIV activities, the 12 globally recommended TB/HIV collaborative activities and relevant literature on TB/HIV co-infection, HIV among TB patients and TB among HIV patients are reviewed in detail.

**CHAPTER THREE:** In this chapter, the *Research Design and Methodology* employed in this particular thesis work is described in detail. The rationale and scope of the study are stated briefly to associate relevant research design and method. The design of mixed method study, the research methods for quantitative and qualitative parts of the research are described in more detail. For both methods, population and sampling, data collection procedures, validity, and reliability of the questionnaires and plan for data analysis are described. In addition, the general ethical considerations applied for this scientific research are described in greater detail.

**CHAPTER FOUR:** In this chapter, *Quantitative Data Presentation, Analysis, Description, and Interpretation* are discussed in the relevant sections. The findings are based on the research questions or objectives of the research set in the preceding chapters. Analysis and interpretation on the findings are presented. Findings in this research are compared and contrasted with similar scientific research findings found elsewhere and objective analysis made of findings to complement the existing body of knowledge on the subject matter.

**CHAPTER FIVE:** In this chapter, *Qualitative Data Presentation, Analysis, Description, and Interpretation* are discussed with relevant sections. The findings are presented according to the research objectives outlined in Chapter 1. Qualitative findings are discussed thematically and triangulated with findings from the quantitative finding. In addition, analysis and interpretations are made on findings to complement the existing theoretical body of knowledge.

**CHAPTER SIX:** In this chapter, *Conclusions, Limitations, and Recommendations* are based on the overall activity procedure and findings of the research, the outcome of which was to draw key conclusions and make recommendations for promoting better implementation strategies of collaborative tuberculosis and human immunodeficiency virus activities in the country in general and in the study area (Addis Ababa) in particular, through building on the existing body of knowledge. Feasible recommendations were based on the findings and stated in this final chapter. Conclusions were systematically objective, to summarise information on the overall finding. The conclusion focused on key findings only so that the reader can understand the research outputs. Finally, presumed limitations during the overall course of the research activity were stated.

**CHAPTER SEVEN:** In this chapter, *Contribution of the Research* was based on the overall activity procedure and findings. The outline of the researcher's to developing *A Pocket Guide for Collaborative TB/HIV Care Services for Health Workers in Ethiopia* was discussed. Specifically, the chapter discussed processes on the compilation of the pocket guide; application of the conceptual and theoretical frameworks to its development, and objectives and contents.

## **1.11 CONCLUSION**

In this chapter, orientation of the study has been outlined. A brief introduction was given to HIV and TB, two diseases that are highly prevalent and the most important public health problems for more than three decades, especially in the developing world. The association of the two disease has gained national and international attention. Background information about the research problem was outlined. The research area, Addis Ababa City Administration, was discussed with specific focus on sources of the research problem. TB/HIV collaborative activity in Ethiopia and the research area was

discussed, with a statement made of the research problem, particularly Ethiopia and the research area. The chapter outlined the aims, research purposes, study objectives and significance. Terms used were defined operationally, and the foundation of the study discussed under two sub-sections, meta-theoretical assumptions and conceptual frameworks.

The research design and methodologies employed were briefly discussed. This study utilises mixed methods study design with triangulation. Both quantitative and qualitative research methods are employed for data collection. In this chapter, the ethical considerations were briefly outlined, with scope and limitations.

The researcher made use of the tutorial guideline of UNISA and Department of Health Studies for setting the computer to correspond with the University and supervisor, to follow the scientific writing, literature review, writing the research proposal, guidelines for writing the research report and writing an article based on the thesis (UNISA 2010; 2012).

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

In this chapter, the existing body of knowledge regarding TB, HIV, TB/HIV co-infection, concept of collaborative TB/HIV activities and specific TB/HIV collaborative activities reviewed, with description of the epidemiological and clinical linkage between TB and HIV, and how each disease affects the other in infection, progression to disease. The concept of collaborative TB/HIV activities is described with reference to World Health Organization (WHO) guidelines. Internationally recommended and nationally adapted collaborative TB/HIV activities to decrease the burden of TB/HIV are described, followed by studies related to TB/HIV co-infection, HIV prevalence among TB patients and TB prevalence among HIV patients along with the responses to this dual problem internationally, regionally and nationally.

#### **2.2 TUBERCULOSIS**

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis* (and occasionally by *Mycobacterium bovis* and *Mycobacterium africanum*). These organisms are also known as tubercle bacilli (because they cause lesions called tubercles) or as acid-fast bacilli (AFB). TB infection occurs when a person carries the tubercle bacilli inside the body, but the bacteria are in small numbers and dormant. Many people have tuberculosis infection and are well. TB is a state in which one or more organs of the body becomes diseased, as shown by clinical symptoms and signs. This is because the tubercle bacilli in the body have started to multiply and become enough to overcome the body's defences (WHO, 2004a:23).

TB infects about 10 million people worldwide annually, of whom about 8 million of develop active TB. Globally, incidence is rising by about 1% per year (WHO, 2005c), almost entirely as a result of increases in sub-Saharan Africa (SSA), while in the other five regions (the WHO regions are six: the African Region [AFRO: most of the sub-Saharan countries], the Region of the Americas [AMRO/PAHO], the Eastern Mediterranean Region [EMRO], the European Region [EURO], the South-East Asia Region [SEARO] and the Western Pacific Region [WPRO]), incidence is stable or

falling. According to the WHO estimate, almost 28% of TB in the African region is attributable to HIV, one of the chief factors facilitating the increase of TB in the region (WHO, 2012c).

The impact of HIV on TB stems from the fact that a large portion of the world is infected with *Mycobacterium tuberculosis*. The suppression of the immune system by HIV leads to activation of the dormant bacilli, and TB follows HIV infection with an average delay of seven years (Williams, Granich, Chauhan, Dharmshaktu and Dye, 2005:9619).

### **2.3 HUMAN IMMUNODEFICIENCY VIRUS**

Since the first description of acquired immunodeficiency syndrome (AIDS) in 1981, researchers have identified two types of HIV (HIV-1 and HIV-2), the cause of AIDS. HIV-1 is the predominant type worldwide, whereas HIV-2 occurs most commonly in West Africa, though occasional infections have occurred in East Africa, Europe, Asia and Latin America. Both types cause AIDS and the routes of transmission are the same. However, HIV-2 is slightly less easy and the progression of HIV-2 infection to AIDS may be slower (WHO, 2004a).

Since the detection and spread of HIV in the last three decades, the number of PLHIV worldwide continued to grow. For example, in 2008, an estimated 33.4 million people were infected with HIV, a number more than 20% higher than in 2000, and the prevalence was roughly threefold higher than in 1990. In the same year (2008), Sub-Saharan (SSA) accounted for 67% of HIV infections worldwide, 68% of new HIV infections among adults and 91% of new HIV infections among children. The region also accounted for 72% of the world's AIDS-related deaths in 2008 (UNAIDS, 2009:7).

With an estimated 1.1 million people living with HIV, Ethiopia has one of the largest populations of HIV-infected people in the world. However, prevalence among the adult population is lower than many SSA countries (FDRE, 2010:6). Ethiopia's HIV epidemic pattern is generalised and heterogeneous with marked regional variations. At the national level, the epidemiological trend over the past eight years has been stable, however, prevalence appears to be declining in urban areas, according to analysis of data from antenatal care (ANC) sites that collected it consistently for more than ten years. For example, prevalence among pregnant women attending ANCs in Addis Ababa has declined from 23% in 1996 to 10% in 2007. Peri-urban and small market

town residents and young females are the most at risk and affected segments of the population (FDRE, 2010:7).

## **2.4 TB/HIV CO-INFECTION**

Together, TB and HIV form a lethal combination, with HIV weakening the immune system and promoting the progression of recent and latent TB infection to active TB disease. A person living with HIV who is also infected with TB is 20 times more likely to become sick with active TB than someone who is HIV negative (World Bank, 2010:1). In many TB/HIV patients in SSA the most common HIV-related illness is TB. However, certain clinical features are more common in HIV-positive patients than in HIV-negative TB patients (WHO, 2004a). HIV fuels the tuberculosis epidemic in several ways, promoting progression to active TB both in people with recently acquired and with late *M. tuberculosis* infections. HIV is the most powerful known risk factor for reactivation of latent tuberculosis infection to active disease. HIV-infected people are more susceptible to TB infection when they are exposed to *M. tuberculosis* (WHO, 2005a).

HIV not only increases the number of TB cases but also alters the clinical course of TB disease. As HIV-related immune-suppression increases, the clinical pattern of TB disease changes, with increasing numbers of smear-negative pulmonary TB and extra-pulmonary TB cases. TB is more likely to be disseminated and more difficult to diagnose as immune-suppression progresses (WHO, 2005a). Escalating TB case rates over the past decade in many countries in SSA and in parts of South East Asia are largely attributable to the HIV epidemic. Since the mid-1980s, in many African countries, including those with well-organised programmes, annual tuberculosis case notification rates have risen up fourfold, reaching peaks of more than 400 cases per 100,000 population. Up to 70 percent of patients with sputum smear-positive pulmonary TB are HIV-positive in some countries in SSA (WHO, 2004c).

The TB and HIV epidemics are inextricably linked, as TB is the leading infectious disease killing PLHIV. Africa is the global epicentre of TB-HIV co-infection, home to roughly 80% of TB cases among PLWHA. Since 1990, the number of new annual TB cases in Africa has more than tripled, as has the number of deaths per year. It is also the only continent in which TB rates are increasing at a dramatic 5% per year, driven by HIV, poverty and weak health systems. Africa's TB burden has become so great that in

August 2005, African Ministers of Health and the WHO declared it an emergency health problem for the entire continent (RESULTS Educational Fund 2007).

A study from a population database and survey in South Korea for the burden of TB/HIV showed that the number of cases with both was 137 cases per 100,000 population (0.07% among 197,562 TB cases) and the newly detected TB/HIV rate was increasing annually: from 0.025 in 2001 to 0.095 in 2005, (Chang-Hoon, Ji-young, Dae-Kyu, Mee-Kyung, Eunjung, Jung-wook, Jinhyun, Heonsook, Hee-Jin, Sung, Hwahyun and Jeong-Gu, 2010:66). The burden of HIV-associated TB is greatest in SSA, where the TB epidemic is primarily driven by HIV. There has been steady progress made in reducing the burden of HIV in TB patients with an increasing number tested for HIV and provided with CPT and ART. Less progress is being made to reduce the burden of TB in PLHIV (Jeremiah, Haileyesus, Reuben & Diane 2008:6).

TB treatment programmes have been built over many decades, more recently with strong HIV service programmes and new treatment being developed. However, often they are not working together, with staffing, training and research endeavours approaching HIV and TB as two wholly independent problems. This vertical approach, amplified by disease-specific funding streams, has served as a barrier to collaboration and integration to address TB-HIV co-infection that occurs in a single patient and that threatens public health as a co-epidemic (Infectious disease society of America, 2007).

A dynamic model based on trends in India suggests that, while the incidence of TB has been minimally affected by the HIV epidemic, the impact on TB mortality is likely to have been much more substantial (Williams, Granich, Chauhan, Dharmshaktu & Dye 2005:9619). The impact of HIV on TB mortality has also been recognised in Thailand and Myanmar, where high case fatality rates have been reported in regions known to have high HIV prevalence (Varma, Wiriyakitjar, Nateniyom, Anuwatnonthakate, Monkongdee & Sumnapan 2007:586; Siriarayapon, Yanai, Glynn, Yanpaisarn, Uthaiworavit 2002:80; Wandee, Supawitkur, Pinta, Ngoentong, Khunkonkapan, Kaewkampa Sumanapun, Levine, Sinsomboontong & Mednavyn, 2004: Abstract no. B10478).

In many African countries, the burden of the dual TB-HIV epidemic continues to rise due to poor implementation of the collaborative activities. For example, the greatest challenge facing post-apartheid South Africa is the control of the concomitant HIV and TB epidemics. HIV continues to spread relentlessly, and tuberculosis has been declared a national emergency. In 2007, South Africa, with 0.7% of the world's population, had

17% of the global burden of HIV infection, and one of the world's worst TB epidemics, compounded by rising drug resistance and HIV co-infection (Salim, Gavin, Quarraisha & Stephen, 2010:921). Cohorts of 6,440 employees in occupational clinics of Harare, Zimbabwe, were followed-up for two years for incidence of TB using a culture-based undiagnosed prevalent TB and anonymised HIV test. According to the results, HIV prevalence was 19%. For HIV-positive and negative participants, the incidence of culture-positive tuberculosis was 25.3 and 1.3 per 1,000 person-years, respectively (Elizabeth, Abbas, Yin Bun, Tsitsi, Ethel, Shungu, Anthony, Simba, Gavin, Stanley, Richard & Peter, 2010:13).

## **2.5 CONCEPT OF COLLABORATION**

According to Collins English Dictionary (2012), "Collaboration is working together to achieve a goal". Another resource defines it as:

'a recursive process where two or more people or organizations work together to realize shared goals, this is more than the intersection of common goals seen in co-operative ventures, but a deep, collective, determination to reach an identical objective for example, an intellectual endeavour that is creative in nature by sharing knowledge, learning and building consensus' (Marinez-Moyano, cited in Schuman, ed, 2006).

The following are some examples of successful collaboration efforts in the past:

### *Arts:*

Collaboration or joint production by two or more artists is a common style among musicians and performance artists. The strong sense of individualism long possessed by artists of fine art began to wane around the 1960s, and some artists working in units have emerged and become widely known along with the development of new media based on the advances in information technology. They have changed the concept of art into something that can be engaged in by more than individual artists alone (Wikipedia, the Free Encyclopaedia [s.a]a).

### *Business:*

Collaboration in business can be found both inter- and intra-organization and ranges from the simplicity of a partnership and crowd funding to the complexity of a multinational corporation. Collaboration between team members allows for

better communication within the organization and throughout the supply chains. It is a way of coordinating different ideas from numerous people to generate a wide variety of knowledge. The recent improvement in technology has provided the world with high speed internet, wireless connection, and web-based collaboration tools like blogs, and wikis, and has as such created a "mass collaboration." People from all over the world are efficiently able to communicate and share ideas through the internet, or even conferences, without any geographical barriers (Wikipedia, the Free Encyclopaedia [s.a]a).

*Collaboration in Education:*

"... two or more co-equal individual voluntarily bring their knowledge and experience together by interacting toward a common goal in the best interest of students for the betterment of their education success" (Wikipedia, the Free Encyclopaedia [s.a]a).

*Music:*

"Musical collaboration occurs when musicians in different places or groups work on the same album or song. Collaboration between musicians, especially with regards to jazz, is often heralded as the epitome of complex collaborative practice. Special software has been written to facilitate musical collaboration over the Internet. Websites have also been created to enable creative music collaboration over the Internet" (Wikipedia, the Free Encyclopaedia [s.a]a).

*Medicine:*

"In medicine the physician assistant (PA) - physician relationship involves a collaborative plan to be on file with each state board of medicine where the PA works. This plan formally delineates the scope of practice approved by the physician" (Wikipedia, the Free Encyclopaedia [s.a] a).

***The term collaboration in relation to other synonyms:***

*Team work:* In healthcare, team work has been defined as:

"...a dynamic process involving two or more healthcare professionals with complementary backgrounds and skills, sharing common health goals and exercising concerted physical and mental effort in assessing, planning, or evaluating patient care' (Xyrichis and Ream, 2008). Team work is increasingly

advocated by healthcare policy makers as a means of assuring quality and safety in the delivery of services” (Kohn, Corrigan & Donaldson, eds., 2000).

*Partnership:*

...an arrangement where entities and/or individuals agree to cooperate to advance their interests’. In the most frequent instance, a partnership is formed between one or more businesses in which partners (owners) co-labour to achieve and share profits or losses (Wikipedia, the Free Encyclopaedia, 2012a).

*Association:*

may refer to voluntary association, a group of individuals who voluntarily enter into an agreement to accomplish a purpose in non-profit organization, alumni association, an association of former students of a college or university, professional association, an industry trade group is also known as a trade association, sports association etc (Wikipedia, the Free Encyclopaedia, 2012b).

*Alliance*

... an agreement or friendship between two or more parties, made in order to advance common goals and to secure common interests (Wikipedia, the Free Encyclopaedia, [s.a]c.).

*Co-operation:*

is the process of working or acting together, which can be accomplished by both intentional and non-intentional agents. In its simplest form, it involves things working in harmony, side by side, while in its more complicated forms, it can involve something as complex as the inner workings of a human being or even the social patterns of a nation. It is the alternative to working separately in competition. Cooperation can also be accomplished by computers, which can handle shared resources simultaneously, while sharing processor time (Wikipedia, the Free Encyclopaedia, [s.a]d).

Based on these concepts, collaboration of TB and HIV care services implies the joint effort of TB control programmes and HIV prevention and control activities to deal with the two diseases in one patient. This means that both TB and HIV care providers deliver services in collaborative manner in the same health facility. This is because these two diseases are usually interdependent or the chance of having both in one patient is higher than having them separately. Therefore, addressing two diseases in one patient

becomes cost-effective and allows the use of resources efficient for both programmes. In addition, patients benefit more in getting the services in one spot from the same healthcare system.

## **2.6 THE CONCEPT OF COLLABORATIVE TB/HIV ACTIVITY**

According to the WHO (2002:17), the HIV epidemic has increased the global TB burden and focused attention on the need to strengthen links between TB and HIV programmes in order to tackle these public health emergencies more effectively. In response to this situation, the WHO has developed an expanded strategy aimed at reducing the burden of HIV-related TB through close collaboration between the two programmes. The rapid growth of the HIV epidemic in many countries has resulted in an equally dramatic rise in the estimated number of new TB cases. HIV-related TB continues to increase, even in countries with well-organised national TB control programmes that are successfully implementing the WHO DOTS strategy. This suggests that where HIV is increasing the TB epidemic, full implementation of the DOTS strategy is insufficient to control TB, and control of HIV infection must become an important concern for National TB Programmes (NTPs). The high morbidity and mortality from TB among people living with HIV makes TB case detection, treatment, and prevention a priority for national HIV control programmes (WHO, 2004b).

TB and HIV infection co-exist in many people worldwide and both programmes need to be collaborative to relieve the resultant suffering and improve diagnostic, care and prevention services for PLHIV and TB. The unprecedented scale of the epidemic of HIV-related TB demands urgent, effective, and coordinated action, not the development of an independent programme for TB/HIV but simply closer collaboration between existing TB and HIV programmes to exploit synergies, avoid overlap, and fill the gaps in service provision (WHO, 2004b).

## **2.7 RATIONALE FOR COLLABORATIVE TB/HIV ACTIVITY**

The HIV pandemic presents a significant challenge to the control of TB and TB is also one of the leading causes of morbidity and mortality among PLHIV (FMOH, 2007b). The interaction between TB and HIV has implications for the public health approach to TB control among HIV-infected people. Both programmes therefore share mutual concerns: *prevention of HIV should be a priority for TB control; TB care and prevention should be*

*priority concerns of HIV programmes.* According to interim policy for collaborative TB/HIV activities (WHO, 2004d), there are 12 recommended collaborative activities that countries should implement to decrease the burden of their national TB/HIV:

1. Set up a coordinating body for collaborative TB/HIV activities at all levels
2. Conduct surveillance of HIV prevalence among TB patients
3. Carry out joint TB/HIV planning
4. Conduct monitoring and evaluation
5. Establish Intensified TB case-finding
6. Introduce Isoniazid prevention therapy
7. Ensure TB Infection control in healthcare and congregate settings
8. Provide HIV testing and counselling for all TB patients
9. Introduce HIV prevention methods for all TB patients
10. Introduce Cotrimoxazole preventive therapy for HIV-infected TB patients
11. Ensure HIV care and support for PLHIV with or without TB infection
12. Introduce antiretroviral therapy for PLHIV with or without TB infection.

These collaborative activities will be more successful where national HIV and TB control strategies are based on international guidelines and are effectively implemented. The recommended activities can be implemented by TB and HIV control programmes, NGOs, community-based organisations or the private sector generally under the coordination of the national TB and HIV programmes. The following sections describe these activities under three main categories, namely (WHO, 2004d):

- Mechanisms for Collaboration of TB/HIV services
- Activities to decrease the burden of TB among HIV patients
- Activities to decrease the burden of HIV in TB patients.

<ol style="list-style-type: none"> <li>1. Set up a coordinating body for TB/HIV activities at all levels</li> <li>2. Conduct surveillance of HIV prevalence among TB patients</li> <li>3. Carry out joint TB/HIV planning</li> <li>4. Conduct monitoring and evaluation</li> </ol>	Mechanisms for Collaboration
<ol style="list-style-type: none"> <li>5. Establish intensified TB case-finding</li> <li>6. Introduce Isoniazid prevention therapy</li> <li>7. Ensure TB Infection control in healthcare and congregate settings</li> </ol>	Activities to decrease the burden of TB among HIV patients
<ol style="list-style-type: none"> <li>8. Provide HIV testing and counselling</li> </ol>	Activities to decrease

9. Introduce HIV prevention methods 10. Introduce Cotrimoxazole preventive therapy 11. Ensure HIV care and support 12. Introduce antiretroviral therapy	the burden of HIV among TB patients
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Whereas previous TB and HIV programmes had largely pursued separate courses, they need to exploit synergies in supporting health service providers to deliver these interventions. The expanded scope of the new strategy for TB control in high HIV prevalent populations includes interventions against TB (intensified TB case finding, cure and TB preventive therapy) and interventions against HIV (and therefore indirectly against TB), e.g., promoting consistent condom use, sexually transmitted infections (STIs) treatment, harm reduction of injected drug users (IDU) and highly active antiretroviral therapy (HAART) (WHO, 2005a).

### **2.7.1 Mechanisms for Collaboration**

Some countries have responded to the need for national TB Programmes (NTPs) and National AIDS Control Programmes (NACPs) collaboration by integrating the two at central and sometimes regional and/or district level. The reasons need to be clear in order for true programme collaboration to be made. Integration should provide definite synergistic benefits such as joint funding, staffing, procurement, and distribution mechanisms. In some countries both report to a single director, but in practice they are still run entirely separately. In many countries they have such different philosophies, structures, operations and funding channels that integration is difficult and counter-productive (WHO, 2005a:26). Therefore, specific areas that need mechanisms for collaboration between TB and HIV programmes are described below.

#### **2.7.1.1 Set up a coordinating body for TB/HIV activities at all levels**

HIV programmes and TB control programmes, including their partners in other line ministries (prison or military), the private-for-profit sector and civil society organisations should work together to provide access to integrated services, preferably at the same time and location, for the prevention, diagnosis, treatment and care of TB/HIV. National coordinating bodies are needed at all levels of the health system to ensure strong and effective collaboration between HIV and TB control programmes and to offer a platform

for coordination and synergy among stakeholders (WHO, 2012a). Representation of people at risk of or affected by both diseases is essential to ensure effective implementation of integrated services and programme success. National AIDS commissions, which coordinate the multi-sectoral response to HIV, should also be included in national TB/HIV coordination efforts (WHO, 2012a).

According to the policy (WHO, 2012a), in countries where coordinating bodies already exist (such as country coordinating mechanisms for the Global Fund to Fight AIDS, Tuberculosis and Malaria), strengthening their role through revised terms of reference and its expansion based on performance and achievements may be needed to deliver integrated TB and HIV services, preferably at the same time and location.

The coordinating body for collaborative TB/HIV activities should have clear and consensus-based terms of reference. The important areas of responsibility are:

- Governance and coordination at national and sub-national levels
- Resource mobilisation
- Provision of general policy and programme direction for the management of activities
- Capacity-building including training
- Ensuring coherence of communications about TB and HIV
- Ensuring the involvement of civil society, nongovernmental and community organisations, and individuals.

Evidence from operational research and descriptive studies has shown that effective coordinating bodies that operate at all levels and which include the participation of all stakeholders from both HIV and TB control programmes, civil society organisations, patients and communities are feasible and ensure broad commitment and ownership (WHO, 2004e; Okot-Chono, Mugisha, Adatu, Madraa, Dlodlo & Fujiwara, 2009).

### **2.7.1.2 Conduct surveillance of HIV prevalence among TB patients**

Surveillance is a “system for collecting information needed for advocating, designing, planning, and evaluating public health action” (Reider & Dehne, eds., 1999:8). The overall objective of any communicable disease surveillance system is to collect, analyse and disseminate accurate epidemiological data (Caribbean Epidemiology Centre, pan-American health organization [PAHO] & WHO, 2002:7). Surveillance should contribute

to a better understanding of the magnitude of the problem and provide reliable, timely, and cost effective information for action.

The intention of surveillance is to better understand the magnitude of the diseases' effects and to evaluate the efficacy of any plans of action. Due to the strong relationship between TB and HIV, co-monitoring is necessity for future efficacious intervention. In addition, beyond their intrinsic linkage, in many countries the spread of HIV among the general population can be sensitively indicated by HIV prevalence in TB patients (WHO, 2004f).

As the HIV and TB epidemics have progressed, surveillance has become widely recognised as an activity critical to understanding the trends of the epidemics and enabling sound strategies to be developed for responding to them (WHO & UNAIDS, 2001:1). Surveillance of HIV among TB patients is increasingly seen as important, as the HIV epidemic has continued to fuel the TB problem and as new solutions have emerged to tackle this developing situation (WHO, 2004c).

Surveillance systems for measuring HIV prevalence among TB patients have a variety of specific objectives, which are likely to vary between countries according to the different needs and demands existing in the countries (WHO, 2004c). A major challenge to any HIV surveillance system is the ethical issues related to HIV testing, which have been widely debated in the published literatures and are complex. The main ethical problem with regard to surveillance of HIV among TB patients concerns the use of unlinked anonymous or 'blinded' methods, especially in the context of increased access to ART. Unlinked anonymous testing refers to the taking of blood or other specimens for other purposes, stripping the left-over part of the specimen and testing it for HIV infection without the consent of the individual concerned (WHO & UNAIDS, 2000:10).

However, surveillance has not been valued enough by health policy makers, so the financing and infrastructure necessary to gather and process the data are not available; for example, lack of properly trained epidemiology staff. Without appropriate training and consistent performance feedback, there is little quality control of the work. Specifically, in dealing with these two epidemics, there is a problem linking TB information with that of HIV, since much intervention work is carried out by mutually exclusive groups (WHO, 2004f). There is often a general lack of understanding among senior health policymakers of the importance of surveillance as a planning and evaluation tool, which results in low priority for surveillance activities and insufficient

investment in the infrastructure necessary for an effective surveillance system (Reider & Dehne, 1999:22).

A problem with many of the current HIV surveillance systems among TB patients is that they reflect more the access of patients to healthcare services than the true occurrence of HIV within the overall TB population. The bias introduced through differential access and through patients' reluctance to be tested for HIV may be a particular problem for surveillance systems that rely on data from HIV routinely testing services. Problems also often exist around collecting data from the private sector, which is often omitted from surveillance systems, leading to under-representation of all those who use these services (Sharman, 2000 cited in WHO, 2004g:6).

There are three main surveillance methods for measuring the prevalence of HIV infection among TB patients, presented as follows.

#### *2.7.1.2.1 Periodic (special) surveys*

Periodic (special) sero-prevalence surveys have been the main surveillance method for measuring HIV prevalence among TB patients for many countries around the world (Range, Ipuge, Obrien, Egwaga, Mfinanga, Chonde, Mukadi & Borgdorff, 2001, as cited in WHO, 2004g; Colvin & Karim, 1998; Van Gorkon & Kibuga, 1999, as cited in WHO, 2004g). Well-conducted, cross-sectional sero-prevalence surveys can provide TB programmes with sufficiently precise point estimates of HIV prevalence among TB patients (Nieto & Szklo, 1999; Jekel, Katz & Elmore, 2001, as cited in WHO, 2004g).

In settings where the prevalence was previously unknown they are useful as part of the initial assessment of the situation. These surveys are also useful in resource-poor countries with underdeveloped surveillance systems, where HIV prevalence in the general population may be high but the institution of more systematic methods of surveillance is not possible. Periodic (special) surveys can also be used to corroborate other surveillance methods (WHO, 2004c).

#### *2.7.1.2.2 Sentinel surveillance*

For surveillance of HIV among TB patients, some countries use the sentinel surveillance methods outlined in the WHO guidelines (Slutkin, Chin, Tarantola, Tarantola & Mann, 1988, as cited in WHO, 2004g). However, very few reports of the results from these

methods have appeared in the literature (Jekel, Katz & Elmore, 2001). The sentinel surveillance system was developed specifically to collect information on HIV prevalence, based on the measurement of HIV infection in pregnant women and other groups from whom blood is usually drawn for purposes other than HIV testing (UNAIDS/WHO, 2003:7; Sharman, 2000, cited in WHO 2004g). The WHO guideline describes sentinel surveillance as the system by which “specific sites and population groups are selected; a predetermined number of persons are routinely tested, and testing is performed in a regular and consistent way” (UNAIDS & WHO, 2003:47; Nieto and Szklo, 1999, as cited in WHO, 2004g).

#### *2.7.1.2.3 Data from routine patient care*

In some countries, particularly those where HIV prevalence in the general population is high, HIV testing of TB patients for diagnostic purposes is becoming more routine. As treatment and care options for HIV infection increase, diagnostic testing of TB patients for HIV in an “opt-out” fashion (i.e., routinely testing unless they decline to be tested) will be carried out increasingly in such settings (WHO, 2004c).

The surveillance method chosen will depend on the underlying HIV epidemic state<sup>1</sup>, the overall TB situation, and the availability of resources and experience. Incorporating HIV testing with TB prevalence surveys and anti-TB drug resistance surveillance offers an opportunity to expand HIV testing and improve knowledge among national TB control programmes on the relationship between HIV and drug-resistant TB at the population level (WHO, 2009c, 2010g). It also provides critically important individual benefits to people living with HIV, including better access to testing, early case detection, and rapid initiation of treatment. With the increasing availability of HIV treatment, unlinked anonymous testing for HIV is not recommended because results cannot be traced back to individuals who need HIV care and treatment (WHO, 2010g).

All countries with a generalised HIV epidemic state should aim to ensure that HIV testing is actively promoted and offered to all TB patients. The data available from these initiatives can form the basis of a reliable surveillance system that achieves high coverage (>80%) of testing among TB patients (WHO, 2004c).

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<sup>1</sup> Generalized epidemic state: HIV prevalence is consistently >1% in pregnant women; concentrated epidemic state: HIV prevalence is consistently >5% in at least one defined subpopulation and is <1% in pregnant women in urban areas; Low-level epidemic state: HIV prevalence has not consistently exceeded 5% in any defined subpopulation.

### **2.7.1.3 Carry out joint TB/HIV planning**

Medium and long-term joint strategic planning to successfully and systematically scale up collaborative TB/HIV activities nationwide and deliver integrated TB and HIV services, preferably at the same time and location with due consideration to prevention of TB transmission should be developed. HIV- and TB-control programmes should either devise a joint TB/HIV plan, or introduce TB/HIV components in their national plans for prevention, diagnosis, treatment, and care (WHO, 2012a).

Main areas to be covered during the joint planning include quality assured health services; a well-performing health workforce; well-functioning information systems; equitable access to essential medicinal products, vaccines and technologies; good health financing; and leadership and governance (Lugada, Levin, Abang, Mermin, Mugalanzi, Namara, Gupta, Grosskurth, Jaffar, Coutinho & Bunnell, 2010:245).

The following elements should be outlined during the joint TB/HIV care planning.

#### **2.7.1.3.1 Joint strategic plan**

Crucial elements for joint planning include the activities detailed in sections 2.7.1 to 2.7.3 of this document, as well as resource mobilisation, capacity-building and training, TB/HIV communication (advocacy, programme communication, and social mobilisation), enhanced community involvement, and operational research (WHO, 2004d).

#### **2.7.1.3.2 Funding**

TB and HIV programmes have recently begun to provide coordinated TB-HIV services, so evidence for their cost effectiveness is limited; however, collaborative TB/HIV activities, which build on well-resourced tuberculosis and HIV strategies, may not require much additional financial input. Pilot projects in Malawi, South Africa and Zambia, for example, have shown that screening HIV patients for TB can be done for little added time and cost, resulting in increased TB case funding (WHO, 2004f). If either or both programmes are under-resourced in funds or human capacity, additional resources should first be mobilised to strengthen each programme. Joint proposals to solicit resources for implementing collaborative TB/HIV activities should be prepared, within the framework of the joint coordinating body, building on the comparative strengths of both programmes and the specific needs of the country (WHO, 2004d).

### *2.7.1.3.3 Training and capacity building*

Joint capacity building for collaborative activities should include training of TB, HIV and primary healthcare workers in TB/HIV issues. Ensuring continued competency-based education of health-care workers through clinical mentoring, regular supportive supervision, and the availability of standard operating procedures and job aids, reference materials and up-to-date national guidelines is important. Capacity should also be enhanced in the healthcare system, for example in the laboratory, supply management, health information, referral and integrated service delivery systems, to enable them to cope better with the increasing demands of collaborative TB/HIV activities (WHO, 2005c).

### *2.7.1.3.4 TB/HIV communication, advocacy and social mobilisation*

According to WHO Policy on Collaborative TB/HIV activities (WHO, 2012a), advocacy targeted at influencing policy, programme implementation, and resource and community mobilisation is important to accelerate the implementation of collaborative TB/HIV activities at all levels. Two-way communication between the programmes and the general public and with affected populations can inform and create awareness about both diseases and is crucial for ensuring that patients actively seek out and demand services. Effective communication measures focused on communities rather than individuals that combine a series of elements from the use of data, science, research, policy and advocacy can inform the public, shape perceptions and attitudes, mitigate stigma, enhance the protection of human rights, create demand for services, form stronger links with health services and systems, improve provider client relationships, and monitor and evaluate TB/HIV activities. Joint TB/HIV communication strategies should ensure the mainstreaming of HIV components in TB communication and of TB components in HIV communication.

### *2.7.1.3.5 Involving nongovernmental and other civil society organisations and communities*

Expanding collaborative TB/HIV activities beyond the health sector through meaningful involvement with communities, nongovernmental and civil society organisations, and individuals in the planning, implementation and monitoring of TB/HIV activities at all

levels is crucially important. People at risk of or affected by TB and HIV as well as community-based organisations working on advocacy, treatment literacy and community mobilisation are key actors in generating the required demand for integrated services at all levels of care. Their recognition and support, including financial, is therefore critical. Advocacy targeted at influencing policy and sustaining political commitment, programme implementation and resource mobilisation is very important to accelerate the implementation of collaborative TB/HIV activities (WHO, 2012a).

Services for TB prevention, diagnosis, treatment, and care can be integrated with those for HIV, and vice versa, through community-based organisations such as community-based TB care or HIV home-based care. Trained home-based care and community healthcare workers as well as NGOs have been successful in providing TB and HIV services in various countries (Corbett, Bandason, Duong, Dauya, Makamure, Churchyard, Williams, Munyati, Butterworth, Mason, Mungofa & Hayes, 2010:1244; Datiko & Lindtjorn, 2009:e5443; Lugada and et al., 2010:245; Miti, Mfungwe, Reijer & Maher, 2003:92; Wandwalo, Kapalata, Tarimo, Corrigan & Morkve, 2004:109). Community-based TB (Okello, Floyd, Adatu, Odeke & Gargioni, 2003:72; Sinanovic, Floyd, Dudley, Azevedo, Grant & Maher, 2003:56) and HIV care services (Creese, Floyd, Alban & Guinness, 2002:1635) are cost-effective. While implementing collaborative TB/HIV activities it is imperative that civil society organisations, including nongovernmental and community-based organisations advocate, promote and follow national TB and HIV guidelines, including monitoring and evaluation of TB/HIV activities using nationally recommended indicators.

#### *2.7.1.3.6 Engaging the private-for-profit sector*

The engagement of the private-for-profit sector in implementing collaborative TB/HIV activities requires coordination and collaboration among HIV programmes and TB-control programmes as well as private service providers and their professional associations. This collaboration can be either at national, state, regional, provincial or district level, depending on the local context. Private-for-profit sector representation should be included in TB/HIV coordinating bodies at all levels and should be encouraged to initiate and implement collaborative activities in accordance with national norms and guidelines (Sinanovic et al., 2003:56).

#### *2.7.1.3.7 Addressing the needs of key populations: women, children and people who use drugs*

Active TB has been diagnosed at rates up to 10 times higher in pregnant women living with HIV than those not (Kali, Gray, Violari, Chaisson, McIntyre & Martinson, 2006:379). Maternal TB is associated with a 2.5-fold increased risk of vertical transmission of HIV infection to the unborn child (Gupta, Bhosale, Kinikar, Gupte, Bharadwaj, Kagal, Joshi, Khandekar, Karmarkar, Kulkarni, Sastry, Mave, Suryavanshi, Thakar, Kulkarni, Tripathy, Sambarey, Patil, Paranjape, Bollinger, Jamkar and Six Week Extended-Dose Nevirapine (SWEN) India Study Team, 2011:358). Similarly, HIV infection is a risk factor for active TB disease in infants or children. More severe forms of TB disease and higher mortality rates are reported in children living with HIV (Swaminathan & Rekha, 2010:184).

Bacille Calmette–Guérin (BCG) is a live vaccine and should not be given to infants or children with known HIV infection (Royal College of Physicians of Ireland, 2008). However, HIV infection cannot reliably be determined at birth, and the majority of infants born to HIV-infected mothers will be HIV-uninfected. BCG should therefore be administered to infants born to HIV-infected mothers in HIV-prevalent settings unless the infant is confirmed as HIV-infected. National HIV programmes and TB-control programmes should ensure that TB prevention, screening, diagnosis and treatment as well as HIV prevention, diagnosis, treatment and care services are integrated with those for maternal and child health (International Union Against Tuberculosis and Lung Disease [IUATLD], 2010) and prevention of HIV vertical transmission.

#### *2.7.1.3.8 Operational research to scale up collaborative TB/HIV activities*

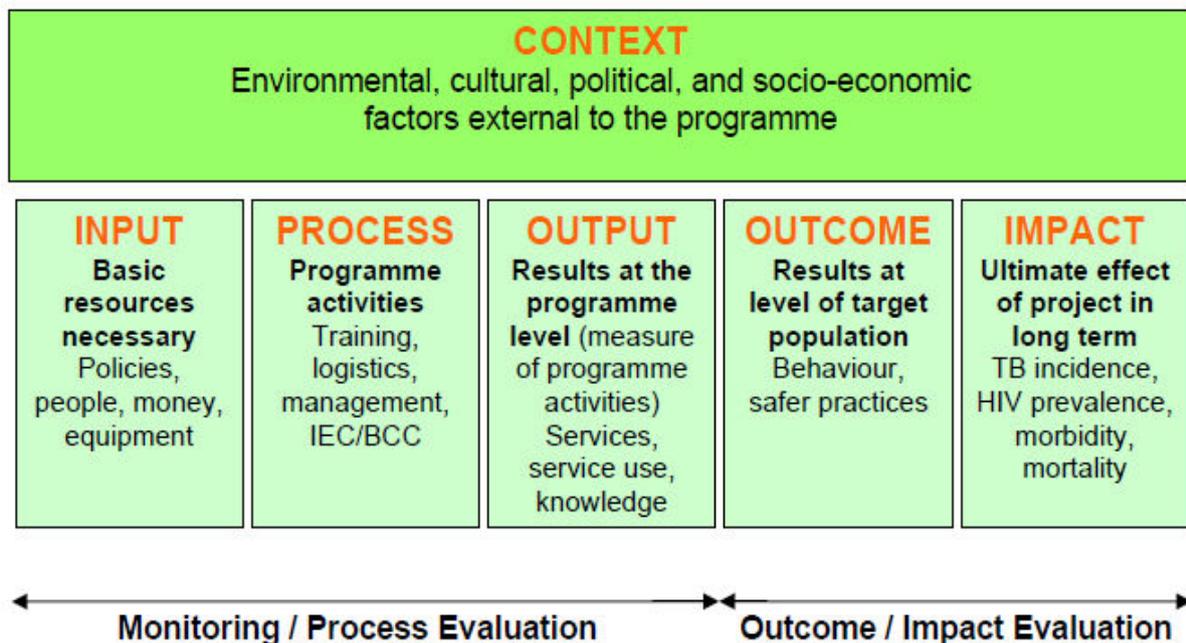
Cultural and system-wide differences between HIV and TB care providers and operational difficulties for providing effective and appropriate interventions have contributed to a lack of progress in expanding collaborative TB/HIV activities. Operational research is needed to define how best to provide high-quality integrated TB and HIV interventions at facility and community levels in order to inform global and national policy and strategy development (Sculier, Getahun & Lienhardt, 2011:S5). Priority research questions for TB/HIV in HIV-prevalent and resource-limited settings, including for operational research, have been identified and need to be urgently answered (WHO, 2011c).

### 2.7.1.4 Conduct monitoring and evaluation

The extent of the joint TB/HIV epidemics and their impact requires effective, coordinated and well-managed interventions. Collaborative TB/HIV activities are a new and developing area and must be shown to be effective to justify their becoming an integral part of national and international responses to the joint TB/HIV epidemics (WHO, 2004b).

Monitoring and Evaluation provides the means to assess quality, effectiveness, coverage, and delivery of services and will promote a learning culture within programmes to ensure continual health improvement. The urgent need for action against TB/HIV means that results must be obtained quickly so that effective interventions can be scaled up and ineffective interventions withdrawn or adapted (WHO, 2004b).

The following figure demonstrates the specific implementation phases of monitoring and evaluation of collaborative TB/HIV care services (described in Chapter 1 under Conceptual framework, section 1.6.2).



**Figure 2.1:** Monitoring and Evaluation Framework (Adapted from WHO, 2004b)

## **2.7.2 Activities to decrease the burden of TB among HIV patients**

According to the global fund to fight AIDS, TB and malaria information note, the interaction of TB with HIV presents additional challenges to TB control. It is crucial to improve and strengthen TB/HIV collaborative activities to reduce the burden of TB in PLHIV and reduce the burden of HIV among TB patients (GFATM, 2011).

HIV has a specific impact on the dynamics of the tuberculosis epidemic, therefore controlling TB in high HIV prevalence populations requires measures not only to achieve high rates of detection and successful treatment of cases which are handled more effectively, but also additional measures (De Cock & Chaisson, 1999:457) beyond case finding and treatment. A global report for 2006 revealed that only 0.96% of PLHIV had been screened for TB (intensified TB case finding), 12% diagnosed with TB, and the coverage for IPT provision among PLHIV was only 0.08% (Mario, 2008).

The individual-centred, rights-based paradigm of the South African National AIDS Policy remains dissonant with the compelling public-health approach of TB control. The existence of independent and disconnected TB and HIV services results in a wastage of scarce health resources, an increased burden on patients' time and finances, and ignores evidence of patients' preference for an integrated service (Rubeshan, Nesri & Ellen, 2009:243).

The following description of interventions considers their efficacy and effectiveness.

### **2.7.2.1 Establish intensified TB case finding**

Community-based studies have reported high rates of undiagnosed TB both among people living with HIV and HIV-negative individuals (Ayles, Schaap, Nota, Sismanidis, Tembwe, De Haas, Muyoyeta, Beyers and Peter Godfrey-Faussett for the ZAMSTAR Study Team, 2009:e5602; Wood, Middelkoop, Myer, Grant, Whitelaw, Lawn, Kaplan, Huebner, McIntyre & Bekker, 2007:87). Early identification of signs and symptoms of TB followed by diagnosis and prompt initiation of treatment in PLHIV, their household contacts, groups at high risk for HIV and people living in congregate settings (e.g., prisons, workers' hostels, police and military barracks) increases the chances of survival, improves quality of life and reduces transmission of TB in the clinic and the community. Prompt diagnosis and treatment of TB among HIV-negative people is also crucial to reducing TB transmission to PLHIV (WHO, 2012a).

All people living with HIV should be regularly screened for TB using a clinical symptom-based algorithm consisting of current cough, fever, weight loss or night sweats at the time of initial presentation for HIV care and at every visit to a health facility or contact with a healthcare worker thereafter (WHO 2010b; Haileyesus, Wanitchaya, Charles, Elizabeth, Helen, Kevin, Alison, Gavin, Michael, Sarita, Stephen, Robin, Gary, Reuben, Anand & Jay, 2011).

Adults and adolescents living with HIV who report any one of the symptoms of current cough, fever, weight loss or night sweats may have active TB and should be evaluated for TB and other diseases. Screening for TB is important regardless of whether they have received or are receiving IPT or ART. Similarly, children living with HIV who have any one of the symptoms (poor weight gain, fever or current cough) or contact history with a TB case may have TB and should be evaluated for it and other conditions (WHO, 2012a).

In people with a positive screen, the diagnostic workup for TB should be carried out in accordance with national guidelines and principles of sound clinical practice to identify either active TB or an alternative diagnosis. Smear negative pulmonary and extra-pulmonary TB is common among people living with HIV and associated with poor treatment outcomes and excessive early mortality. If smear negative pulmonary TB or extra-pulmonary TB is suspected, diagnostic processes should be expedited using all available and appropriate investigations, including myco-bacterial culture (WHO, 2007b).

In high HIV prevalence settings, where WHO approved molecular tests (e.g., Xpert MTB/RIF) available, they should be the primary diagnostic test for TB in people living with HIV (WHO, 2011d). Among seriously ill patients in HIV-prevalent settings, empirical anti-TB treatment should be initiated in case of negative investigations and no improvement to parenteral antibiotics (WHO, 2007b). Patients should be referred to the next level of care to confirm diagnosis. If referral is not possible, anti-TB treatment should be completed.

New TB patients living with HIV should receive a TB regimen containing six months of rifampicin (two months of isoniazid, rifampicin, pyrazinamide and ethambutol followed by four months of rifampicin and isoniazid, 2HRZE/4RH) on a daily schedule (WHO 2009f), and should be started on ART regardless of CD4 count as soon as possible within the first eight weeks of anti-TB treatment (WHO, 2010c).

Tuberculosis control programmes need to support general health service providers in ensuring proper case management conditions for patients to complete a course of effective anti-TB treatment and avoid the risk of drug resistance (WHO, 2005c). The WHO recommends directly observed therapy as one of a range of measures aimed at promoting treatment adherence and completion; in addition, only rifampicin-containing regimens (NHS, 2011) are recommended for HIV-TB co-infected persons.

According to the progress report of Federal Democratic Republic of Ethiopia towards implementation of the UN Declaration of Commitment on HIV (FDRE 2010:53), a total of 24,112 HIV-positive people were screened for TB at HIV counselling and testing (HCT) centres, chronic HIV and ART clinics, of whom 4,154 (17.2%) were found to have active TB and 2,403 (10%) latent TB, and so put on IPT. The proportion of HIV-positive patients who were screened for TB increased from 25% in 2007 to 55% in 2009.

### **2.7.2.2 *Introduce Isoniazid preventive therapy***

According to the recent report by WHO, Isoniazid is given to individuals with latent infection with *Mycobacterium tuberculosis* in order to prevent progression to active disease. Exclusion of active TB is critically important before IPT is started. The absence of all of current cough, night sweats, fever, or weight loss can identify a subset of adolescents and adults living with HIV who have a very low probability of having TB disease that can reliably be initiated on IPT. This screening rule has a negative predictive value of 97.7% (95% CI [confidence interval] 97.4–98.0) at 5% TB prevalence among people living with HIV. In children, the absence of poor weight gain, fever, and current cough can identify children who are unlikely to have TB. Isoniazid is given daily as self-administered therapy for at least six months as part of a comprehensive package of HIV care for all eligible people living with HIV irrespective of degree of immune-suppression, ART use, previous TB treatment, and pregnancy. Information about IPT should be made available to all people living with HIV. Providing IPT as a core component of HIV preventive care should be the responsibility of national HIV programmes and HIV service providers (WHO, 2012a).

Evidence has shown that IPT is as efficacious as, but safer than Rifampicin and Pyrazinamide containing regimens used for prevention of latent TB infection (Akolo, Adetifa, Shepperd & Volmink, 2010:CD000171). IPT was also found to be effective in reducing the incidence of TB and death from TB in HIV-infected patients with a positive

tuberculin skin test (TST) (Charalambous, Grant, Innes, Hoffmann, Dowdeswell, Pienaar, Fielding & Churchyard, 2010:s13; Durovni, Saraceni, Pacheco, Cavalcante, Cohn, King, Moulton, Chaisson, Golub & THRio study group 2011). Evidence from Botswana and South Africa suggests an increased benefit with 36 months or longer duration of IPT, particularly in people who are TST-positive in settings with higher TB prevalence and transmission (Neil, Grace, Lawrence, Reginah, Harry, Malathi, James, Glenda & Richard, 2011:11; Samandari, Agizew, Nyirenda, Tedla, Sibanda, Shang, Mosimaneotsile, Motsamai, Bozeman, Davis, Talbot, Moeti, Moffat, Kilmarx, Castro & Wells, 2011:1588). However, operational challenges for TST represent significant impediments to accessing IPT in resource-limited settings, and TST should therefore not be a requirement for initiating IPT among people living with HIV.

ART is a powerful strategy to reduce TB incidence among people living with HIV across a broad range of CD4 cell counts. ART reduces the individual risk of TB by 54% to 92% (Lawn, Kranzer & Wood, 2009:685) and the population-based risk by 27% to 80% (Middelkoop, Bekker, Myer, Johnson, Kloos, Morrow & Wood, 2011:263; Miranda, Morgan, Jamal, Laserson, Barreira, Silva, Santos, Wells, Paine & Garrett, 2007:e826) among people living with HIV. Studies conducted in Brazil and South Africa showed up to 90% reduction in TB risk among HIV-infected patients with a positive TST who received both ART and IPT (Golub, Saraceni, Cavalcante, Pacheco, Moulton, King, Efron, Moore, Chaisson & Durovni, 2007:1441; 2009:631). ART also reduces TB recurrence rates by 50% (Golub, Astemborski, Ahmed, Cronin, Mehta, Kirk, Vlahov and Chaisson, 2008:532). Modelling exercises from nine sub-Saharan African countries indicated that the most profound reduction in incidence of HIV-related TB is seen when ART is initiated as soon as people test HIV-positive (Williams, Granich, De Cock, Glaziou, Sharma & Dye, 2010:19485).

The WHO recommends that all adolescents and adults, including pregnant women with HIV infection, and CD4 counts  $\leq 350$  cells/mm<sup>3</sup> should be started on ART regardless of symptoms (WHO, 2006c). According to the recent WHO TB/HIV policy, a systematic review including data from randomly controlled trials and large multicentre cohorts was conducted and analysed using the GRADE system to explore the role of earlier initiation of ART (at CD4 counts  $>350$  cells/mm<sup>3</sup>) for preventing TB in PLHIV. The policy showed that the risk of TB is reduced by half among people living with HIV when ART is initiated at CD4 counts  $>350$  cells/mm<sup>3</sup>.

Base on earlier research, IPT for TB can safely be given to people living with HIV without TB disease, reducing the risk of developing TB by 33-67% for up to 48 months. It is currently recommended for all people living with HIV in areas with a prevalence of latent TB infection >30%, and for all people living with HIV with documented latent TB infection or exposure to an infectious TB case, regardless of where they live. More recently, evidence has shown that the combined use of IPT and ART among PLHIV significantly reduces the incidence of TB; and the use of IPT in patients who have successfully completed a course of TB therapy has been shown marked reduction in the risk of subsequent TB cases (WHO, 2008a).

A follow-up study in Tanzania for 565 tuberculin skin test (TST) positive cohorts of PLHIV for completion of IPT revealed that 493 (87.3%) completed treatment and 72 (12.7%) did not. Non-completion was physician-initiated in 24 (33.3%, due to active TB or side effects), patient initiated in 42 (58.3%, due to self-cessation or loss to follow-up) and due to death in 6 (8.3%, unrelated to IPT). HIV-infected subjects provided with counselling, monthly follow-up and travel re-imburement have high rates of IPT completion with minimal side effects (Munseri, Talbot, Mtei & Fordham, 2008:1037).

A cross-sectional facility based study on provision and awareness of IPT among PLHIV in Addis Ababa in 2008 revealed that, only 32.0% of apparently TB free PLHIV had received IPT (Wesen & Getnet, 2012:2).

### **2.7.2.3 Ensure control of TB infection**

People living with HIV in congregate settings, such as prisons and centres for refugees or internally displaced persons, and people who use drugs have a higher risk of and incidence of TB and HIV infection (Getahun, Gunneberg, Granich & Nunn, 2010:201).

TB Infection Control (IC) measures are essential to prevent the spread of *M. tuberculosis* to vulnerable patients, healthcare workers, the community, and those living in congregate settings. Fundamentally, TB infection control is about safety, and people receiving or offering HIV care should not have to worry about being exposed to or infected with *M. tuberculosis* in the process. In light of the crisis of drug-resistant TB in countries with a high burden of HIV, establishing facilities that are safe from TB has become an emergency for health services, prisons and other congregate settings in general, but especially for HIV programmes (WHO, 2008a).

At one time there were over two million people incarcerated in the USA who were disproportionately poor and from African American communities, with rates of HIV in prisons five times higher than in the general population. The correctional setting provides an excellent opportunity to screen for and treat TB and to develop effective prevention programmes (Timothy, Nickolas, Lynn, Curt, Landon, Josiah & Charles 2009:73).

Low-cost infection control interventions include triaging patients, scheduling new and follow-up patients separately; providing well-ventilated and sheltered waiting rooms; and encouraging use of personal respirators by patients and staff. A more patient-centred approach to TB care may improve recruitment of the active participation of TB patients in positive prevention efforts, including maximising personal infection control, limiting exposure of social contacts to TB during the intensive phase of treatment, advocating Isoniazid prophylaxis within the home, and patient-centred education efforts to reduce overall transmission (Rubeshan et al., 2009:243).

### **2.7.3 Activities to decrease the burden of HIV in TB patients**

Since HIV fuels the TB epidemic, interventions to decrease HIV transmission should contribute to decreasing the TB burden. Increased condom use, treatment of STIs, reduction in the number of sexual partners, safe injection behaviour, and drugs to prevent mother-to-child transmission have all been shown to be effective in preventing HIV infection in pilot projects, controlled trials, or national programmes in less developed countries (Merson, Dayton & O'Reilly, 2000:68).

The impact of HIV co-infection on TB case fatality is evident in surveillance data. As the rate of co-infection rises so does the reported death rate among sputum smear-positive patients (Cambodian Ministry of Health, 2006).

In the following sections, specific activities to decrease the burden of HIV among TB are discussed.

#### **2.7.3.1 *Provide HIV testing and counselling for TB patients***

The vast majority of people living with HIV do not know their HIV status and seek healthcare from general service providers. HIV testing and counselling for people with diagnosed or presumptive TB offers an entry point for a continuum of prevention, care,

support, and treatment for HIV and for TB (WHO, 2012a). Evidence from observational studies shows that testing patients with presumptive and diagnosed TB and their contacts for HIV yields a high number of new diagnoses of HIV infection, as prevalence of HIV is higher than among the general adult population. The yield of HIV-positive testing in TB patients varies significantly from 6.3% to 77% (WHO, 2012a).

Studies in SSA have shown that HIV testing of presumptive TB cases who turn out not to have active TB disease also yields high HIV-positive results (Odhiambo, Kizito, Njoroge, Wambua, Nganga, Mburu, Mansoer, Marum, Phillips, Chakaya & De Cock, 2008:63; Srikantiah, Lin, Walusimbi, Okwera, Luzze, Whalen, Boom, Havlir & Charlebois, 2007:168). One study in Thailand showed 74% acceptance rate of HIV testing among contacts of TB patients and a higher (13.8%) HIV prevalence rate among contacts of HIV-positive TB cases than with contacts of HIV negative TB cases (2.5%) (Suggaravetsiri, Yanai, Chongsuvivatwong, Naimpasan & Akarasewi, 2003:424). Voluntary HIV testing and counselling for sexual or needle-sharing partners, with shared disclosure and mutual support, may also improve the uptake of and adherence to ART, benefiting both the index individual and their partners regardless of HIV status (WHO, 2012b).

Despite the low quality of evidence, the current TB/HIV Policy recommends routine HIV testing and counselling to all patients with presumptive and diagnosed TB as benefits of testing accrue to the patient, partner, family, and community at large. The testing should be readily available and voluntary, with informed consent and confidentiality protected. Moreover, TB patients with a new potential HIV exposure or who are at higher risk of HIV exposure and with an HIV-negative test result should be re-tested four weeks after the time of initial testing (WHO, 2010d). Age-appropriate algorithms should be in place for undertaking HIV testing in young children, and HIV testing should be family- and child-focused (WHO & UNICEF, 2010h). All people diagnosed with HIV infection should be offered HIV prevention, diagnosis, treatment, and care services, including ART. These services should be offered by TB control programmes or through effective referral to HIV services.

A baseline evaluation of access to and acceptance of HIV counselling and testing among TB patients in Rwanda indicated a nationwide increase from 46% in 2004 to 81% by the third quarter of 2006. In that quarter, 49% of HIV-infected TB patients had initiated Cotrimoxazole preventive therapy and 34% were receiving antiretroviral treatment (Michel, Greet, Gaspard, Jules, Simon, Aliou, Alyssa, Jessica, Ruben &

Wafaa, 2007:383). In a similar baseline assessment of TB/HIV collaborative activities in the Democratic republic of Congo (DRC), 53% out of 92 surveyed clinics offered counselling and testing to TB patients; 22 (42%) routinely offered HCT to all patients, while others used selective criteria. While most offered onsite counselling (92%) and testing (77%), not all 53 clinics had an HCW trained in counselling, and only 31 had access to a counselling room (Amanda et al., 2008:137).

Voluntary counselling and testing for HIV is recommended for persons treated for TB, but in some countries there are barriers to implementing routine HIV testing for all TB patients. For example, a qualitative study in Indonesia showed very poor knowledge of patients and providers regarding HIV. The main barriers perceived by patients were burden for accessing VCT and fear of knowing the test results. Stigma caused concern among providers but did not play a great role in patients' attitudes towards VCT. The main barriers perceived by providers were communication, patients feeling offended, stigmatisation and additional burden (Yodi, Riris, Pierre, Marleen & Patrick, 2008:385). An epidemiological synthesis in Ethiopia showed that the percentage of TB patients who received HIV counselling and testing had increased from 10% to more than 80% in most health facilities (EHAPCO/World Bank, 2008:43).

A study in Southern Ethiopia to assess acceptability of HIV testing among TB patients revealed overall acceptability rate of 35%, with the prevalence of HIV among the study TB patients at 20.6% (Degu, Aschalew & Bernt, 2007:4). In a recent report in Ethiopia, the introduction of provider-initiated counselling and testing in most public health facilities among TB patients had increased from 16% in 2007 to 38% in 2009. A total of 56,040 TB patients were tested for HIV, of whom 11,118 (20%) were found to be HIV-positive. The co-infection of TB patients had declined from 31% in 2007 (FDRE-MOH 2010:53) to 20% in 2009.

### **2.7.3.2 Introduce HIV prevention methods for TB patients**

The Stop TB Partnership and WHO's (2006:126) Global Plan to Stop TB 2006-2015 acknowledges that as the HIV pandemic continues to spread, "the TB community must advocate for all efforts to mitigate the impact of HIV and to promote HIV preventions and treatment as a vital component of the TB control strategy." Prevention of HIV includes interventions to (a) prevent sexual transmission, such as male and female condoms, male circumcision, HIV testing and counselling, including couples' counselling

and testing, and early ART in line with WHO guidelines; (b) prevent transmission through sharing contaminated injecting equipment among injecting drug users; combined with (c) behavioural and brief interventions to prevent hazardous alcohol use and use of other psycho-stimulants (WHO, 2010f).

HIV prevention services also include prevention of vertical transmission of HIV, which comprises two key approaches (WHO, 2010I). HIV-infected women, including during pregnancy, with CD4 counts  $\leq 350$  cells/mm<sup>3</sup> irrespective of WHO clinical staging or in clinical stage 3 or 4 irrespective of the CD4 cell-count, should start lifelong ART for their own health, which is also safe and effective in reducing vertical transmission. For HIV-infected pregnant women who do not need ART for their own health, prophylaxis with triple ARV medicines or with zidovudine plus lamivudine to prevent HIV transmission is needed and should be continued until one week after all infant exposure to breast milk has ended (WHO, 2010I).

In sub-Saharan African countries with very high HIV prevalence and low male circumcision rates, medical male circumcision in HIV-negative men is also recommended, combined with HIV testing and counselling and promotion of consistent condom use (WHO, 2010f). In healthcare settings, transmission of HIV can be prevented through primary prevention measures such as standard precautions, injection safety, blood safety, and safe waste disposal, as well as secondary prevention measures such as occupational post-exposure prophylaxis (WHO, 2012a).

Review of the evidence has shown that HIV prevention methods such as voluntary counselling and testing, prevention of vertical transmission of HIV and condom distribution are cost-effective (Creese et al., 2002:1635; Daniel, Rob, Chika, Jeremy & Joshua, 2005:1431). The provision of HIV preventive interventions by TB-control programmes or effective referral of patients to HIV programmes has been successfully implemented in many countries (Gasana, Vandebriel, Kabanda, Tsiouris, Justman, Sahabo, Kamugundu & El-Sadr, 2008:39; Shetty, Granich, Patil, Sawant, Sahu, Wares, Chauhan & Joshi, 2008:26). Improved treatment of sexually transmitted infections has been shown to reduce HIV incidence in an environment characterised by an emerging HIV epidemic (Sangani, Rutherford & Wilkinson, 2004:CD001220).

Random trials in areas of high HIV prevalence have shown that male circumcision reduces the risk of heterosexually acquired HIV in men up to 60% (Newell & Barnighausen, 2007:617). Systematic reviews have shown that behavioural interventions targeting HIV-positive individuals in resource-limited settings are effective,

especially among HIV sero-discordant couples (Kennedy, Medley, Sweat & O'Reilly, 2010:615). Meta-analysis random controlled trials and community-based studies support the use of ART for HIV prevention in HIV sero-discordant heterosexual couples (Attia, Egger, Müller, Zwahlen & Low, 2009:1397; Myron, Ying, Marybeth, Theresa, Mina, Nagalingeswaran, James, Johnstone, Beatriz, Jose, Sheela, Sanjay, Suwat, Breno, Kenneth, Irving, Susan, Estelle, Lei, Joseph, Lisa, Guy, Ian, Joseph, Joel, Diane, Susan, Heather, Vanessa, David, Taha, Karin, David, Max & Thomas, 2011:493).

Among people who inject drugs, comprehensive harm reduction programming, such as wide access to sterile injecting equipment, opioid substitution therapy, and outreach services to reduce the risk of HIV transmission and other negative health effects of injecting drug use, should be implemented (WHO, UNODC & UNAIDS, 2008).

### **2.7.3.3 Introduce Cotrimoxazole preventive therapy**

Cotrimoxazole, a fixed-dose combination of sulfamethoxazole and trimethoprim, is a broad-spectrum antimicrobial agent that targets a range of aerobic gram-positive and gram-negative organisms, fungi, and protozoa. Providing Cotrimoxazole has been part of the standard of care for preventing *Pneumocystis jiroveci* pneumonia (PCP) (formerly *Pneumocystis carinii* pneumonia) and toxoplasmosis since the early 1990s. Data on the effectiveness of Cotrimoxazole in reducing morbidity and mortality among individuals living with HIV in resource-limited countries comes from random clinical trials, observational cohort studies and programme analyses from several African countries (with varying levels of Cotrimoxazole resistance), India and Thailand. There is limited data from the Caribbean and Latin America (WHO 2006a).

Cotrimoxazole preventive therapy is promoted by WHO and UNAIDS for the prevention of a range of secondary bacterial and parasitic infections in eligible adults and children living with HIV. TB patients living with HIV should receive CPT and it should be implemented as an integral component of the HIV chronic care package (WHO, 2012a).

Evidence from different random controlled trials, including areas of high levels of antibiotic resistance, has shown reduced mortality, morbidity, and hospitalisation with no significant increase in adverse events among smear-positive TB patients with HIV regardless of their CD4 counts (Nunn, Mwaba, Chintu, Mwinga, Darbyshire & Zumla, 2008:257; Wiktor, Sassan-Morokro, Grant, Abouya, Karon, Maurice, Djomand, Ackah,

Domoua, Kadio, Yapi, Combe, Tossou, Roels, Lackritz, Coulibaly, De Cock, Coulibaly & Greenberg, 1999:1469).

Other non-randomised and operational studies showed that CPT is feasible (Chimzizi, Harries, Manda, Khonyongwa and Salaniponi, 2004:938; Zachariah, Spielmann, Harries & Salaniponi, 2003:65), safe and reduces mortality rates in TB patients (Mwaungulu, Floyd, Crampin, Kasimba, Malema, Kanyongoloka, Harries, Glynn & Fine, 2004:354; Zachariah et al., 2003:65). Moreover, CPT did not select for sulfadoxine–pyrimethamine-resistant malaria parasites among HIV-uninfected household members of people living with HIV receiving the medicine, but did reduce the number of malaria episodes among household members (Malamba, Mermin, Reingold, Lule, Downing, Ransom, Kigozi, Hunt, Hubbard, Rosenthal & Dorsey, 2006:375).

Based on this evidence from various parts of the world, the WHO policy for collaborative TB/HIV care services recommends that routine CPT should be administered in all HIV-infected patients with active TB disease, regardless of their CD4 cell count. Moreover, HIV programmes and TB-control programmes should establish a system to provide CPT to all eligible people living with HIV who have active TB (WHO, 2012a).

According to the 2011 global TB report, in Ethiopia, the percentage of identified HIV-positive TB patients started on CPT in 2010 was 69% (WHO, 2011a:62).

#### **2.7.3.4 Ensure HIV care and support**

According to the WHO policy on collaborative TB/HIV care (WHO, 2012a), all PLHIV should be provided with a comprehensive package of prevention, diagnosis, treatment, and care interventions (continuum of care). These comprehensive packages of care start before the need for ART, which include:

- regular assessment of the clinical and immunological stages of infection
- prevention of illness
- care for opportunistic infections
- preparation for adherence to ART
- provision of safe water
- sanitation and hygiene
- psychosocial support
- Prevention and management of mental health disorders, including alcohol and other substance use.

The policy also outlines the need to provide HIV prevention methods for people already living with HIV to prevent inadvertent HIV transmission (“positive prevention” or “prevention for positives”).

A continuum of care should also be provided to people living with HIV who are receiving or who have completed their anti-tuberculosis treatment through integrated services or strengthened referral systems. Evidence has shown that linking TB and HIV prevention, diagnosis, treatment and care services may generate synergies, strengthen both programmes, and scale up the delivery of these interventions to HIV-infected TB patients (Helena, Catherine, Palwasha, Ade, Haileyesus & Alison, 2010).

Particular attention should be paid to seriously ill patients (e.g., those with multidrug-resistant and extensively drug-resistant TB). Palliative care, both chronic and terminal as needed, should be offered to ensure that patients and their families live out their lives with minimal suffering and loss of dignity, even when all available curative treatments have been exhausted (WHO, 2010i).

### **2.7.3.5 Introduce antiretroviral therapy**

ART greatly improves the survival and the quality of life of TB patients living with HIV, prevents HIV transmission, and should be considered part of HIV and TB treatment and prevention. The availability of ART can also encourage people to be tested for HIV. HIV and TB control programmes should ensure that TB patients diagnosed with HIV infection are offered ART as early as possible. They should work together to guarantee ART to all TB patients living with HIV in a decentralised manner (WHO, 2012a). Observational studies conducted in both resource-limited and high-income settings have shown that ART is associated with significant reductions in mortality risk (between 54% and 95%) (Lawn et al., 2009:685).

Evidence from random controlled trials shows that early initiation of ART during anti-TB treatment is associated with reduced mortality rates, especially in patients with profound immune-suppression (e.g. CD4 < 50 cells/mm<sup>3</sup>). The CAMELIA trial conducted in Cambodia, which enrolled 661 HIV-infected TB patients with a median CD4 count of 25 cells/mm<sup>3</sup>, showed that mortality was reduced by 34% when ART was initiated two weeks rather than eight weeks after the onset of anti-TB treatment (François-Xavier, Thim, Didier, Laurence, Claire, Eric, Yoann, Olivier, Sarin, Narom, Chindamony,

Khemarin, Chanroeurn, Bunnet, Chhun, Sath, Bertrand, Borann, Sirenda, Marcelo, Lawrence, Jean-François & Anne, 2011:1471).

The STRIDE and SAPIT trials found similar results of reduced deaths and AIDS-related events with combined and earlier ART and anti-TB treatment, by 42% and 68% respectively, especially among people with a CD4 count less than 50 cells/mm<sup>3</sup> (Havlir, Kendall, Ive, Kumwenda, Swindells, Qasba, Luetkemeyer, Hogg, Rooney, Wu, Hosseinipour, Laloo, Veloso, Some, Kumarasamy, Padayatchi, Santos, Reid, Hakim, Mohapi, Mugenyi, Sanchez, Lama, Pape, Sanchez, Asmelash, Moko, Sawe, Andersen & Sanne, 2011:493; Salim, Kogieleum, Anneke, Nesri, Cheryl, Andrew, Tanuja, Santhanalakshmi, Anushka, Niraksha, Gonasagrie, Wafaa, Gerald & Quarraisha 2011:1492). Based on these three trials, ART should be started as a matter of emergency (within two weeks of the onset of anti-TB treatment) in TB patients with a CD4 count < 50 cells/mm<sup>3</sup> and as early as possible in the remaining cases.

Caution is needed in PLHIV with TB meningitis as immediate ART was significantly associated with more severe adverse events when compared with initiation of ART 2 months after the start of anti-tuberculosis treatment (M. Estee, Nguyen TB, Tran, Nguyen TH, Nguyen HP, Pham, Nguyen TD, Nguyen, Nguyen VV, Nguyen DB, Nguyen AT, Phan, Doan, Do, Nguyen TC, Nguyen, Nguyen NH, Nguyen NL, Hoang, Nguyen HD, Tran, Nguyen TC, Cameron, Menno, Marcel & Jeremy, 2011:1374).

Rifampicin reduces drug levels of both non-nucleoside reverse transcriptase inhibitors and protease inhibitors through induction of the cytochrome P450 liver enzyme system. A random controlled trial in Thailand comparing efavirenz and nevirapine-based ART in HIV-infected TB patients receiving rifampicin showed that both standard doses were effective in achieving viral load suppression (Manosuthi, Sungkanuparph, Tantanathip, Lueangniyomkul, Mankatitham, Prasithsirskul, Burapatarawong, Thongyen, Likanonsakul, Thawornwa, Prommool & Ruxrungtham, 2009:1752). However, reports of efficacy, safety, and tolerability of efavirenz and nevirapine administered with rifampicin varied across observational studies (Boulle, Van Cutsem, Cohen, Hilderbrand, Mathee, Abrahams, Goemaere, Coetzee & Maartens, 2008:530; Shipton, Wester, Stock, Ndwapi, Gaolathe, Thior, Avalos, Moffat, Mboya, Widenfelt, Essex, Hughes & Shapiro, 2009:360).

When rifampicin is given with protease inhibitors, highly variable and mainly sub-therapeutic plasma concentrations of the protease inhibitor are observed, even in the presence of boosted doses of ritonavir (Nijland, L'homme, Rongen, van Uden, van

Crevel, Boeree, Aarnoutse, Koopmans & Burger, 2008:931). Rifabutin, listed in the WHO Model List of Essential Medicines, is a less potent inducer of the cytochrome P450 system which can be used in patients on ART regimens that include a protease inhibitor.

## **2.8 HIV AMONG TB PATIENTS**

According to annual global TB report, in 2008 there were an estimated 9.4 million incident cases of TB globally, 11.1 million prevalent cases of TB, 1.3 million deaths from TB among HIV negative people and an additional 0.52 million TB deaths among HIV-positive people, classified as HIV deaths in the International Statistical Classification of Diseases (WHO, 2009b). The number of notified cases of TB in 2008 was 5.7 million, equivalent to 55-67% of all incident cases, with a best estimate of 61% (WHO 2009a). Eastern, Southern, Western, and Middle Africa experienced an upward trend in the number of reported TB-HIV deaths (Olalekan et al., 2009:65).

A study on the prevalence of HIV among TB patients in India (Neeraj, Lakbir, Ajay, Jotna, Fraser, Suvanand, Rahul & Puneet, 2008: e2970) revealed that HIV prevalence ranged widely among 15 surveyed districts, from 1% to 13.8%. Relative to smear-positive TB, HIV infection was 1.4 times more likely among smear negative patients and 1.3 times more likely among extra-pulmonary patients (Neeraj, Lakbir, Ajay, Jotna, Fraser, Suvanand, Rahul & Puneet, 2008: e2970).

According to TB diagnosis data abstracted from clinical records of Ugandan TB suspects, 238 (42%) were HIV-positive among 565 consented to test. Of the HIV-infected patients, 37% had received a non-TB diagnosis. HIV sero-prevalence was higher in patients with a non-TB diagnosis (49%) than those diagnosed with TB (39%) (Srikantiah, et al., 2007:168).

A study in Thailand to evaluate the potential impact of the new Global Plan to Stop TB from 2004 to 2005 showed that 24% of TB cases were known to be HIV-positive in 2005 alone. The proportion of TB cases with unknown HIV status decreased from 66% in 2003 to 23% in 2005 ( $P < 0.01$ ) (Jay, Daranee, Sriprapa, Amornrat, Patama, Surin, Somsak, Wanchai, Pricha, Somsak, Norio, Pasakorn, Charles & Jordan, 2007:586). In another earlier study in Thailand for the prevalence of HIV among active TB cases and their household contacts, 197 (39.5%) index cases were HIV-positive among 499 pulmonary TB and higher HIV prevalence was found among contacts of HIV-positive TB

patients than among household contacts of HIV negative TB index cases (13.8% vs. 2.5%). The same study revealed that spouses of HIV-positive TB cases had the highest HIV prevalence (48.6%). Among the household contacts who were HIV-positive, 9.5% had active TB (Suggaravetsiri et al., 2003:424).

A facility-based study for the TB-HIV co-infection in Southern Ethiopia (Daniel, Mohammed, Luelseged, Lopisso & Bernt 2008:266) showed a higher rate of HIV infection among TB patients than non-TB patients. Of the 1,308 TB patients enrolled, 18% were HIV-positive; whereas, of the 4,199 pregnant women attending ANC, only 3.8% were HIV-positive (Daniel et al., 2008:266).

A cross-sectional study in 2000 for determination of HIV status among smear positive TB patients in Addis Ababa, Ethiopia, revealed that 45.3% were HIV-positive. Among the HIV-positives, 61.7% were male and 38.3% female. The TB-HIV co-infection was highest in the age group 20-49 and the largest number of TB co-infection (75% of all such co-infection) was found in the 20-39 age groups (Demissie et al., 2000:277).

## **2.9 TB AMONG HIV PATIENTS**

It has been well documented that TB is the most common opportunistic infection in PLHIV. Different documents globally as well as regionally confirmed this with firm grounds (GFATM 2011; WHO 2005a, 2012a). In the last two decades the number of new TB cases has tripled in high HIV-prevalence countries, making TB the leading cause of death among people living with HIV in Africa and a major cause of death elsewhere, accounting for almost 2 million deaths per year globally. It is also the most common presenting illness among people living with HIV (GFATM, 2011).

A secondary analysis of TB-HIV prevalence survey in Harare, Zimbabwe, found one or more symptoms of TB in 21.2% of HIV-positive compared with 9.9% of HIV negative participants ( $P < 0.001$ ). TB was subsequently diagnosed in 48 HIV+ and 31 HIV- participants. In the HIV+ study participants, cough of  $\geq 2$  weeks duration, any one TB symptom (night sweat, fever or weight loss) and a positive sputum culture had sensitivities of 48%, 81% and 65% respectively (Elizabeth et al., 2010:13).

A study to evaluate screening tests for TB, using sputum bacteriology in HIV-infected persons attending a VCT clinic in Addis Ababa, Ethiopia, found out that 7% were diagnosed with TB, of whom 16% were asymptomatic but culture-confirmed TB cases. Screening for cough ( $> 2$  weeks) would have detected only 38% confirmed TB cases;

screening for cough or fever, of any duration, have detected 75% cases, with specificity of 64%. Negative predictive value of screening for these two symptoms was 97% (Shah, Demissie, Lambert, Ahmed, Leulseged, Kebede, Melaku, Mengistu, Lemma, Wells, Wuhib & Nelson, 2009:537).

Despite these figures, delay in the diagnosis of TB results in excess morbidity and mortality, particularly among HIV-infected individuals. For example, a cross sectional study conducted in Cape Town, South Africa, among patients admitted for TB suspects in a secondary level hospital revealed that provider delay was double that of patient delay. Patients had a median of three contacts with formal healthcare services before referral (Graeme, Hennie, Chelsea, Douglas & Gary 2008:72). In settings of endemic TB and escalating HIV incidence, targeted latent TB infection screening and treatment among high risk groups may be highly cost-effective. A study in Mexico over 20 years estimated that it would prevent 78 cases of active TB and 55 TB-related deaths among a cohort of 1,000 individuals at high risk of HIV infection (Burgos, Kahn, Strathdee, Valencia, Bautista, Laniado, Castañeda, Deiss & Garfein, 2009:962).

Economic evaluations of TB-HIV integrated services are necessary as countries move to establish or scale up intensified TB case finding and IPT services to reduce the burden of TB among HIV patients. Adherence to IPT study at Battambang, Cambodia, IPT clinic was high (86%) relative to other reported studies of IPT among HIV patients in developing countries (Sutton, Arias, Chheng, Eang & Kimerling, 2009:713).

Integration of TB screening among VCT clients benefits early diagnosis of active TB infection. The finding from Haiti, even before the concept of TB/HIV collaborative activity, showed clear evidence that of the 241 clients evaluated for cough, 76 (32%) were diagnosed with pulmonary TB. Of the 76 patients diagnosed with pulmonary TB, 28 (37%) had a positive smear for acid-fast bacilli (AFB), 14 (18%) had a negative AFB smear but a positive sputum culture for Mycobacterium TB, and 34 (45%) had culture-negative TB (Burgess, Fitzgerald, Severe, Joseph, Noel, Rastogi, Johnson & Pape, 2001:1875).

## **2.10 CONCLUSION**

The policy for collaborative TB/HIV care service was initiated by the WHO after the concern of gradual rise in both HIV and TB prevalence globally. That both TB and HIV occur more frequently in a single patient draws the attention of public health experts to

the urgent need for collaborative activity to decrease the burden of TB-HIV within the existing setups. There has been no cause of global health concern greater than TB and HIV, next to malaria in general and in SSA in particular, for the last two decades. There are 12 priority TB/HIV collaborative activities to decrease the burden of TB/HIV proposed by WHO, categorised under three main themes as described in this chapter.

The first one is mechanisms for collaboration, under which four activities were described: set up a coordinating body for TB/HIV activities effective at all levels; conduct surveillance of HIV prevalence among TB patients; carry out joint TB/HIV planning; and conduct monitoring and evaluation. The second theme is activities to decrease the burden of TB in people living with HIV, which are classified under three I's: establishing intensified TB case-finding; Isoniazid prevention therapy; and ensuring TB infection control in healthcare and congregate settings. The third theme is decreasing the burden of HIV in TB patients, under which five activities were classified: providing HIV testing and counselling; HIV prevention methods; Cotrimoxazole preventive therapy; HIV care and support; and antiretroviral therapy for all HIV-TB patients.

Different research worldwide regarding the burden of TB/HIV has indicated that there is a strong link between TB and HIV, with high chance of dual appearance in one patient. Following the introduction of policies for these collaborative activities, countries have adapted their guidelines for implementation of the TB/HIV collaborative activities. Many African countries, especially sub-Saharan, are far behind fully implementing all the recommended activities at all corners of their health system. Even those who are considered as better in implementing lack consistency, effectiveness and well-developed monitoring and evaluation systems.

Ethiopia began implementing TB/HIV collaborative activities in 2004, in selected pilot sites nationally. After lessons learnt from those pilot sites, national implementation was held in most of the government health facilities with support from international and bilateral donor organisations. The implementation status is said to be in a better condition, despite being devoid of well-established monitoring and evaluation systems, and poor knowledge with regard to scientific background on the implementation status nationally and regionally. Therefore, this research will explore the status of TB/HIV collaborative activities implementation in Addis Ababa, Ethiopia, with the aim of helping as a baseline for further nationwide study.

# **CHAPTER THREE**

## **RESEARCH DESIGN AND METHODOLOGY**

### **3.1 INTRODUCTION**

In this chapter, the research design and methodology employed to conduct the study *providing collaborative TB/HIV care services in Addis Ababa Ethiopia* is stated. The chapter re-affirms the foundation of the research, explains the study design, study population, sampling and sampling designs, research tools, data collection procedure and data analysis. Issues related to ethical considerations and assuring validity, reliability are discussed. In addition, triangulation, design and mixed methods appropriate to this study are described. Both quantitative and qualitative methods are discussed in detail. Throughout this study, mixed method triangulation research design was applied during data collection, analysis, and interpretation.

### **3.2 RESEARCH DESIGN**

Amin (2005:210) describes research design as an outline of what the researcher will do, starting from the formulation of research questions to the final analysis of data. Research design is the blueprint for any study as it facilitates smooth running of the various procedures making the study more efficient (Wikipedia, 2012e). Before the final decision for the appropriate research design to be used in this research, the researcher has considered a number of factors, including the orientation of the research, the plan for analysis and the time dimension as authors state (Bless & Higson-Smith, 1995:28; Creswell & Plano-Clark, 2007:58; Saunders et al., 2009:137).

Therefore, in order to understand the full picture about the implementation status, the strengths, challenges, and lessons learnt for the TB/HIV collaborative activities in public health facilities in Addis Ababa city administration, the researcher implemented the mixed methods triangulation designs. In this case both quantitative and qualitative research methods were used.

### 3.2.1 Mixed methods research design

Creswell, Plano-Clark and Garrett (2008:66) describe a mixed methods research model as "...a plan for collecting, analysing and mixing both quantitative and qualitative research methods or data in a single study or a series of studies to understand the research problem". In this study, the research problem is the implementation status of TB/HIV collaborative activities in public health facilities in the era of synergy between TB and HIV. In high HIV prevalence population, TB is the leading cause of morbidity and mortality and HIV is driving the tuberculosis epidemic in many countries, especially in SSA (WHO 2012a). The mixed methods research design brings together both the quantitative and qualitative data simultaneously. The justification for mixing both quantitative and qualitative data within one study is that neither are sufficient by themselves to capture the trends and details of the situation. Its central premise is that their use in combination provides a better understanding of research problems than either approach alone (Creswell et al., 2007:5).

According to Polit and Beck (2008:309), there are three main advantages of mixed methods design:

- *Complementarity*: allowing a study to use both numbers (quantitative) and words (qualitative) in order to minimise the limitations of using a single approach.
- *Incrementality*: the progress on research topic tends to be incremental, lying on a feedback loops. Therefore, by using qualitative findings one can generate hypotheses that can be tested quantitatively, with qualitative findings that need clarification through in-depth probing of specific subjects.
- *Enhanced validity*: when a model is supported by multiple and complementary types of data, the researcher can be more confident about the validity of the results (Polit & Beck, 2008:309).

Both research designs were utilised in order to gain detailed information on what participants felt and understood as realistic findings about implementation of TB/HIV collaborative activities among public health facilities in Addis Ababa city administration in Ethiopia. Methodologists writing about mixed methods research have devoted a great deal of attention to classifying the different types (Creswell et al., 2007:59). Among the contemporary methodologists, Creswell et al. (2008:68) classify mixed methods research design into two major categories, namely concurrent and sequential designs.

In the concurrent designs both qualitative and quantitative data are collected at the same time or within the same period. They include triangulation and embedded designs. In sequential designs one category of data (quantitative or qualitative) builds on the other with emphasis put on one. Sequential designs may be explanatory, exploratory, or sequentially embedded. Although it is thought to be more inclusive, mixed methods design has its challenges, for example, requiring extensive data collection, time-intensive analysis, decisions on which research methods to combine, and how to integrate and interpret research findings (Creswell et al., 2008:72; Stewart, Makwarimba, Barnfather, Letourneau & Neufeld, 2008:1407).

For this study, the researcher used the concurrent triangulation design to describe, explain and explore how TB/HIV collaborative activities have been implemented in Addis Ababa city administration of Ethiopia.

### **3.2.2 The triangulation design**

Triangulation is a term borrowed from cartography and military naval science that signifies the use of multiple reference points to locate an object's exact position. It was later used to suggest that quantitative and qualitative data could be complementary (William, John, Vicki & Kelly, David, 2005:224). For Saunders et al. (2009:146) it refers to "...the use of different data collection techniques within one study in order to ensure that the data tells one what one thinks they are telling him/her." Triangulation design is a one-phase plan in which the researcher implements the quantitative and qualitative methods during the same timeframe and with equal weight or priority (Creswell, Plano-Clark, Gutmann & Hanson, 2003:209). The single-phase timing is the reason it is referred to as the 'concurrent triangulation design'.

The purpose of triangulation design is "to obtain different but complementary data on the same topic, with the intention of bringing together the differing strengths and minimise on the weaknesses of quantitative and qualitative research methods" (Morse, 1991, as cited in Julia, 2005). In triangulation, simultaneous but separate quantitative and qualitative data collection and analysis is carried out. The researcher then attempts to merge the two sets of data by bringing the separate results together during interpretation or by transforming data to facilitate the integration of the two types during analysis. This enables the investigator to understand the research problem better (Creswell & Plano-Clark, 2007:64).

The researcher collected data using different methods (methodological triangulation) on implementation of TB/HIV collaborative activities at public health facilities from interview of both TB and HIV patients (beneficiaries) and their service providers (health workers) from different levels of health facilities (space triangulation and person triangulation), during the same period and integrated the findings during interpretation phase (data triangulation):

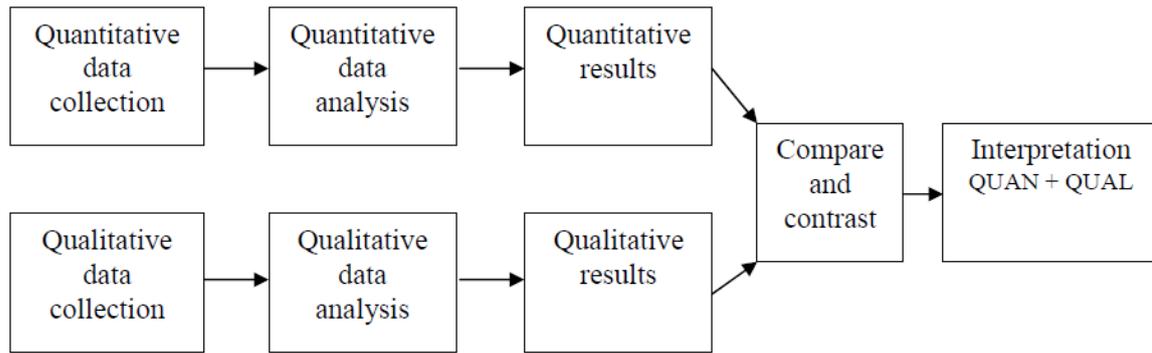
- *Methodological triangulation*: involves using multiple research methods or data collection techniques about the same phenomenon, which in this case is the implementation of activities to decrease the burden of TB/HIV. The researcher used structured questionnaires to collect quantitative data and semi-structured interviews guide to collect qualitative data (Amin, 2005:65; Polit & Beck 2008:543).
- *Space triangulation*: involves collecting data on the same topic from different sites to test for cross-site consistency (Amin, 2005:65; Polit & Beck, 2008:543). The researcher collected data from eight randomly selected public health centres and two hospitals and from all the ten sub-cities administered by Addis Ababa city administration health bureau.
- *Person triangulation*: involves collecting data from different types or levels of people (Polit & Beck 2008:543). This is aimed at validating data through multiple perspectives on the topic. The researcher collected data from TB and HIV patients, from service providers and TB/HIV care coordinators.
- *Data triangulation*: involves the use of multiple data sources with similar focus to obtain diverse views through a range of data on a given topic in order to increase the validity of the findings. The data collected can be analysed using different strategies for validation (Amin, 2005:65; Polit & Beck, 2008:543). The researcher collected data from both TB and HIV patients, health service providers and coordinators at different level of healthcare system (Health centre and Hospital). The researcher employed semi-structured questionnaires, in-depth interviews and focused group discussions among patients to gain diverse views on the same subject matter. Similar questions were used for in-depth understanding of the implementation status of TB/HIV collaborative activity for interview of healthcare providers and TB/HIV care coordinators at all levels. The different sources of information provide insights into the phenomenon, provide an

enriched explanation of the problem, and assist in validating conclusions (De Vos, Strydom, Fouche & Delport, 2005:362).

- *Investigator triangulation*: this refers to a situation in which two or more investigators with diverse background examine the same phenomenon with each having a specific role to play in the study (Amin, 2005:65). This removes the potential bias likely to occur if there is only one investigator. The researcher used the services of 10 trained research assistants and one overall data collection coordinator, all with background in public health or social sciences to interview the patients and health service providers/coordinators during the qualitative phase. This reduced the potential bias since the research assistants were not involved in analysis or interpretation stages of the study. At the same time, the researcher employed a statistician to analyse the quantitative data and another scientist experienced in analysing qualitative data. All this was aimed at enhancing the validity and reliability of this study.

### **3.2.3 Variants of triangulation design**

Creswell and Plano-Clark (2007:64) describe four main variants of triangulation design, namely convergence, data transformation, data validating quantitative, and multilevel. The researcher used the convergence model, by which collecting and analysing both quantitative and qualitative data separately on the same phenomenon and then the different results are converged (by comparing and contrasting the different results) during the interpretation. By doing so the researcher wanted to compare results or to validate, confirm or corroborate quantitative results with qualitative findings. The purpose of this model is to draw valid and well-substantiated conclusions about a single phenomenon. Figure 3.1 (below) illustrates the convergence model of the triangulation design in which quantitative data represents purely the reception of relevant TB/HIV collaborative activities for both TB and HIV patients (beneficiaries), and the qualitative part from patients, healthcare providers and coordinators for the TB/HIV collaborative activity implementation phenomenon.



**Figure 3.1:** Triangulation design: Convergence Model (Adapted from Creswell & Plano-Clark 2007:63)

In this design, different but complementary data was collected on the same topic by means of both quantitative and qualitative techniques with equal priority.

A survey approach using interviewer-administered questionnaires was used to collect quantitative data for receiving relevant services of TB/HIV collaborative activities for both TB and HIV patients while in their follow-up visits at TB and HIV chronic care clinics, respectively. Qualitative data was collected using structured interviews with patients, healthcare providers, and coordinators for the TB/HIV collaborative activities at the health facilities and city administration levels to explore the phenomenon of implementation of TB/HIV collaborative activities in general. The reason for collecting both quantitative and qualitative data was to bring together the strengths of both forms of research and hence produce more credible results. The data was analysed in parallel and then merged to develop a more complete understanding about the implementation of TB/HIV collaborative activities (Creswell et al., 2008:68).

### 3.3 THE QUANTITATIVE RESEARCH DESIGN

Quantitative research design was used to collect data from both TB and HIV patients (clients) at the health facility. Amin (2005:210) describes quantitative design as "...a plan for carrying out research oriented towards data quantification and is applied in order to describe or investigate current conditions and relationships". Polit and Beck (2008:16) explain that the quantitative approach involves the use of a general set of organised and controlled procedures to gather information. In quantitative research, evidence is generated according to the specified plan, using formal instruments such as questionnaires to collect the required information, which is generally numerical and is analysed using statistical procedures in order to enhance objectivity (Polit & Beck, 2008:16; Somekh & Lewin, 2005:215). According to Polit and Beck (2008:63), the

quantitative design can be experimental, quasi-experimental, or non-experimental and used for descriptive and inferential statistics. They can be cross-sectional or longitudinal in nature. This study is cross-sectional and non-experimental because data was collected at a specific time in the natural environment of the health facilities and without experimental manipulation of the participants.

The researcher therefore used quantitative non-experimental cross-sectional designs to identify and collect numerical data on receptive of appropriate TB/HIV collaborative activities from both TB and HIV patients accordingly. By doing so, it was possible to explain, describe, understand, and predict the service provision status of TB/HIV collaborative activities at public health facilities in the city administration.

### **3.3.1 Descriptive research design**

Descriptive research is a broad class of non-experimental studies (Polit & Beck, 2008:274). Saks and Allsop (2007:6) also describe a descriptive study as "...providing current information or intelligence on a research problem". Polit and Beck (2008:274) add that in descriptive study the researcher observes, relates, and describes measurable attributes of the phenomenon in a natural environment as a starting point for theory development. The main purpose of descriptive study is to generate precise measurement of the phenomena being studied that can be explained by the accumulation of statistical data (Burns & Grove, 2007:34; Saunders et al., 2009:140).

The researcher explored and described the implementation status of TB/HIV collaborative activities in public health facilities of the city administration, in relation to the healthcare delivery system in the current working environment. In addition, the researcher described the various approaches currently used to implement TB/HIV collaborative activities among the different healthcare delivery levels (health centres and hospitals). This made it possible to identify their strengths and weaknesses, which formed the basis for development of appropriate workable pocketbook for implementation of TB/HIV collaborative activities.

### **3.3.2 Survey research**

The researcher implemented a survey approach to collect both the qualitative and quantitative data. Amin (2005:212) defines a survey as "...a research activity that is used to gather data from a sample of a population." A survey approach may be used in descriptive, explanatory, and exploratory studies. According to Polit and Beck (2008:323), a survey is designed to obtain information about the prevalence, distribution, and interrelations of variables within a population. Babbie (2001:238) argues that a survey is probably the best method available for researchers who are interested in collecting original data for describing a given population. The purpose of a survey is to generalise data from a sample to the population so that inferences can be produced about their characteristics or attitudes. Surveys are mainly used in studies in which individuals are the units of analysis.

The researcher used the survey approach because of its cost-effectiveness and usefulness in covering a large population using a sample. A survey is an excellent way to gain knowledge from the target population of a study, and it allowed both clients and healthcare providers to answer questions comfortably and therefore more truthfully, since answers were handled anonymously. Additionally, a survey helps the researcher to be creative in shaping the areas for further research (Saunders et al., 2009:144).

Although a survey has certain advantages it also has some drawbacks. First, it does not provide in-depth picture of why certain features are there or not, and why stakeholders hold different perspectives. Second, in a survey participants may sometimes want to portray themselves in a better light. Third, a survey may lead to bias since people who respond to them are usually on extremes of the continuum, mostly the opinionated, generally better educated, and wealthier. Fourth, a survey may lead to less representation of the minority groups (Lange, 2002:78; Saunders et al., 2009:145).

## **3.4 QUANTITATIVE RESEARCH METHODS**

The quantitative data collection methods were used to collect data from both TB and HIV patients on their follow-up care at their respective health facilities. The specific methods employed are described as follows.

### **3.4.1 Population and sampling**

The research methods used in sampling and collection of data from patients (TB and HIV) are described in the following sub-sections.

#### ***3.4.1.1 Study population for patients (TB and HIV)***

According to Amin (2005:235), a study population is "...a complete collection of all elements or individuals that are of interest in a particular investigation to the researcher and where inferences are to be made." On the other hand, Trochim (2006:32) describes it as a group to which the results of the study are generalised, and Saunders et al. (2009:212) as "...the full set of cases from which a sample is taken." The study population may include study objects such as individuals, groups, organisations, human products and events to which they are exposed. Taking this into consideration, the study population in this study were diagnosed TB patients and HIV patients residing in Addis Ababa City administration, Ethiopia.

#### ***3.4.1.2 Target population for patients (TB and HIV)***

According to Polit and Beck (2008:338), the target population is "...the aggregate of cases about which the researcher would like to make generalisations." Similarly, Burns and Grove (2007:324) describe it as the entire set of individuals or units that meet the sampling criteria, and Amin (2005:235) as the parent population that may not be accessible but from which the researcher would wish to generalise the results. For the purpose of this study the target population for this category comprised TB and HIV patients who were attending follow-up care at public health facilities in Addis Ababa City Administration of Ethiopia. as well as health workers involved in the care of TB/HIV patients and coordinators of TB/HIV care at health facility level working in Addis Ababa City Administration.

#### ***3.4.1.3 Accessible population for patients (TB and HIV)***

According to Burns and Grove (2007:324), an accessible population is "...the portion of the target population to which the researcher has access." Polit and Beck (2008:338) define it as "...the aggregate of that conform to the designated criteria and are

accessible as participants of the study”, and Amin (2005:235) describes as one from which the sample is actually drawn. This implies that results from the sample should only be generalised to the sampled population and generalisation to the target population will depend on similarities that exist across the population.

The researcher interviewed all patients found on the days of interviews, until the allocated number of samples was reached for that specific health facility from both TB and HIV patients separately from the 10 public health facilities. The study health facilities were selected randomly, with at least one each from the ten sub-cities; namely: Zewditu Memorial Hospital, Menelik II Hospital, Health centres of Lideta, Yeka, Kazanchis, Nifas-Silk Lafto No-1, Woreda 7, Kality, Bole and Gulele.

#### ***3.4.1.4 Sampling frame for patients (TB and HIV)***

Saunders et al. (2009:214) and Trochim (2006:32) describe the sampling frame as “...a list of elements from which the probability sample is selected.” The proposed sampling frame for the quantitative design consisted of all TB and HIV patients found on the respective health facilities at the time of data collection period until the sample size quota was filled for the site. On average, 18 patients (ranged 11 - 29) from both clinics were interviewed per day. More patients were found in the hospitals than health centres. The minimum number of days taken by data collectors to complete the specified sample size for particular health facility was eight, and maximum 12 days.

#### ***3.4.1.5 Sampling and sampling techniques of patients (TB and HIV)***

According to Polit and Beck (2008:339), a sample is a portion of population whose results can be generalised to the entire population for a particular study. Therefore, sampling is the process of extracting a portion of the population from which generalisation of the findings can be made (Amin, 2005:237; Polit & Beck, 2008:339). Sampling is useful because it is more practical and economical, and saves cost and time compared to larger populations. Furthermore, sampling ensures completeness and high degree of accuracy due to the limited area of operation. As Amin (2005:239) and Burns and Grove (2007:327) state, the main disadvantage is that the selected units may not be representative of the population, even when the best statistical methods have been applied, especially when the sample size is small. In addition, accessible

population is not usually 100% representative since elements that are not accessible might be different from the accessible ones.

A sample may be selected using probability or non-probability sampling methods, the former being selected randomly such that all the elements in each sampling frame have an equal chance of being chosen. Probability sampling methods include simple random sampling, stratified sampling, systematic sampling, cluster sampling, and panel sampling (Amin 2005:244; Polit & Beck 2008:340; Saunders et al., 2009:222). The researcher used the probability proportional to size (PPS) technique to select participants in the quantitative design from each health facility. If one primary sampling unit has a larger population than another it should be given twice the chance of being selected. Equal probability sampling is inappropriate because if the units are selected with equal probability (i.e., the same sampling fraction) then a large unit may yield too many sample members, whereas a small unit would yield too few. Instead, one could stratify the units by size and select a sample of them within each size group, with variable sampling fractions. Alternatively, one could sample the units with PPS, then the probability of selection for each person would be the same and the larger units would not exert too great an influence on the total sample. The sizes of the primary sampling units must be known in order to carry out this method (Ann, 2005:198). The selection of the total sample from each health facility depended on its cumulative TB/HHIV patient load, which implies that large samples were selected from a large number of patients and small samples from the smaller patient load. This was to ensure representativeness of all the health facilities.

In order to avoid disruption of service delivery, data collectors usually arrived early (morning and afternoons) before normal working hours, so that patients who were found in the waiting area would be interviewed privately. In addition, patients who had just completed their services for the day were also approached for interview. Therefore, maximum effort was employed to maintain the normal service delivery. Once an HIV patient registers in a facility for follow-up care he or she becomes a regular attendee, which ultimately increases the cumulative patient load through time. In principle, when the number of daily new HIV patients increases in a facility so does the cumulative number. Unfortunately, in this study the cumulative TB/HIV patient load in health centres was found less than that in the hospitals. In addition, the patients' loads among the different health centres were comparable, as were those for hospitals. Therefore, the researcher decided to take an equal number of samples from all the health centres

and an equal number from the hospitals. However, the latter were more than the samples from the health centres, as reasoned in the preceding paragraph above.

### 3.4.1.6 Sample size determination for patients (TB and HIV)

Sample size is dependent on the accuracy required and the variation among the target population. Saks and Allsop (2007:219) state that the larger the sample size the smaller the error in estimating the characteristics of the target population, but the more costly it will be to conduct the study. The researcher used EPI INFO version 2002 statistical software to calculate the sample size for quantitative data for both TB and HIV patients. In addition, an unmatched comparative cross-sectional study was employed; i.e., TB patients from TB clinics and HIV patients from HIV care clinics.

According to a study by Wesen and Getnet (2009:109), the prevalence of TB among HIV patients for Addis Ababa was 43% (P1). However, due to lack of recent data for HIV prevalence among TB patients for the study area, 50% were taken (P2) for maximum sample size. Therefore, the sample size was calculated using a two population proportion sample size equation designed for a comparative cross-sectional study (Casagrande, Pike & Smith, 1978, as cited in Sample Size Calculator [s.a]).

Formula:

Define  $z_p$  be the upper 100(1-p) percentile of the standard normal distribution,

$m$  be the required sample size from the first population,

$rm$  be the required sample size from the second population,  $0 < r < \infty$

$$\delta = |P_2 - P_1|, \quad \bar{P} = \frac{P_1 + rP_2}{r+1} \quad \text{and} \quad \bar{Q} = 1 - \bar{P}$$

$$m = \frac{m'}{4} \left[ 1 + \sqrt{1 + \frac{2(r+1)}{rm'\delta}} \right]^2$$

$$\text{where} \quad m' = \frac{\left[ z_{1-p} \sqrt{(r+1)P\bar{Q}} + z_p \sqrt{(rP_1Q_1 + P_2Q_2)} \right]^2}{r\delta^2}$$

$$N = (r+1)m$$

*Notations:*

$\alpha$ : The probability of type I error (significance level) is the probability of rejecting the true null hypothesis.

$\beta$ : The probability of type II error (1 – power of the test) is the probability of not rejecting the false null hypothesis.

Assumptions were also made using 95.0% confidence interval, 5% level of significance, with power of 80%,  $r=1$ ; *i.e.*, allocation ratio of HIV patients to TB patients ( $n_1:n_2$ ) of 1:1 and taking none response rate of 5%. The calculated sample was 865 participants for HIV patients and 865 for TB patients.

### **3.4.2 Data collection for quantitative study of patients**

Burns and Grove (2007:536) define data collection as "...identification of respondent and the precise, systematic gathering of information relevant to the aim, and objectives of the study." Saunders et al. (2009:256) add that data collection is the gathering of information required to address the research problem.

The researcher used structured interviewer administered quantitative data collection methods, because of its advantages. As with face-to-face interview, they only require the participant to speak the same language in which the questions are asked, and to have basic verbal and listening skills. No reading skills are required, unless written materials for the participant are contained within the interview. A friendly, motivating interviewer can increase response and item response rates, maintain motivation with longer questionnaires, probe for responses, clarify ambiguous questions, help participants with enlarged show cards of response choice options, use memory jogging techniques for aiding recall of events and behaviour, and control the order of the questions. Interviewers can also be trained to follow complex question routing and skipping instructions (Ann and Shah 2005). Although the use of face-to-face interview is advantageous, it has its own drawbacks, as questionnaires are costly compared to other methods and usually offer less assurance of anonymity than mailed ones. Additionally, they cannot cover a wider geographical area since the researcher and research assistants have to approach participants one by one.

### **3.4.3 Data collection approach and method for patients**

The researcher utilised a structured data collection approach, which involves the use of formal instruments comprising pre-defined items and response options (Polit & Beck 2008:371; Saunders et al., 2009:601). In the quantitative part of this study the researcher used interviewer-administered questionnaires. The questionnaire items consisted mainly of closed-ended and a few open-ended questions. The development of the questionnaire was guided by the objectives of the study and the theoretical model (Saunders et al., 2009:362). The structured methods yield data that is relatively easy to quantify and analyse.

Burns and Grove (2007:551) define a questionnaire as "...a printed, structured self report form designed to collect information through written or verbal responses", whilst for Amin (2005:269) it is a form consisting of interrelated questions prepared by researcher about the problem under investigation, based on objectives of the study. It is assumed that if a questionnaire is to be used the participants must understand the items, possess information to answer the questions and be willing to do so honestly.

### **3.4.4 Construction of the questionnaires**

In triangulation design the researcher used different tools to collect data on the same topic. The researcher developed three separate tools, one for each level of the data collection process (quantitative and qualitative). An interviewer-administered questionnaire was developed for quantitative strand and a structured interview guides for the qualitative (interview and FGD) strand. A questionnaire must be clear, simple, and unambiguous, arranged in an orderly manner in such a way that data analysis is easy (Polit & Beck 2008:425; Saunders et al., 2009:387). The questionnaire was based on the reviewed literatures related to TB/HIV collaborative activities, the research objectives, and the conceptual framework. The researcher also looked at other tools that have been used by investigators in similar studies and used some of the questions appropriate for this study.

Almost all questionnaire items were closed and worded in such a way that the participants were limited to specified mutually exclusive response options. Closed options facilitate coding and statistical analysis of data. It also ensures that the researcher obtains the desired information, which can increase the reliability of the study (Saunders et al., 2009:374). Therefore, the assistance of the study promoter and

a statistician were incorporated in this regard. The questionnaires were interpreted in Amharic (regional official language) by interviewers and some words and phrases were clarified to facilitate understanding (Annexures E - J).

#### **3.4.5 Structure of the questionnaire for patients**

There were two questionnaires for the quantitative part of patients, consisting of one for TB patients and the other for HIV patients. They were very similar except for the focus of disease of interest, that is of similar structure but the questions were relevant to the respective TB or HIV patients. The quantitative questionnaires were divided into three parts (I-III), with questions designed to elicit information about actual service provision of TB/HIV collaborative activities to the respective patients on their follow-up care. As stated, all the questions were closed-ended, with the parts arranged as follows.

**Part I:** consisted of seven items of closed-ended questions about socio-demographic characteristics, namely age, sex, marital status, religion, ethnicity, educational status and occupation.

**Part II:** consisted of 12 items of closed-ended questions about prevalence of HIV among TB patients and prevalence of TB among HIV patients for TB and HIV patient questionnaires respectively.

**Part III:** consisted of six items of closed-ended questions about activities to decrease the burden of HIV among TB patients and vice versa, for TB and HIV patients respectively.

#### **3.4.6 Study population for healthcare providers and/or coordinators**

This study has a quantitative section in the questionnaire for healthcare providers and/or coordinators working specifically in TB/HIV collaborative activities from all study health facilities, in addition to patients. Therefore, the study population for healthcare providers were all health workers working on TB/HIV collaborative activities residing in Addis Ababa city administration, Ethiopia. The selected TB/HIV care service providers were also coordinators for their respective facilities for the programme TB/HIV collaborative care. The target population for this category were healthcare providers/TB/HIV care coordinators working at either TB or HIV in TB/HIV clinics at public health facilities of Addis Ababa city administration of Ethiopia. The researcher included one healthcare worker either from TB or HIV clinics from each of the ten study

health facilities; therefore, purposive sampling technique was used to select study participants for health workers/coordinators.

For the patient's questionnaires, the researcher used structured interviewer-administered quantitative data collection methods for health workers as well. The questionnaire items (part I and II) were closed and worded in such a way that the participants were limited to specified mutually exclusive response options (Annexure H). The questionnaires were prepared in English and the research assistants (interviewers) translated them into the local language for ease of communication. However, the responses were stated in English on the questionnaires, therefore data presentation and analysis was conducted directly from the stated responses.

The questionnaires were divided into five parts (I-V), with questions designed to elicit information about qualification, job related trainings attended, years of services, opinions of programme implementation of TB/HIV collaborative activities, and impact of programme implementation on staff performances and infrastructure.

#### **3.4.7 Structure of the questionnaire for healthcare workers and/or coordinators for TB/HIV care**

The questionnaire was divided into five parts (I-V), these questions being designed to elicit information about actual programme implementation of collaborative TB and HIV services at their respective health facilities, impact of programme implementation on staffs' performances, on infrastructure and on human resource development.

**Part I:** consisted of four closed-ended questions about socio-demographic characteristics information, such as age, sex, professional and number of years of services on the programme.

**Part II:** consisted of 20 closed-ended questions about programme implementation of collaborative TB and HIV services in their health facilities.

Most parts of the questionnaire were constructed with qualitative open-ended questions to be responded in short answers, parts III-V.

**Part III:** consisted of eight open-ended questions about the impact of collaborative TB/HIV activities implementation on staff performance.

**Part IV:** consisted of five open-ended questions about impacts implementation on infrastructure.

**Part V:** consisted of seven open-ended questions about the impact of TB/HIV collaborative activities implementation on human resource development.

### **3.4.8 Pilot testing of the questionnaire**

Polit and Beck (2008:213) define a pilot study as "...a small-scale version or trial designed to test the methods to be used in a larger and more rigorous study." It is conducted in order to identify possible weaknesses in the research instruments. For Saunders et al. (2009:394) its purpose is to refine questionnaires so that the participants will have no problems in answering questions and there will be no problems in recording data. The researcher will obtain some assessment of the questions' validity and reliability of the data that will be collected.

Polit and Beck (2008:214) and Saunders et al. (2009:394) write that pre-testing a questionnaire assists the researcher to find out:

- how long it will take to complete the questionnaire,
- the clarity of the instructions,
- questions that are unclear or ambiguous,
- whether there are any major omissions in the questionnaires,
- whether the layout is clear and attractive, and
- identify potential confounding variables that need control.

The researcher pre-tested the questionnaire on 12 participants from each of the TB and HIV patients from two health centres by all the research assistants, which were not among the selected study health facilities (health centres of Woreda-24 and Shiromeda), to identify any gaps in the questionnaire. This exercise assisted in estimating the time required to complete the questionnaire, and helped to identify the questions that were not clear or too difficult in terms of language and conceptualisation (Saunders et al., 2009:394).

### **3.4.9 Training of the Research Assistants**

The researcher recruited and employed 10 research assistants to assist in data collection for both quantitative and qualitative phases of this study. The research assistants conducted interviews, administered quantitative and short answered interview questionnaires in collecting data from patients. In addition, an overall data

collection coordinator, who was a highly educated and experienced public health expert, was employed to conduct interviews with healthcare providers and facility coordinators, facilitate the FGD discussion, and supervise the research assistants. The researcher recruited the research assistants for their training in public health and social sciences background, a first degree graduate level and prior experience in conducting research, good communication skills and fluency in both written and spoken English and Amharic (official language of the Addis Ababa city administration).

Training was necessary in order to ensure standardisation of the data collection process. Depending on the prior experience, the training covered both the general procedures (such as how to conduct an interview), and those specific to this study (e.g., how to administer questions), as well as the ethical standards for conducting research. The theoretical training was followed by rehearsals and role plays, until the research assistants had mastered the skills (Polit & Beck 2008:382-383). The training took two days and the researcher involved the senior public health expert (overall coordinator) during the training and for the qualitative research methodology. Finally, data collectors were sent to two health centres for the pilot testing (section 3.4.2.6). Initially, 13 data collectors were trained but three were not qualified after the evaluation so that the remaining ten continued for the contract of data collection activity. During the data collection period the overall data collection process coordinator was meeting all of them daily for immediate corrective measures. There were no poor performers during the process, however, inconsistency and incomplete questionnaires were discarded before data entry, which did not impose any drawbacks to the planned sample size (Chapter 4: Table 4.1).

### **3.5 ADMINISTRATION OF THE QUESTIONNAIRE**

After completion of design, the questionnaires were pilot tested, modified and the study participants identified. The questionnaires were used to collect the main data. The research assistants conducted interviewer-administered questionnaires by interviewing the selected sample until the calculated sample size for that specific health facility was reached. Each research assistant (data collector) was assigned randomly in one of the study health facilities (health centre or hospital). The data collection period was 6 June 2011 – 8 July 2011 (including the training and pilot testing period). The sample for each of the health centres was set 160 patients of TB and HIV each, with each of the 225 TB patients and HIV patients for each of the hospitals. The sample size for each facility was

based on sampling proportional to the facilities' cumulative TB/HIV patient load. As this was found similar across the health centres, the sample for all health centres was set 160 each for both TB and HIV patients (80 TB patients and 80 HIV patients). Similarly, the cumulative TB/HIV patient load for hospitals was comparable; the sample for the two hospitals was set 225 each of both TB and HIV patients (112 TB patients and 113 HIV patients).

Data collectors were given transportation allowances to and from the facility. They were also supposed to be in their respective assigned health facility by 7:00am. Interviewing was carried out without interfering with the normal service delivery, mainly before the working hours while patients were at their waiting areas. The maximum number of interviews allowed per day by each data collector was set at 20, assuming 20 minutes duration for each. This was to maintain the quality of the data as the collectors would not rush. In addition, all data collectors were to meet every evening at the data collection coordinator to submit the filled questionnaires and discuss the daily activities.

Each interview followed an appropriate ethical formality. As a principle, the purpose, risks, and benefits of the research were described to potential participants in a language they understood, so that they had the information needed to decide whether to participate in the research (Annexure D). Providing initial information allowed for *informed consent* of participants. They were told that they did not have to participate if they did not want to, that they had the right to refuse to answer any question(s), and that they could quit at any time if they wished (US Department, [s.a]).

### **3.5.1 Validity and reliability of the questionnaire**

Two vital concepts that determine the suitability of a questionnaire to use for research purposes are validity and reliability, described briefly as follows.

#### **3.5.1.1 Validity of the questionnaire**

Validity is the suitability of an instrument while reliability is its consistency in measuring anything it is deliberated to measure (Polit & Beck, 2008:457). Amin (2005:285) describes validity as the ability to produce findings that are in conformity with theoretical or conceptual values. A research instrument is said to be valid if it actually measures what it is intended to. For Burns and Grove (2007:365) the validity of a research instrument lies in the determination of how well it reflects the theoretical concept being

examined. Different writers (De Vos et al., 2005:160; Polit & Beck, 2008:458; Saunders et al., 2009:372) have identified four main approaches for measuring the validity of research instruments, namely face, construct, content, and criterion related validity.

In this study, the researcher made use of construct and content validity. Saunders et al. (2009:373) define construct validity as the extent to which the measurement questions actually measure the presence of those variables intended. The researcher ensured construct validity by rooting the measures in wide literature search that it defined meanings of the construct and its elements. The researcher ensured that categories of meanings were relevant to the participants in a natural setting. The content validity on the other hand refers to the extent to which a measurement tool provides adequate coverage of the research questions (Saunders et al., 2009:373).

In this study, content validity was ensured through careful sampling and good formulation of the research questionnaires. This ensured that the questionnaire items were relevant to the study subjects. The experts in the field of this research topic, such as the promoter, lecturers at school of public health of Addis Ababa University, and national TB/HIV collaborative activity coordinator at the Ministry of Health in Ethiopia, consulted upon whether or not the instrument items adequately covered the known content of the subject matter (De Vos et al., 2005:161). Despite all these, the researcher observed that using these methods might introduce bias due to their subjectivity. Validity in terms of research instruments can be external or internal.

### ***External Validity***

External validity is the degree to which the research findings can be generalised to the wider population (Polit & Beck, 2008:287; Saunders et al., 2009:216). In this study, external validity was ensured through the use of probability sampling, specifically stratified sampling (TB-HIV patients separately, health centres and hospitals) in order to have adequate representation from the major categories of patients and healthcare delivery setups (health centres and hospitals). In addition, the researcher tried as much as possible to get the right composition of study participants with regard to socio-demographic characteristics and maximum sample size ( $p=50\%$ ). The researcher selected constructs relevant to the study population in general and took samples from each health facility by applying probability proportional to size of their patient load.

### ***Internal validity***

Internal validity seeks to demonstrate that the explanation for a particular event or set of data derived from that research can actually be sustained by data, in other words, the findings of the study must describe accurately the phenomena being investigated (Polit & Beck, 2008: 295). Internal validity was ensured through construction of questionnaires in agreement with study objectives, and by ensuring voluntary and consensual participation.

#### ***3.5.1.2 Reliability of the questionnaire***

Polit and Beck (2008:452) define reliability as “the consistency with which the study instruments measure the targeted attribute”, whilst Saunders et al. (2009:156, 373) refer to it as “...the extent to which data collection techniques or analysis procedure yields consistent findings.” Hence, when a research instrument is administered by various researchers it will produce comparable results under similar conditions (De Vos et al., 2005:163). The researcher believed that reliability was ensured through pre-testing of the questionnaires to ensure clarity of the test items and by ensuring anonymity of the participants. Reliability of test items was also tested by means of Chronbach’s coefficient Alpha ( $\alpha$ ), which is an index for testing internal consistence of the test items using SPSS. As a rule, Alpha ( $\alpha$ ) should be at least 0.70 or higher (Amin, 2005:298; Polit & Beck 2008:454-456), though in this study the value of  $\alpha$  was set as 0.5%.

#### ***3.5.2 Data analysis for quantitative data***

Amin (2005:306) defines data analysis as “...closely related operations which are performed for the purpose of summarising the collected information and organising it in such a way that they answer the research questions.” The researcher employed temporary skilled statistician to assist with data entry and analysis, and used computer software called *Statistical Package for Social Sciences* (SPSS, 2006) for both data entry and analysis of quantitative data. Analysis of closed-ended questions was made using descriptive statistics and inferential statistics such as frequencies and percentages, p value and odds ratio.

The researcher analysed open-ended questions using thematic qualitative content analysis, with the aim of quantifying emerging descriptions and ideas. Polit and Hungler (1993, as cited in Research [s.a]) explain content analysis as “the process of analysing

verbal or written communication in a systematic way to measure variables quantitatively.”

### **3.5.3 Data presentation**

The analysed data was presented in the form of frequency tables, charts, and texts where applicable. Therefore, tables, graphs, and figures were used in the data presentation. Graphs have the advantage of communicating a large amount of information in a summary at a glance (Polit & Beck, 2008:561). The presented percentages were rounded off to one decimal point. The research results of the statistical tests were discussed with reference to the sample characteristics of the participants. References are only made to the frequencies of responses that showed significant variations.

## **3.6 THE QUALITATIVE RESEARCH DESIGN**

Amin (2005:43) defines a qualitative research design as “...one whose data is basically descriptive in nature.” Amin (2005:45) outlines the characteristics that define qualitative research as including:

- detailed description of the phenomenon,
- explicit description of data collection and analysis,
- inductive reasoning applied to evidence gained from sources,
- synthesised interpretation, and
- Extension of understanding by others.

Qualitative research design was used to collect data from both clients (TB and HIV patients) and healthcare providers for the TB/HIV collaborative service provision at health facilities and TB/HIV collaborative activities coordinators at the same health facilities and regional level. The data obtained using qualitative methods was mostly expressed in non-numerical terms, although sometimes it was transformed into numerical variables. Even though description is emphasised this does not mean that numerical figures cannot be used. In qualitative methodology the researcher usually collected open-ended data with the primary intention of developing themes from it. Both in-depth interview and focus group discussions (FGD) were the qualitative data

collection techniques used, the advantages being that they provided depth to the data, allowing for probing and improving the confirmation of quantitative data.

In this study, the researcher collected qualitative data from both clients and healthcare providers using structured interview and FGD guides. The qualitative patients' interview procedures assessed how collaborative TB/HIV care service affected their health, its feasibility, healthcare provider's behaviour and quality of services in general, whereas that for healthcare providers was to assess how collaborative TB/HIV care implementation impacts on staff performance, infrastructure, human resource in the health sector, diagnosis and case-holding for both TB and HIV cases, and progression of HIV-related immuno-suppression.

This research approach also enabled the researcher to gain in-depth information on why TB/HIV collaborative activity implementation is delivered in the way it is. Lastly, the research used this method to collect the views of both TB and HIV patients, healthcare providers and coordinators on how implementation can be improved.

### **3.7 QUALITATIVE RESEARCH METHODS**

The qualitative data collection procedures were used in parallel or together with the quantitative data collection from the patients themselves and healthcare providers at the respective health facilities and regional (Addis Ababa City administration) level. As described above, the researcher collected data from both patients (TB and HIV) and healthcare workers using qualitative research methods as well. This enabled the researcher to explore and explain the implementation status of TB/HIV collaborative activities among the study health facilities, impacts of the programme on human resource, staff performances, and infrastructure. Furthermore, the researcher used this method to collect the views of health workers and patients on how TB/HIV care implementation can be improved. The qualitative questions to be responded, using interview, were placed together with the quantitative part in both patients and health workers questionnaires which is placed in the last parts of the questionnaires. The focus group discussion guide questions for patients of both TB and HIV were prepared separately.

### **3.7.1 Population and sampling**

The research methods used in sampling and collection of data from patients (TB and HIV) and healthcare providers in the qualitative study are as follows.

### **3.7.2 Study population for patients (TB and HIV)**

The study population for the qualitative part of the study are also people diagnosed with TB who are under treatment, and HIV patients enrolled at the HIV chronic care clinics living in Addis Ababa City administration, Ethiopia.

### **3.7.3 The target population for qualitative part of patients**

The target population for the qualitative strand of short-answered questions were the same patients (TB and HIV) and TB/HIV care providers/coordinators who were residing in Addis Ababa City Administration. In addition, the targets for FGD study were both TB and HIV patients who reside in Addis Ababa City administration.

### **3.7.4 Accessible population for patients (TB and HIV)**

For the qualitative section, the researcher did not embark on selecting a new group of samples, but rather the same patients who participated for the quantitative section were enrolled. However, very few inclusion and exclusion criteria were used (Section 3.7.7).

### **3.7.5 Sampling frame for qualitative research**

Study participants who were included in the quantitative part were those who continued for short-answered interview guided questions. Therefore, there is no separate sampling frame for qualitative part for the patients (TB and HIV) and healthcare providers. For FGD participants, selected TB and/or HIV patients were included with a mix of age categories from both sexes. In addition, those who were not willing were excluded. However, those who participated in the quantitative and qualitative interview questionnaires were also excluded from the FGD. The proposed sampling frame for the qualitative design was to select samples conveniently among TB and HIV patients who had participated in the first parts of the quantitative part.

### **3.7.6 Sampling techniques for patients**

The researcher employed convenient sampling techniques to interview patients among those enrolled for the quantitative section for the short answer qualitative section. Therefore, it was decided to interview maximum number of patients from those who could deliver relevant information for the open-ended questions presented.

### **3.7.7 Inclusion and Exclusion criteria**

*Inclusion criteria* were used to accept those who volunteered to continue for the open-ended questions, were able to communicate and understood the questions very well.

*Exclusion criteria* were used to reject non-volunteers and those who could not communicate maturely.

### **3.7.8 Sampling of healthcare providers or coordinators**

The researcher conveniently sampled one TB/HIV care provider from each of the ten study health facilities, who at the same time were coordinators for TB/HIV collaborative activities for their respective facilities, and regional coordinator of TB/HIV collaborative activity for the city administration at the health bureau. Therefore, participants of this category for the qualitative study were selected using purposive sampling techniques. Purposive sampling is a non-probability sampling method in which the researcher uses his/her own judgement regarding the participant from whom information will be collected (Polit & Beck 2008:355).

The researcher usually chooses the sample based on knowledge of the group to be sampled and has in mind that respondents have the information required. The main disadvantage of this method is its potential for inaccuracy in the researcher's criteria and the resulting sampling selection (Amin, 2005:242; Saunders et al., 2009:237). However, all the ten eligible health workers who at the same time were coordinators were included, which was not prone to sampling bias and no sample size determination technique was applied.

### **3.7.9 Sample size for short-answer interview of patients**

The sample size for patient (TB and HIV) interviews was not set initially, as the researcher decided on convenient sampling. However, as the quantitative size was large, most patients were approached to continue interviewing the short-answered questions that follows the quantitative sections. The number of participants for qualitative was less than the quantitative for reasons mentioned above. Similarly, the sample size for the health worker interview was 10, i.e., one health worker from each of the ten study health facilities. In addition, one regional collaborative TB/HIV care coordinator was interviewed for the overall understanding of TB/HIV care using the standard monitoring checklist (WHO 2006b).

### **3.7.10 Sample size for focus group discussion of patients**

Polit and Beck (2008:357) suggest that the sample for qualitative study should be based on the information needs, hence, the guiding principle in sampling is data saturation (sampling to the point at which no new information is obtained and redundancy is achieved). In this study, five FGDs for each of TB and HIV patients were planned separately but it was conducted with four FGDs among each of TB and HIV patients, as information was saturated at the end of the fourth FGDs.

### **3.7.11 Data collection approach and methods for interview**

For the qualitative strand of this study, the researcher used a structured interview guide in order to have uniformity in the questions. According to Saunders et al. (2009:320), structured interviews are based on identical sets of questions. The interview technique is unique in that it involves the collection of data through direct verbal interaction. The response rates are usually high during face-to-face interactions, given that many people cannot easily fill out questionnaires. The interview situation permits the researcher to follow up verbal leads and thus obtain more data and greater clarity of questions which seem to be ambiguous or confusing to the participants. The interview also permits greater depth than other methods of collecting data, such as questionnaires (Amin, 2005:274; Polit & Beck, 2008:424).

Cognizant of this, Polit and Beck (2008:424) highlight that the strengths of interviews outweigh those of questionnaires, although they are costly, prevent anonymity and carry

the risk of interviewer bias. In addition, the interviewees are less likely to give 'I don't know' answers, hence missing information is minimised. In an interview, the order of questioning does not matter greatly since the interviewer is at liberty to change the order in which the questions are asked. Interviews also help to control the sample since the researcher knows whether the participants are the intended target. Lastly, with face-to-face interviews, additional information such as understanding and the level of cooperation can be obtained through the non-verbal observations (Polit & Beck 2008:425).

The structured interview guide consisted mainly of open-ended questions based on the objectives of the study (Annexures F, G and H).

### **3.7.12 Data collection during the qualitative study**

As mentioned above (section 3.6), the researcher used structured data collection techniques to collect data from the healthcare providers, guiding questions for FGD and interview guides for interview questions.

### **3.7.13 Structure of the qualitative questionnaires**

The structured interview guide for patients consisted of open-ended questions. The interview guide consisted of one part, embedded at the end of the quantitative questionnaire (Part IV) for both HIV and TB patients separately (Annexures F and G). Separate focus group discussion guides were used for the discussion of patients of both TB and HIV separately. In addition, the regional TB/HIV collaborative activity coordinator was interviewed for the overall city administration TB/HIV care activity implementation status using the standard monitoring checklist developed by the Stop TB department of the WHO headquarters (WHO, 2006b). These questions were designed to explore information about the status of service delivery and impacts of collaborative TB/HIV care services from the clients' perspectives, and providers' attitudes towards patients and the effect of the services on their lives. Therefore, all the questions in all the qualitative sections were open-ended.

### *Patients' interview questionnaire*

**Parts I, II and III** of patients' interview questionnaire consisted of quantitative closed-ended questions of socio-demographic characteristics, prevalence of TB/HIV, and activities to decrease the burden of TB and HIV, as stated in section 3.4.2.3.

**Part IV:** consisted of 7 and 10 items of qualitative open-ended questions for TB and HIV patients, respectively. The questions explored how collaborative TB/HIV activities impact on patients lives.

### *Patients' FGD Guide*

A total of 13 questions were used as a guide for the focus group discussion for both TB and HIV patients separately (Annexures I and J). The questions explored knowledge about TB and HIV diseases, the role of the TB/HIV care services on patients' health conditions, their perceived quality of services and behaviour of healthcare providers towards patients.

#### **3.7.14 Construction of the interview schedule**

The interview guide for both patients and health service providers was based on the theoretical frameworks, literature reviewed, and the objectives of this study. This structured interview guide was meant to provide in-depth information about joint TB/HIV collaborative activities in the implementation of public health facilities in Addis Ababa.

#### **3.7.15 Structure of the discussion and interview guide for patients and healthcare providers**

The FGD interview guide consisted of 10 questions or items about the effect of provision of integrated TB and HIV services on their health, how patients thought health workers assisted them in improving their health, their opinion on the quality of service provision in general regarding TB and HIV in their health facilities, how they evaluated the behaviour and performances of healthcare providers towards their patients and comments of patients to improve the service provision of HIV and TB care in their respective health facilities. Finally, HIV patients were asked additional questions to understand the occurrences of common HIV-related opportunistic infections for the preceding year. Similarly, the structured interview guide for healthcare providers also

consisted of open-ended questions. The interview guide consisted of three parts, Parts III-V following the quantitative questionnaire.

**Part III** consisted of 12 open-ended questions, designed to probe about impacts of programme implementation on staff performance. Aspects related to whether related trainings had been attended, effects on health workers performances following integrated service provision, issues regarding logistical supply, convenience of health facility's physical structure for integrated TB/HIV service provision, facility administration conditions and challenges or problems encountered while implementing integrated TB/HIV services. Finally, study participants were given a chance to forward their recommendations to improve the care provision of collaborative TB and HIV care services in public health facilities in Addis Ababa.

**Part IV** consisted of five questions on the impact on infrastructure of integrated TB/HIV programme implementation. Questions were on imposed renovation or rearrangement of health facility infrastructure following commencement of collaborative TB/HIV activities, restructured or other instigated cross-cutting services in effect with infrastructure change, and the effect on the provision of existing services of the health facility, among other topics.

**Part V** consisted of seven questions regarding the impact of human resource following the commencement of TB/HIV collaborative activities on their respective health facilities. Among the questions, effects on human resource workload due to the commencement of TB/HIV collaborative activities, how the performance of health workers in the health facility affected the new programme, be it through training or experience, schemes of assignment of health workers in one of the TB/HIV collaborative activity clinics, opportunities created for human resources concerning incentives, and challenges faced following TB/HIV collaborative activity. Finally, participants were asked to recommend human resource development for TB/HIV collaborative activity improvement.

### **3.7.16 Administration of the interviews and discussions**

The semi-structured interviewer-administered questionnaires used formal and written questions that were asked face to face with interactions between the interviewers and the study participants. Polit and Beck (2008:429) point out that administering interview schedules requires different skills. The quality of interview data relies heavily on interviewer proficiency. The researcher tried as far as possible to put the participants at

ease so that they felt comfortable in expressing their opinions. The interviews were conducted at the respective health facilities of patients and healthcare providers. The interviewers tried to keep to the participant's convenient time and strived to be unbiased (Polit & Beck 2008:429). Questions were asked orally in *Amharic* (official language of the city administration), as they appear sequentially on the interview schedule. The responses to the qualitative interview questions were recorded with participants' own words in a meaningful way. Audio recording and note taking were both used for all FGDs sections.

The interviewers tried to keep the level of understanding of participants' pace for responses and sometimes had to repeat the questions when required, in order to elicit more useful information. Before the interviews commenced, the interviewers explained the purpose and procedure, and requested written and oral consent to use an audio tape-recorder (Polit & Beck 2008:386). The study participants were assured that all the information they provided would be treated with utmost confidentiality. The interviews commenced after informed written consent had been given. The participants were assured that they were free to terminate the interview at any time, even if they had consented earlier. Immediately after the interviews for the qualitative part, the data was transcribed in full (Saunders et al., 2009:485), immediately after each session.

### **3.7.17 Criteria for enhancing quality and integrity of qualitative data**

Strauss and Corbin (1990:17) define qualitative research broadly as "...any kind of research that produces findings not arrived at by means of statistical procedure or other means of quantification and instead as a kind of research that produces findings arrived from real-world setting where the 'phenomenon of interest unfold naturally,'" as Patton (2002:39) states. Both qualitative and quantitative researchers need to test and demonstrate that their studies are credible. While credibility in quantitative research depends on instrument construction, the researcher is the instrument in qualitative research (Patton, 2002:14). Although reliability and validity are treated separately in quantitative studies, these terms are not viewed separately in qualitative research, but rather the terminology that encompasses both, such as credibility, transferability, and trustworthiness, is used (Golafshani, 2003:600).

Lincoln and Guba (1985, cited in Polit and Beck, 2008:539) propose four constructs for measuring the trustworthiness or soundness of the qualitative research design, namely

credibility, transferability, dependability, and confirmability. The researcher made use of these to ensure the trustworthiness of the findings. Different techniques were utilised to ensure that these four qualitative assumptions were tested and met.

- **Credibility:** refers to the how well the subjects of the study are accurately identified and described by the inquiry (Troiano, 2003:404). Polit and Beck (2008:539) refer to credibility as the confidence in truth of data and its interpretation. Credibility was ensured through member checking and peer debriefing (Lincoln & Guba, 1985, cited in Polit & Beck, 2008:545). The researcher took comprehensive field notes, audio-taped the interviews and as far as possible used participants' own words in transcription of the interviews.
- **Dependability:** refers to the stability of data over time and over relatively similar conditions (Polit & Beck, 2008:539). For Troiano (2003:404) it measures the researcher's ability to account for changes in the phenomenon under study. The researcher strengthened dependability through checking and re-checking of the presence or absence of the phenomenon by careful documentation of the interviews. In addition, dependability was ensured through space, person, investigator, and methodological integration (triangulation) of data. Lastly an 'inquiry audit' by an external reviewer was used to enhance the dependability (Polit & Beck 2008:549).
- **Confirmability:** Polit and Beck (2008:539) refers to this the congruence between two or more independent people about the accuracy, relevance, and meaning of data. In other words, it is a measure of the researcher's objectivity. It was reinforced through an audit trail, inter-coder checks or inquiry auditor as well as peer review and debriefing (Polit & Beck 2008:544).
- **Transferability:** refers to the extent to which the findings can be applied or have applicability in other settings or groups (Polit & Beck 2008:539). The applicability of one set of data was achieved through triangulation by use of multiple informants and data collection methods. The applicability was also ensured through taking of comprehensive field notes and ensuring that adequate sample until data saturation was reached (Polit & Beck, 2008:544; Troiano, 2003: 404).
- **Authenticity:** refers to the extent to which the researcher fairly and faithfully showed a range of different realities. According to Polit and Beck (2008:540), authenticity emerges in a report when it conveys the feeling tone of participants.

It was ensured through audio-taping and verbatim transcription of the interviews, as well as through prolonged engagement with the participants.

### **3.7.18 Data analysis**

Qualitative research is increasingly common in health service research (Bradley, Curry & Devers 2007:1758). The analysis of qualitative data is a labour-intensive activity and requires creativity, conceptual sensitivity, and hard work (Polit & Beck 2008:507). The analysis of qualitative data is an active and interactive process. Generally, qualitative data is challenging, even to experienced researchers, because of the lack of universal rules for data analysis, the large amount of work required and the necessity to reduce data for reporting purposes. Data analysis in qualitative research usually begins during the process of data collection, mainly because the results of early data collection guide subsequent data collection and allow timely theorising about results (Polit & Beck, 2008:507-508).

### **3.7.19 Processing of interview data**

According to Miles and Huberman (1994, cited in Cohen, Manion & Morison, 2000:283), the following tactics are suggested for generating meanings from transcribed and interviewed data:

- counting frequencies of occurrences of themes;
- noting patterns of the themes, which may originate from repeated themes;
- seeing plausibility – trying to make good sense of data, using informed intuitions to reach conclusion;
- clustering-setting items into categories;
- identifying and noting relations between themes;
- building a logical chain of evidence by noting causality and making conclusions;
- Making conceptual coherence by moving from constructs to theories to explain the phenomena.

The researcher employed the following steps when processing the data from the audio-taped interviews and field notes:

- listening to the data from each set without writing down anything;

- listening to the data the second time and noting the themes and patterns that emerged as characteristics about implementation status of TB/HIV collaborative activities;
- writing down the themes as categories as they appeared in each set of data. These themes were laid out on a chart such that the information from each case was visible. Codes were developed from these themes that related to the research questions;
- using the codes from each theme, to revisit the data sets and code the relevant segment in each theme;
- from the data recorded against each theme, aggregating the answers to the relevant research questions.

### **3.7.20 Analysis of interview data**

Bradley et al. (2007:1758) and Polit and Beck (2008:509) write that the analysis of interview data involves a systematic approach for discovering and categorising ideas that are conveyed by the study participants. The first step in data analysis is a data-coding process, defining categories and giving a wealth of ideas order and structure. The codes are tags or labels assigned to the whole or segments of the document to help catalogue key concepts while preserving the context in which they occur (Bradley et al., 2007:1761). From the different approaches that may be followed in qualitative data analysis, the researcher selected Strauss and Corbin's (2008) grounded theory approach (in Saunders et al., 2009:509). This was used to analyse both the patients and health service providers' interviews.

### **3.7.21 Strauss and Corbin's grounded theory approach**

Strauss and Corbin's approach (in Saunders et al., 2009:509) involves a complex coding process designed to break down the data, create meaning, and then put data back together in new and different ways. The analysis consists of three major types of coding: open, axial, and selective (Saunders et al., 2009:509). Open coding involves the naming and categorising of phenomena through close examination of the data with similar events and incidents grouped together. (Saunders et al., 2009:509; Troiano, 2003:406). The grouping of events and incidents led to the discovery of a number of

categories during open coding. The axial coding allowed the researcher to reassemble data that was 'fractured' during open coding in new ways, by linking categories with subcategories. Therefore, based on the results of the interviews, the researcher yielded a set of categories for further analysis (Saunders et al., 2009:510; Troiano, 2003:406). Selective coding is the process by which the categories are integrated to form core category as the central phenomenon around which all other categories are related (Saunders et al., 2009:510; Troiano, 2003:407).

Open coding involved the process by which the content of the interview was carefully searched for discrete instances of both patients and health services providers' ideas about implementation status of TB/HIV collaborative activities. Once the main idea was identified, the identified concepts were grouped according to their properties. After performing these coding procedures, combined axial coding was performed on a collection of results. Once the categories were identified and given a name, they were characterised by their relationships to the main phenomenon or idea. The coding results therefore provided a comprehensive summary of the contents of the collection of the interviews.

### **3.8 ETHICAL CONSIDERATIONS**

De Vos et al. (2005:57) define ethics as "...preferences that influence behaviour in relations". Ethics are mostly associated with morality and deal with issues of rights and wrong among societies. Therefore, ethics in the use of human subject for research should not go without careful examination. Amin (2005:28) writes that ethics refers to "well based standards of right and wrong that prescribe what humans ought to do usually in terms of rights, obligations benefits to society, fairness, or specific virtues." Polit and Beck (2008:753) describe ethics as a system of moral values concerned with the degree to which research procedures adhere to professional, legal, and social obligations of the participants. Therefore, ethical consideration in research should consider fairness, honesty, openness, disclosure of methods and the purpose for which the research is being carried out. Based on this understanding, the researcher followed the following ethical standards.

### **3.8.1 Protecting the participants**

Every individual is entitled to the right of privacy and dignity, and the researcher treated the participants with respect and sought their cooperation through informed consent (Polit & Beck, 2008:171). Amin (2005:40) and Saunders et al. (2009:187) write that participants should be told of the research interest and should give permission to proceed. The researcher ensured that the study participants were identified and protected, and that the information collected does not harm them in any way. Therefore, no participants' names were recorded in any form on the questionnaires, thus ensuring anonymity and confidentiality (Polit & Beck, 2008:170). The researcher did not at any time relate any information collected to any other individual. The researcher only collected data necessary for this study and made the necessary effort to disclose and explain how the participants would benefit from the results of this study. It was important for the participants to understand the value of the study and how the information will be used before they give their consent. Participation was voluntary and participants were informed of their right to withdraw from the study even if they had initially given their written consent. No form of coercion was used for those individuals who refused to participate in the study (Polit & Beck, 2008:172). For participants younger than 18, consent was obtained from their guardians, but discussions were held mainly with the patients themselves under the support of their guardians.

### **3.8.2 Protecting the right of the Institution**

The researcher had already been awarded ethical clearance from the Research and Ethics Committee at the Department of Health Studies of the University. The researcher had presented the certificate of ethical clearance of UNISA to Addis Ababa City Administration Health Bureau to gain clearance to collect data in Addis Ababa City Administration public health facilities. At the health facility levels, permission was requested from regional health bureau and the respective heads of the hospitals and health centres. The researcher made a promise to abide with the agreements made during the negotiations for permission to conduct the study (Polit & Beck, 2008:188). Furthermore, the study health facilities from which the participants were drawn were identified by level of health facility and name.

### **3.8.3 Scientific integrity of the research**

The researcher respected the work of others through acknowledging the sources. The researcher was objective and used objective methods to collect, analyse and reporting the study results. Therefore, the researcher has chosen the methodology to use based on the research objectives and not any other reason. The data was interpreted according to methodological standards and not the researcher's opinion or bias. The researcher described the truth of the findings when writing and reporting them up by properly explaining the methods used and reasons for doing so. No fabrication or distortion of data was done to fit what the researcher wanted to achieve (Polit & Beck, 2008:188). The researcher reported what data revealed as outlined by Amin (2005:30) and Saunders et al. (2009:188.).

The researcher protected the privacy and confidentiality of study participants. The conducted study was considered as having low risk as it did not introduce any invasive procedures or collection of any specimen from the participants. Therefore, there was no anticipated harm this study would cause to the participants.

## **3.9 CONCLUSION**

In this chapter, the researcher has presented the research design and methodology employed for the study. The mixed methods and triangulation designs have been presented in detail and the sampling techniques have been outlined. The structure of the data collection instruments have been presented and strategies used to ensure validity and reliability of study were presented in detail. Lastly, the researcher has outlined the methods used to ensure that data was collected, analysed and reported in an ethical way.

In the next chapters (chapters 4 and 5), the researcher presented analysis and interpretation of the research findings.

## **CHAPTER FOUR**

### **QUANTITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION**

#### **4.1 INTRODUCTION**

In this chapter, the findings of the quantitative data are presented, interpreted, analysed and discussed in comparison with previous researches on the area of the study. The chapter begins with an introduction, followed by details of how questionnaires were administered, and then described the findings of the quantitative data under several sub-topics. The chapter will be summarised by key findings from the quantitative data.

The purpose of this study was to provide guidance in promoting the implementation of collaborative TB/HIV activities in Addis Ababa and to increase better knowledge to healthcare workers in this area of practice.

The research objectives for quantitative design were to:

- determine HIV prevalence among TB patients in Addis Ababa
- determine TB prevalence among HIV patients in Addis Ababa
- determine the implementation status of collaborative TB and HIV Care services (quantitative finding)
- recommend to policymakers and practitioners the technical basis to guide the implementation of collaborated TB/HIV activities based on findings of this study.

In the following sections, the quantitative findings which answer some of the research questions are presented. In the next chapter (5), findings from the qualitative data are discussed.

#### **4.2 ADMINISTRATION OF QUESTIONNAIRE**

The questionnaires (Annexures F and G) for both TB and HIV patients were administered by ten research assistants by interview (interviewer administered). Sample size of study participants for each category (health centre and hospital) of the health facilities was set (Chapter 3, section 3.5). Each study facility was given a unique identification code number for data entry purpose, and questionnaires for each facility were numbered consecutively, starting from 001 up to the last questionnaire until the required sample size for the study site reached. Assigning consecutive numbers for the

questionnaires was carried out to re-check the data completeness and consistency during and after data entry or data clearing, but not for identifying participants. In addition, collecting unique identification from study participants was minimised to ensure the anonymity of the study participants.

The research sample for quantitative data for both TB and HIV patients was 1,730 (865 for each of the TB and HIV patients). The questionnaires for TB and HIV patients were of similar design, but constructed differently based on their disease conditions in a way designed to gather information for activities to decrease the burden of TB/HIV in respect to their current disease. As a result, data from 1,683 (834 TB patients and 849 HIV patients) data was collected from the interviewer-administered quantitative parts from both TB and HIV patients, which made a 97.3% (96.4% TB patients and 98.2% HIV patients) response rate (section 4.3).

Data analysis and presentation was based on the number of complete responses to each of the respective question. The missing data did not pose any problem with analysis or interpretation because respondents still totalled more than 1,557, which was the minimum figure the researcher aimed at. Data was presented according to the three sections of the quantitative part in a sequence presented on the questionnaire.

### 4.3 RESPONSE RATE

Polit and Beck (2008:765) describe the response rate as calculated by dividing the number of persons participating in the study by the number sampled. Table 4.1 shows the response rate for quantitative data of this study.

**Table 4.1:** Response rate for the quantitative study, Addis Ababa City Administration, August 2011

<b>Data type</b>	<b>Number of questionnaire administered</b>	<b>Number of questionnaire completed</b>	<b>Percent (%)</b>	<b>Reason for difference</b>
Quantitative questionnaire for TB patients	865	834	96.4	Incompleteness or inconsistency of data
Quantitative questionnaire for HIV patients	865	849	98.2	Incompleteness or inconsistency of data
Quantitative questionnaire for TB/HIV care providers and/or Facility TB/HIV care coordinators	10	10	100	
<b>Total number of usable questionnaires</b>	<b>1730</b>	<b>1683</b>	<b>97.3</b>	

As shown in Table 4.1, the response rate for the quantitative study was 97.3%, which is considered to be very good. This high rate of study participation was the result of the interviewer administered questionnaire and may be an indication that the questions were interesting to the participants given that the questionnaire items were directly related to the patients' health conditions.

#### **4.4 DATA ANALYSIS**

Data analysis is the systematic organisation, synthesis of research data and testing of the hypothesis using the raw data (Polit & Beck, 2008:751). Saunders et al. (2009:587) describe data analysis as the ability to break down data and clarify the nature of the factors and the relationships between them. Therefore, the objective of data analysis is to respond to the research questions or study objectives. According to Wood and Ross-Kerr (2006:243), a plan for data analysis comes from the research objectives, the research design, methods of data collection used, and the level of measurement of data. The following sub-sections describe data analysis principles employed in this study.

##### **4.4.1 Statistical analysis programme**

A *Statistical Package for Social Sciences Study* (SPSS, 2006) version 15 was used to analyse the data. A statistician was contracted to assist the researcher to analyse the data. Both descriptive and inferential statistics were used for data analysis. A P-value of less than 0.05 ( $p < 0.05$ ) was set as the level of statistical significance for the tests performed.

##### **4.4.2 Data cleaning, checking for completeness and consistency**

According to Arthur (2005), data cleaning:

“...is a process used to determine inaccurate, incomplete, or unreasonable data and then improving the quality through correction of detected errors and omissions. The process may include format checks, completeness checks, reasonableness checks, limit checks, review of the data to identify outliers (geographic, statistical, temporal or environmental) or other errors, and assessment of data by subject area experts.”

In this study, data was manually cleaned during data collection, entry and before analysis. During data cleaning, completeness and consistency of each of the questionnaires were checked before analysis. As a result, all data found to be incomplete or inconsistent was discarded from the final analysis.

Consistency of the data was checked before data entry and after entry by SPSS data split and select analysis. For example, the sex of the participant is denoted by male and female on the questionnaire, therefore, SPSS Data 'select cases' identifies those who are male, but occupation denoted to be housewives, so that data would be either checked from the hard copy of the questionnaire for correction or discarded. Another example, if an HIV patient said s/he had never received IPT, one should not expect this study participant to report where s/he refilled the drug INH. This is actually skipping patters where data collectors sometimes miss to skip.

Completeness of data is the extent to which its expected attributes are provided (Execution MiH, [s.a]). All the questionnaires were checked for completeness by data entry personnel before data entry. Incomplete questionnaires were not included for data entry or final analysis.

#### **4.4.3 Reliability of the data collection tool**

Reliability is defined as the degree of consistency with which a research instrument measures a given attribute (Polit & Beck, 2008:764), hence, a reliability test measures how consistent the participants were in answering a group of related questions. Before collecting the data for individual groups of patients (TB and HIV patients), the researcher had to make sure all the questionnaire items were reliable. The reliability of the data collection tool was insured by correlating the individual questionnaire items to complementary ideas, such that it measured the same thing. This was made possible by adopting the standard TB/HIV monitoring tool (WHO, 2006a) and cross-checking the policy documents of TB/HIV collaborative activities (WHO, 2012a) to insure all activities mentioned were included in a sequential manner during developing the questionnaire items.

## **4.5 QUANTITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION**

Data that can be quantified and verified, and is amenable to statistical manipulation. Quantitative data defines whereas qualitative data describes (BusinessDictionary, [s.a]).

Quantitative Research options have been predetermined and a large number of participants were involved. By definition, measurement must be objective, quantitative, and statistically valid. It involves numbers and objective hard data (Qualitative and Quantitative research, [s.a]).

### **4.5.1 Data from Patients (TB and HIV patients)**

The findings from interviewer-administered patient interview quantitative data is presented in the following sub-sections.

### **4.5.2 Descriptive Statistics**

Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis they form the basis of virtually every quantitative analysis of data (Research Methods, [s.a]). Descriptive Statistics are used to present quantitative descriptions in a convenient type. In a large research study, a large number of people may be measured on any measure. Descriptive statistics help to simplify a large quantity of data in a meaningful way. All descriptive statistics reduce large quantities of data to a simpler summary (Measurement, [s.a]). In the following sections, the findings of the quantitative data are described.

#### **4.5.2.1 Section I: Socio-Demographic Data**

Section I of both TB and HIV questionnaires consisted of seven items, namely age, sex, marital status, religion, ethnicity, educational status, and occupation. The socio-demographic characteristics of both TB and HIV patients are presented in the following sections.

#### 4.5.2.1.1 Study participants by number

A total of 1,683 of both TB and HIV patients participated in this study, of whom 834 were TB patients and 849 HIV patients (Table 4.1). From each of the ten sub-city administrations in Addis Ababa, one health facility was selected randomly, of which two hospitals were included, based on their optimal cumulative TB/HIV patient load (detailed in Chapter 3). Data was collected from different parts of the city and facility set-ups (health centre and hospital) to minimise information bias. Accordingly, the number of sampled study participants for each level of health facility was calculated based on their overall TB/HIV follow-up patient load of both TB and HIV (Chapter 3).

Based on this, the two hospitals' patient load was found to be approximately equal; from each of them, 225 of both TB and HIV (each of 112 and 113 patients) were included. Similarly, the average patient loads for most of the health centres were again comparable; therefore, from each a total of 160 of both TB and HIV (each of 80 patients) were enrolled in this study (detailed in Chapter 3, section 3.5), and 1730 participants were planned to be included. Finally, however, 1683 patients of both TB and HIV (834 TB patients and 849 HIV patients) were found to be valid for final presentation and analysis in the study (Table 4.2).

**Table 4.2:** Number of Study Participants by health facility and category of disease

Name of Health Facility	TB Patients		HIV Patients	
	Frequency	Percent	Frequency	Percent
Zewditu Memorial hosp	112	13.4	124	14.6
Menelik II hospital	113	13.5	106	12.5
Kazanchis health centre	79	9.5	79	9.3
Bole health centre	80	9.6	80	9.4
Nefasilik lafito No2 health centre	79	9.5	77	9.1
Lideta health centre	54	6.5	69	8.1
Kality health centre	80	9.6	79	9.3
Yeka health centre	80	9.6	78	9.2
Woreda 7 health centre	78	9.4	80	9.4
Gulele health centre	79	9.5	77	9.1
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

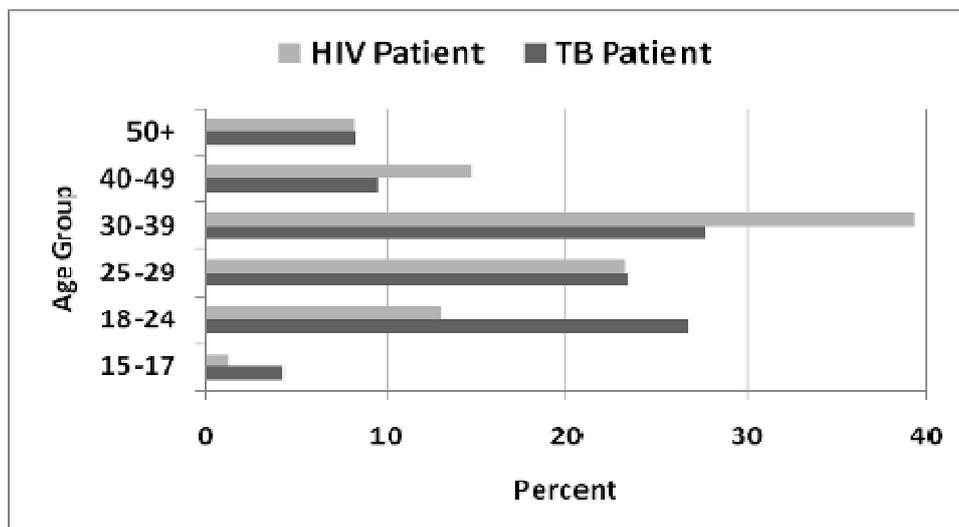
#### 4.5.2.1.2 Age of study participants

The mean  $\pm$  SD age of TB patients was  $31.3 \pm 11.9$  years with minimum age of 15 years and maximum of 86; whereas, the mean  $\pm$  SD age of HIV patients was  $33.8 \pm 9.9$  years with minimum and maximum age of 16 and 76, respectively. Children under the age of 18 (15-17) accounted for small proportions in both groups of study participants. But the proportion of study participants whose age  $<18$  was slightly higher for TB patients than the proportion for HIV patients. On the other hand, the proportion of late age (50+ years) study participants in both groups was approximately equal (table 4.3).

**Table 4.3:** Proportion of study participants by age group and category of disease

Age Group	TB Patients		HIV Patients	
	Frequency	Percent	Frequency	Percent
(15-17)	36	4.3	11	1.3
(18-24)	223	26.7	110	13.0
(25-29)	195	23.4	198	23.3
(30-39)	231	27.7	334	39.3
(40-49)	80	9.6	126	14.8
(50+)	69	8.3	70	8.2
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

As shown above in Table 4.3, the larger group of participants were in the age group of 18-39 in both groups, accounting for 77.8% of TB patient study participants. The same age group of HIV patients accounted for 75.6%. In general, the TB patients were slightly younger than HIV patients (Figure 4.1).



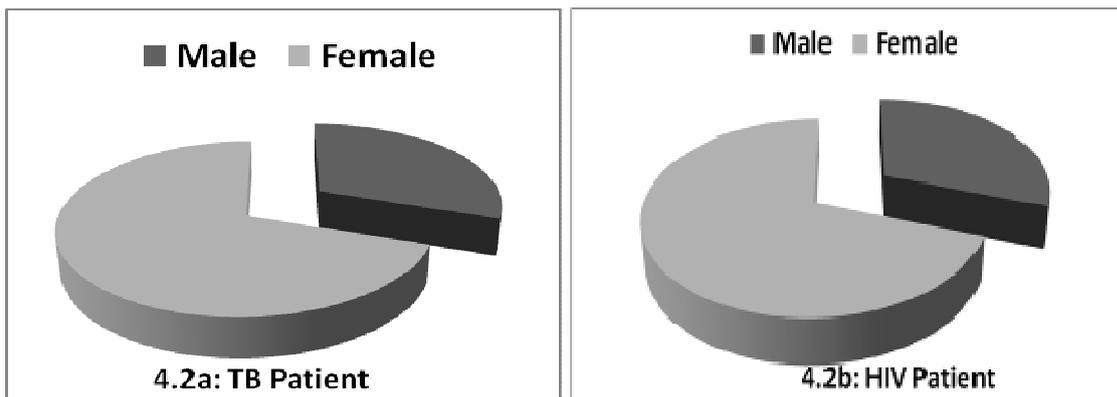
**Figure 4.1:** Age Group of Participants by Category of disease, Addis Ababa, August 2011

#### 4.5.2.1.3 Sex of study participants

**Table 4.4:** Proportion of study participants by Sex and category of disease

Sex	TB Patient		HIV Patient	
	Frequency	Percent	Frequency	Percent
Male	364	43.6	257	30.3
Female	470	56.4	592	69.7
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

As it is shown in the above table (table 4.4), females were in a higher proportion in both groups. This was not because of sample selection, as samples were taken randomly without any preference. Also, the proportion of females (about 2.3 times higher than males) in HIV patients was significantly higher than the proportion in TB patients (about 1.3 times higher). This finding is consistent with the national HIV prevalence of Ethiopia (FMOH 2007a), which shows females to be more commonly affected than males. However, this proportion is unlike a research finding in India which showed males to be about 1.3 times more likely to be infected than females (Neeraj, Lakbir, Ajay, Jotna, Fraser, Suvanand, Rahul & Puneet 2008: e2970).



**Figure 4.2:** Proportion of study participants by sex and category of disease (4.2a-TB Patients, 4.2b-HIV Patients), Addis Ababa August 2011

These findings may be similar to those elsewhere in other countries. Exposure to infectious diseases is related to activities that dictate where people spend the day. Men and women have different activity patterns related to gender differences in occupation

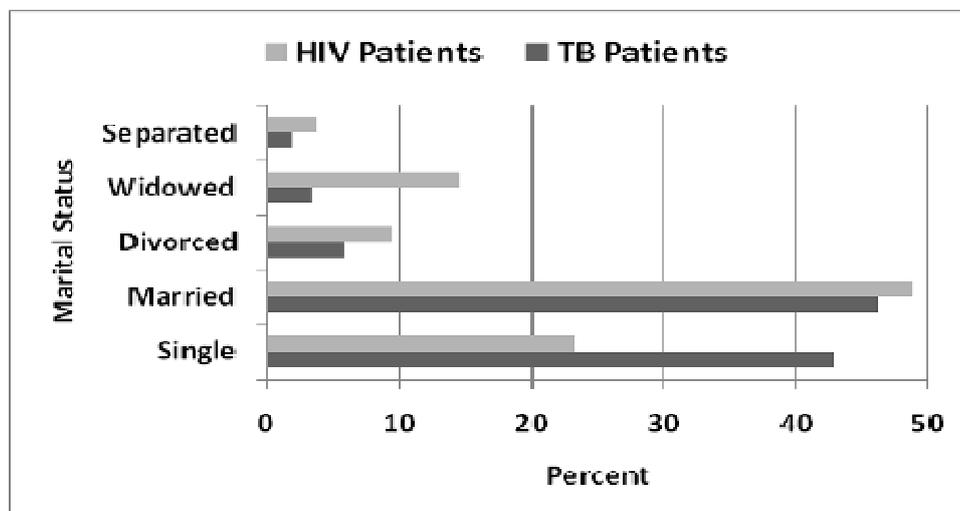
and in family roles. For example, in many societies females spend more time at home than males during the day, and therefore experience greater daytime household exposure to infection. Caring for the sick carries an increased risk of exposure, especially for diseases that are spread directly from person to person. In most societies females are more likely to care for the sick than are males (WHO, 2007a).

#### 4.5.2.1.4 Marital status of study participants

**Table 4.5:** Proportion of study participants by Marital Status and category of disease

Marital Status	TB Patients		HIV Patients	
	Frequency	Percent	Frequency	Percent
Single	357	42.8	198	23.3
Married	386	46.3	415	48.9
Divorced	48	5.8	80	9.4
Widowed	28	3.4	124	14.6
Separated	15	1.8	32	3.8
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

In both TB and HIV participants, married patients accounted for the highest (46.3% and 48.9%, respectively) compared with the other statuses. However, nearly half (48.9%) of HIV patient study participants were married, which was slightly more than double the singles (23.3%); whereas, 46.3% of TB patients were married, which was slightly higher than the singles (42.8%).



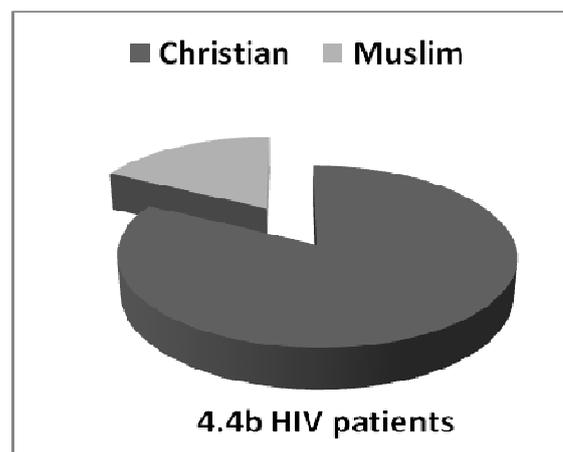
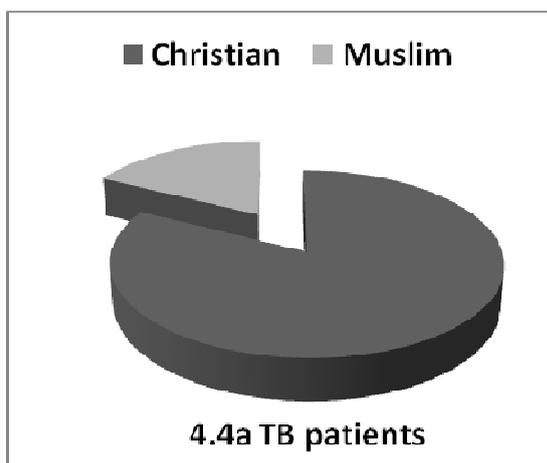
**Figure 4.3:** Proportion of study participants by marital status and category of disease, Addis Ababa August 2011

As shown above (Figure 4.3), the majority of study participants were either single or married (89.1% =TB patients and 72.2% = HIV patients). The proportion of unmarried (single) for TB patients was significantly higher (42.8%) than those of HIV (23.3%) counterparts. On the other hand, the proportion of HIV patients in all marital statuses, except single, were higher than TB patients. Significantly, a higher proportion of HIV patients (14.6%) than TB patients (3.4%) were widowed, which may indicate that deaths attributed to HIV infection lead to loss of partner among PLHIV. Therefore, from this study one can conclude that those who had not married were more highly exposed to HIV than to TB disease.

#### 4.5.2.1.5 Religion of study participants

**Table 4.6:** Proportion of study participants by Religion and category of disease

Religion	TB Patient		HIV Patient	
	Frequency	Percent	Frequency	Percent
Christian	674	80.8	701	82.6
Muslim	160	19.2	148	17.4
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>



**Figure 4.4:** Proportion of study participants by religion and category of disease (4.4a-TB Patients, 4.4b-HIV Patients), Addis Ababa August 2011

Table 4.6 (above) shows Christians of all types accounted for the majority of the religion shared among both sets. This finding could be consistent with the overall demographic

situation of Addis Ababa, where the majority of the residents of the City Administration are Christians (Central Statistical Agency of Ethiopia [CSA-E], 2007).

The reason for merging all types of Christians together in this study is the similarity of the doctrines and to reduce bias attributed to the differences in the findings during analysis. In the demographic and health survey of Ethiopia, all subtypes of Christians who follow the doctrine of the Bible are put in different categories. Based on the Ethiopian 2007 CSA (CSA, 2007) data for Addis Ababa, the religion with the most believers in the city is Ethiopian Orthodox, with 74.7% of the population, while 16.2% are Muslim, 7.77% Protestant, and 0.48% Catholic. The finding in this study reflects these figures.

There may be those who were neither Christian nor Muslim, but the finding could not detect any, despite the option of 'other' on the questionnaire.

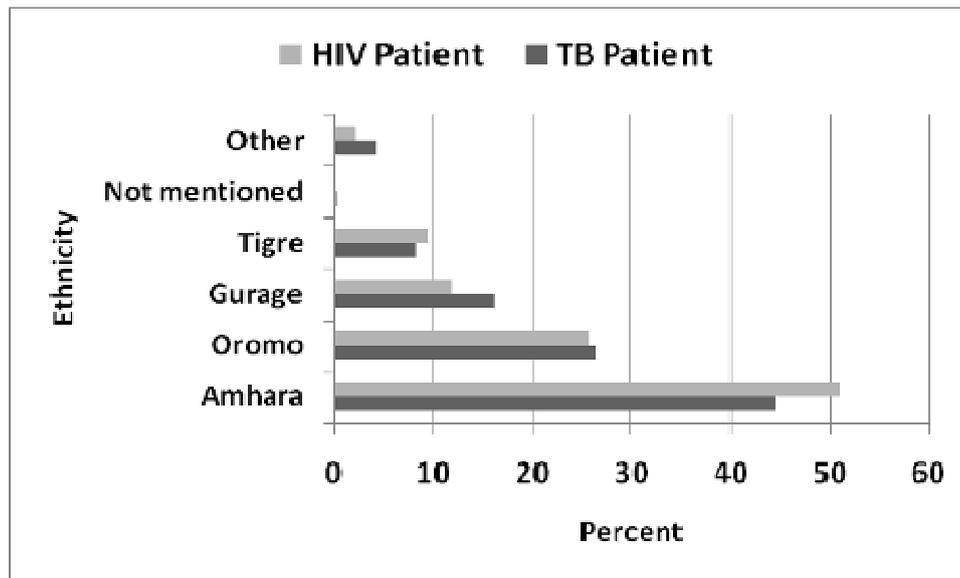
#### 4.5.2.1.6 Ethnicity of study participants

**Table 4.7:** Proportion of study participants by Ethnicity and category of disease

Ethnicity	TB Patients		HIV Patients	
	Frequency	Percent	Frequency	Percent
Amhara	373	44.7	433	51.0
Oromo	220	26.4	217	25.6
Gurage	135	16.2	100	11.8
Tigre	68	8.2	81	9.5
Not mentioned	2	.2	0	0
Other	36	4.3	18	2.1
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

Amhara and Oromo dominated for the ethnic groups in both groups. Among the HIV patients, the proportion of Amhara (51.0%) was almost double that of Oromo (25.6%), whereas among the TB patients, Amhara and Oromo together accounted for 44.7% and 26.4%, respectively (Table 4.7).

According to the 2007 national census conducted by the Central Statistical Agency of Ethiopia (CSA 2007), the proportion of ethnic groups in Addis Ababa include the *Amhara* (47.04%), *Oromo* (19.51%), *Gurage* (16.34%), *Tigray* (6.18%), *Silte* (2.94%), and *Gamo* (1.68%). Therefore, the proportion found in this study is almost consistent with the CSA demographic data for Addis Ababa City Administration.



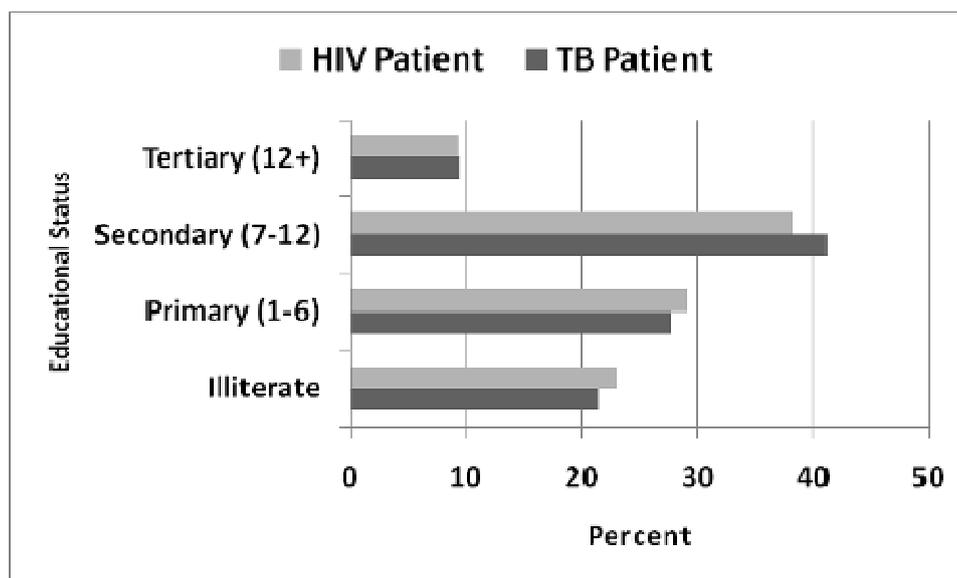
**Figure 4.5:** Proportion of study participants by Ethnicity and category of disease

#### 4.5.2.1.7 Educational Status of study participants

**Table 4.8:** Proportion of study participants by Educational status and category of disease

Educational Status	TB Patient		HIV Patient	
	Frequency	Percent	Frequency	Percent
Illiterate	179	21.5	197	23.2
Primary (1-6)	232	27.8	247	29.1
Secondary (7-12)	344	41.2	325	38.3
Tertiary (12+)	79	9.5	80	9.4
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

In both groups of study participants, those who completed secondary education accounted the largest proportion, with 41.2% and 38.3% for TB and HIV patients, respectively. Similarly, those illiterate, primary educated and tertiary levels shared almost similar proportions across both groups. In general, those who learned above secondary (tertiary) levels shared the least in both TB and HIV patients.



**Figure 4.6:** Proportion of study participants by educational status and category of disease

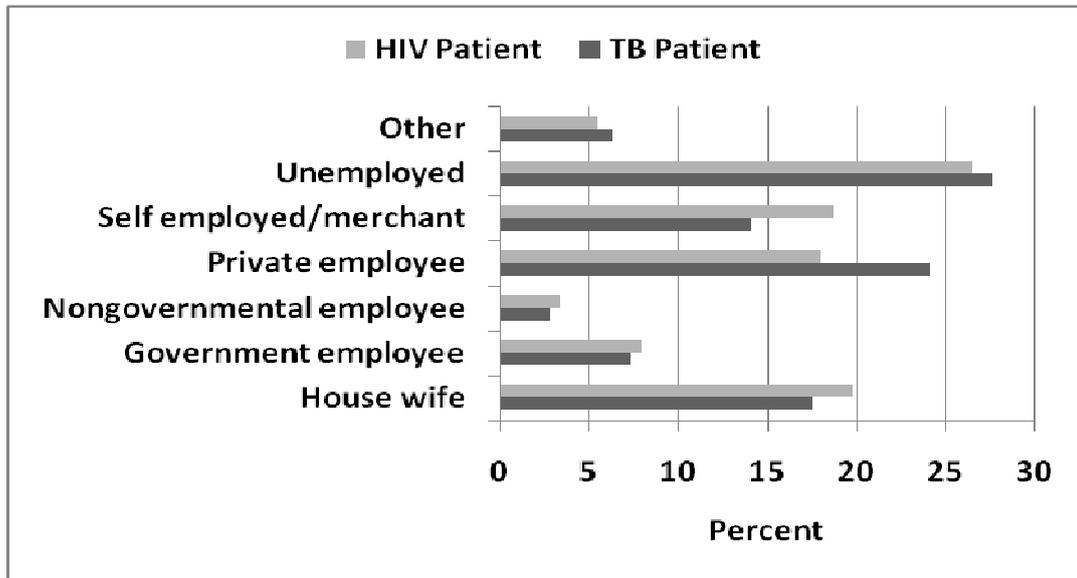
#### 4.5.2.1.8 Occupation of study participants

**Table 4.9:** Proportion of study participants by occupation and category of disease

Occupation	TB Patient		HIV Patient	
	Frequency	Percent	Frequency	Percent
House wife	147	17.6	168	19.8
Government employee	61	7.3	68	8.0
Nongovernmental employee	23	2.8	29	3.4
Private employee	201	24.1	153	18.0
Self employed/merchant	118	14.1	159	18.7
Unemployed	231	27.7	225	26.5
Other	53	6.4	47	5.5
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

Slightly more than a quarter of study participants in both TB and HIV patients were found to be unemployed, with rates of 27.7% and 26.5% respectively. Nearly a quarter (24.1%) of TB patients included in the study were employees of private organisations, whereas about a fifth (19.8%) of HIV patients were housewives. In both groups these accounted for the second larger proportions in the classification of occupation. The rest of the occupations shared almost similar proportions in both groups of patients.

The findings of greater unemployment rate (27.7% for TB patients and 26.5% for HIV patients) in this study were higher than those from other sources of urban unemployment rates in Ethiopia; for example, an article posted by Daniel Berhane on April 27, 2011 on a web page (Daniel, 2011) showed the urban unemployment rate in Ethiopia had dropped to 18.9%.



**Figure 4.7:** Proportion of study participants by occupation and category of disease

However, it can be clearly explained that those groups who are unemployed are highly vulnerable to communicable diseases, which is consistent with findings elsewhere in the world. For example, a study by Cohen (1999:246) examined the prospective association of several markers of social status (unemployment, perceived and observed social status) with host resistance to upper respiratory infections, which showed unemployment was associated with increased susceptibility to infection in adult humans.

#### **4.5.2.2 Section II: Prevalence of HIV among tuberculosis patients and tuberculosis prevalence among HIV patients**

Section II of TB and HIV questionnaires consisted of 13 and 12 items, respectively. The main aim was to determine the prevalence of HIV among TB patients and vice versa.

##### **4.5.2.2.1 How long have you been diagnosed with current disease and length of treatment?**

In this section, the two categories of study participants were asked how long they had been in their disease conditions. In addition, the two categories were asked accordingly how long they had been on treatment for their disease conditions. Results are presented below.

##### **4.5.2.2.2 How long have you been diagnosed for TB and duration on treatment?**

**Table 4.10:** Duration of TB disease and duration since on anti-TB treatment in months

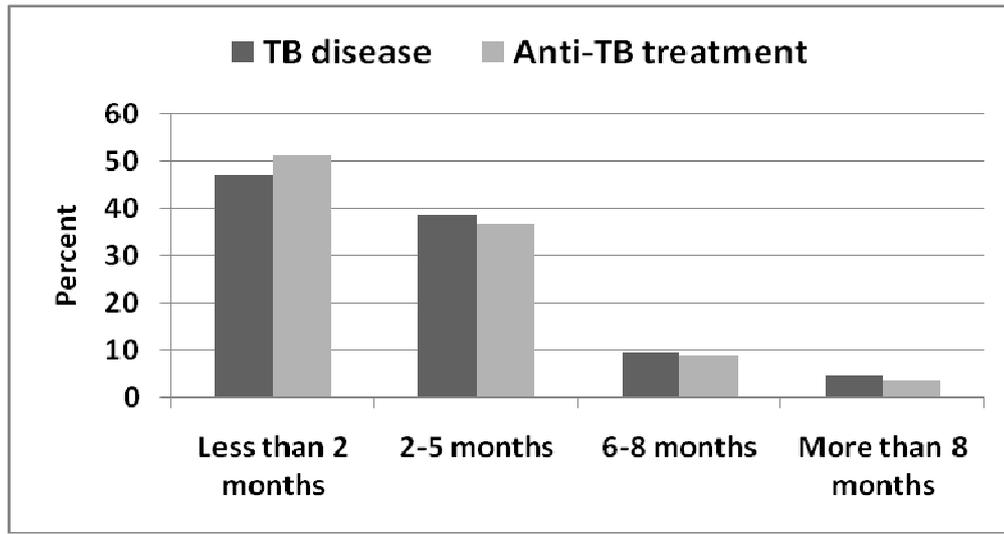
Duration of TB disease and length of treatment	TB disease		Anti-TB treatment	
	Frequency	Percent	Frequency	Percent
Less than 2 months	394	47.2	428	51.3
2-5 months	322	38.6	306	36.7
6-8 months	79	9.5	72	8.6
More than 8 months	39	4.7	28	3.4
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>834</b>	<b>100.0</b>

As shown above (Table 4.10), the majority of the interviewed TB patients were in their intensive phase therapies (less than 2 months). On the other hand, less than 10% were in their 6-8 final months of continuation therapy phases. Nearly 5% were in more than the DOTS range of treatment (6-8 months), which could be either in their treatment failure or retreatment phase, or mean they were defaulters.

Another explanation for the higher proportion of TB patients in their earlier phase could be the increasing incidence of the infection in the city administration, perhaps attributable to HIV infection, high rates of malnutrition and poor housing standards. A study in Adama Ethiopia by Ligidi, Gebre-Selassie and Tsegaye (2011:75) on 'The

immunological status of newly diagnosed tuberculosis patients co-infected with human immunodeficiency virus-1 revealed that 85.3% of TB patients were not aware of their HIV sero-status prior to the screening in the study.

Slightly higher than half (51.3%) of the TB patient were found at their intensive phase therapy, whereas the second larger proportion (36.7%) were on their 2-5 months of continuation therapy (Figure 4.8).



**Figure 4.8:** Duration of TB disease and duration of treatment by percentage, TB patients

#### 4.5.2.2.3 How long have you been diagnosed HIV-positive?

**Table 4.11:** How long have you been diagnosed HIV-positive?

Duration since first diagnosed for HIV+	Frequency	Percent
Less than 6 months	124	14.6
6-11 months	91	10.7
1-3 years	300	35.3
More than 3 years	334	39.3
<b>Total</b>	<b>849</b>	<b>100.0</b>

It can be clearly observed from Table 4.11 (above) that for quite larger proportions of HIV patients it had been more than three years (39.3%) since diagnosis for the infection. Similarly, those for whom it was 1-3 years since they learnt their positive HIV status accounted for 35.3% of all HIV-positive study participants. For only about a quarter (25.3%) was it less than a year since they had been diagnosed HIV-positive. This finding may lead to various conclusions, new infection (incidence rate) for HIV

could be decreasing, and/or death rates could be decreasing (prevalence rate increasing) attributed to HIV infection. On the other hand, the lower proportion of HIV-infected people at their short duration could be due to increased awareness of the general population to get tested for HIV. As a result, a higher proportion of the low risk sub-group diluted the proportion of the overall HIV-positive status.

#### 4.5.2.2.4 *How long have you been on HAART?*

**Table 4.12:** How long have you been on HAART?

<b>Duration since on HAART</b>	<b>Frequency</b>	<b>Percent</b>
Less than 6 months	149	17.6
6 months – one year	105	12.4
More than one year	451	53.1
Not yet started	144	17.0
Total	849	100.0

More than half (53.1%) of the HIV-positive study participants had been on HAART for more than one year, whilst those on HAART for less than six months (17.6%) were proportional to those who had not yet started on treatment (17.0%) at the time of interview (Table 4.12, above).

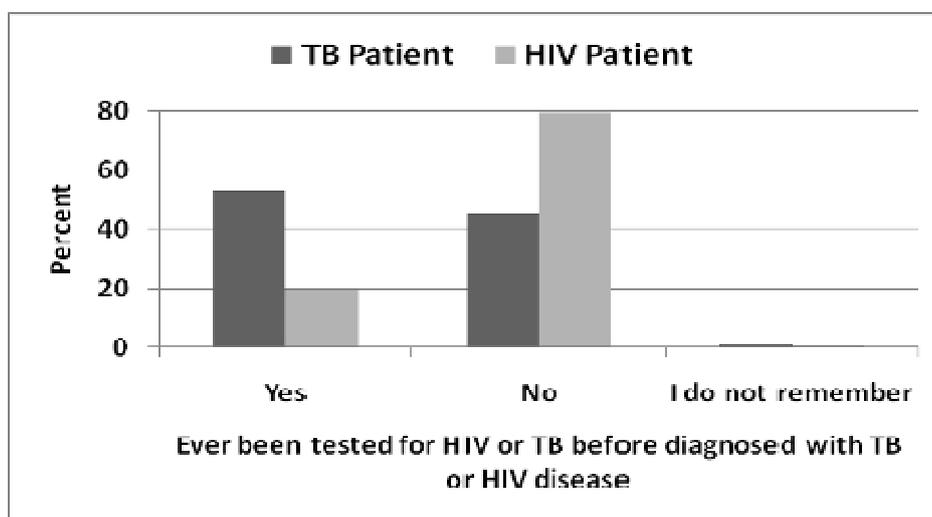
#### 4.5.2.2.5 *Have you ever been tested for HIV or diagnosed with TB before you knew your current disease?*

In this question, the two categories were asked accordingly whether they had been tested for HIV or diagnosed for TB before they knew their current disease of TB and HIV, respectively. The findings for both TB and HIV study participants are presented below (Table 4.13).

**Table 4.13:** Have you ever been tested for HIV before you knew your TB disease or ever been diagnosed with TB before your HIV-positive status?

Ever been tested for HIV or TB before diagnosed with TB or HIV disease	TB Patients		HIV Patients	
	Frequency	Percent	Frequency	Percent
Yes	445	53.4	167	19.7
No	381	45.7	676	79.6
I do not remember	8	1.0	6	0.7
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

Just above half (53.4%) of TB participants had been tested for HIV before they were diagnosed with TB. This may be attributed to increased awareness amongst the general population of voluntary counselling and testing for HIV, and improved access to counselling and testing centres for HIV in the country. In Ethiopia, there are about 2,023 (NARC-E, 2012b) HIV testing and counselling centres and in Addis Ababa alone, with around 299 (NARC-E, 2012c) HIV counselling and testing centres available free of charge.



**Figure 4.9:** Proportion of patients diagnosed for TB for HIV patients and tested for HIV for TB before being diagnosed for the current disease

The finding revealed that a fifth of people living with HIV had a history of being diagnosed for TB before they learnt their HIV-positive status, with 19.7% having had TB disease before they knew they were HIV-positive. This could be logical evidence that some HIV-positive people might have been infected with HIV before their TB diseases, and so supplements prior findings that HIV is one risk factor for development of TB

disease (National Prevention Information Network [NPIN] [s.a]). Conversely, the finding may show that people who are HIV-positive do not learn their status early. Those who failed to do so would continue to transmit the virus to non-infected people. A study by Anandaiah, Dheda, Keane, Koziel Moore and Patel (2011:987) on novel developments in the epidemic of human immunodeficiency virus and tuberculosis co-infection revealed that increased risk of TB disease begins early in the course of HIV infection. However, the mechanism by which HIV increases this risk is not well understood.

*4.5.2.2.6 When were you tested for HIV or diagnosed with TB before you knew your TB disease or before your HIV-positive status, respectively?*

In this question, the two categories of study participants who had been tested for HIV or diagnosed for TB *before* their current diseases were asked when they had been tested for HIV or diagnosed for TB in reference to the time of current disease of TB and HIV, respectively. The findings for both TB and HIV study participants are presented below.

*4.5.2.2.7 When have you been tested for HIV before diagnosed for your current TB disease?*

**Table 4.14:** When were you tested for HIV? TB patients

<b><i>When have you been tested for HIV before, in reference to the current TB disease</i></b>	<b>Frequency</b>	<b>Percent</b>
Before <6 months	192	43.1
Before 6-11 months	79	17.8
Before 1-2 years	109	24.5
Before >2 years	65	14.6
<b>Total</b>	<b>445</b>	<b>100.0</b>

Most of those TB patients who tested for HIV (43.1%) had been tested just within the previous six months before being diagnosed with TB. In addition, nearly a quarter (24.5%) of those tested had conducted an HIV test between 6 and 11 months prior to their diagnosis for TB. This implies that the majority of the TB patients had better perceived behaviour on the relationship between TB and HIV.

#### 4.5.2.2.8 When were you diagnosed with TB before diagnosed for your HIV disease?

**Table 4.15:** When were you diagnosed with TB before you knew your Positive HIV status?

<b>When were you diagnosed with TB before, in reference to the date tested for HIV-positive</b>	<b>Frequency</b>	<b>Percent</b>
Within less than 6 months before knowing HIV-positive status	52	31.1
Within 6 months -1 year before knowing HIV-positive status	49	29.3
Within 1.1-2 year before knowing HIV-positive status	28	16.8
Within 2.1-3 years before knowing HIV-positive status	9	5.4
More than 3 years before knowing HIV-positive status	29	17.4
<b>Total</b>	<b>167</b>	<b>100.0</b>

Around 60.4% of HIV patients were diagnosed with TB less than one year prior to knowing their positive HIV status. In addition, 16.8% and 17.4% of those diagnosed HIV-positive TB cases had been diagnosed for TB before 2-3 years and more than 3 years prior to knowing their positive HIV status, respectively.

#### 4.5.2.2.9 How were your results for HIV test or site of TB diagnosed?

In this question, the two categories of participants who had been tested for HIV or diagnosed for TB before their current diseases were asked how their HIV test result was, or the site of TB for which they diagnosed with TB and HIV, respectively. The findings for both TB and HIV study participants are presented below separately.

#### 4.5.2.2.10 How were your results for the HIV test?

**Table 4.16:** If tested for HIV, how were your results?

<b>HIV test result</b>	<b>Frequency</b>	<b>Percent</b>
Negative	357	80.2
Positive	87	19.6
Don't want to disclose	1	0.2
<b>Total</b>	<b>445</b>	<b>100.0</b>

Of those tested 445 TB patients prior to their knowledge of TB disease, 19.6% had been found to be HIV-positive. This finding is exactly the same as the prevalence of TB among the HIV-positive study participants prior to their knowledge of HIV status. From these two findings, the prevalence of HIV among the previously tested TB patients and the prevalence of TB among the previously diagnosed HIV-positive individuals is around a fifth of patients.

#### 4.5.2.2.11 Which site of TB was that?

**Table 4.17:** Which site of TB was that?

Site of TB diagnosed	Frequency	Percent
Pulmonary	137	82.0
Extra-Pulmonary	30	18.0
<b>Total</b>	<b>167</b>	<b>100.0</b>

Table 4.17 (above) shows that the majority (82.0%) of previously TB-diagnosed HIV patients had had pulmonary tuberculosis. However, this proportion is less than from findings in Poland for 2009 (Korzeniewska-Koseła, 2011:301), which showed that 93% were pulmonary and only 7% were extra-pulmonary. On the other hand, the proportion in this study is more than a study in Spain on *Extra pulmonary tuberculosis epidemiology and risk factors* by García-Rodríguez, Álvarez-Díaz, Lorenzo-García, Mariño-Callejo, Fernández-Rial and Sesma-Sánchez (2011:502), which showed the proportion of pulmonary tuberculosis to be 55%.

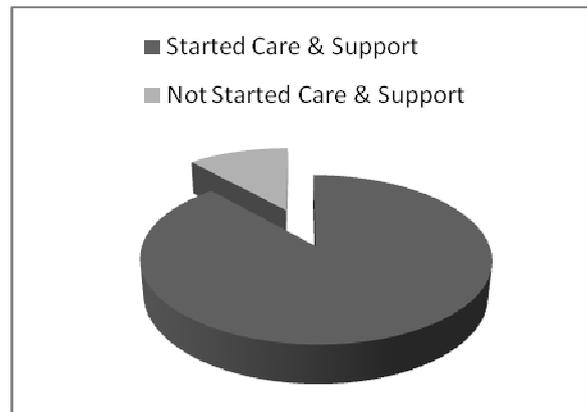
#### 4.5.2.2.12 Have you started on care and treatment or completed treatment?

In this question, the two categories of study participants who had been tested positive for HIV or diagnosed for TB before were asked whether they had started care and treatment for HIV or completed treatment for TB, respectively. The findings for both are presented below separately.

#### 4.5.2.2.13 Have you started on HIV care and treatment?

**Table 4.18:** Have you started of HIV care and treatment?

<b>Started on HIV care and treatment</b>	<b>Frequency</b>	<b>Percent</b>
Yes	77	88.5
No	10	11.5
<b>Total</b>	<b>87</b>	<b>100.0</b>



**Figure 4.10:** Started care and treatment by percent, TB patients

In recent years, great advances in HIV treatment, care, and support have allowed many people living with HIV to regain their health, live longer and to plan for their futures. Cognizant of this, the findings in this study revealed that the majority (88.5%) of the HIV-positive individuals had already enrolled in the care and treatment centres of public health facilities.

#### 4.5.2.2.14 Have you completed your treatment for TB?

Treatment of tuberculosis with the recommended chemotherapy is the single effective way to treat a patient with confirmed tuberculosis disease.

**Table 4.19:** Have you completed your anti-TB treatment?

<b>Completed of anti-TB treatment</b>	<b>Frequency</b>	<b>Valid Percent</b>
Yes	163	97.6
Still on treatment	4	2.4
<b>Total</b>	<b>167</b>	<b>100.0</b>

The internationally recommended DOTS strategy is the standard for treatment of tuberculosis in all countries. This study also confirmed that people living with HIV who had been diagnosed for TB had all undergone treatment based on the DOTS strategy, with the majority (97.6%) having completed and 2.4% on their follow-up treatment (Table 4.19, above).

*4.5.2.2.15 Have you ever been offered for HIV test or diagnosed for TB after/while you know your current disease?*

In this question, the two categories of participants were asked whether they had been tested for HIV or diagnosed for TB *while* they were on their follow-up treatment of TB or care and treatment for HIV, respectively. The findings for both are presented below.

*4.5.2.2.16 Have you been offered for HIV test now during your TB treatment and tested for HIV (offered vs tested)?*

**Table 4.20:** Have you been offered (self experience) for HIV test now and tested for it during your TB treatment?

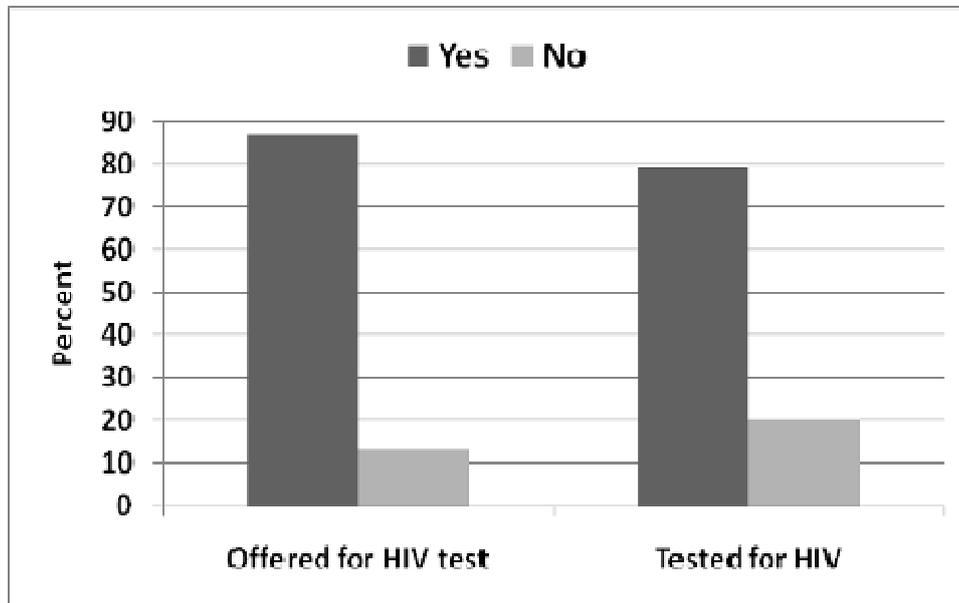
HIV testing being encouraged at TB clinics	Offered for HIV test		Tested for HIV	
	Frequency	Percent	Frequency	Percent
Yes	726	87.1	579	79.8
No	108	12.9	147	20.2
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>726</b>	<b>100.0</b>

In 2007, the WHO recommended that countries with high co-infection rates should implement TB/HIV collaborative activities, including routine provider-initiated HIV testing and counselling (PITC) of TB patients in TB clinical settings, using an "opt-out" approach (WHO, 2007c).

One of the activities in the interim policy for collaborative TB/HIV activity is offering voluntary HIV counselling and testing services for all TB patients under their follow-up treatment care (WHO, 2012a). All TB patients who have not previously been diagnosed with HIV infection should be encouraged to have an HIV test. Failing to do so is to deny people access to the care and treatment they might need, especially in the context of the wider availability of treatments that prevent infections associated with HIV (Williams, Alarcon, Jittimane, Walusimbi, Sebek, Berga & Villa, 2008:889).

In this study, 87.1% of TB patients had been offered voluntary HIV testing, and only 12.9% not. This finding is slightly less than that in Malawi (Zachariah, Spielmann, Harries and, 2003:65), where 96% were pre-test counselled, 91% underwent HIV testing, and 87% were post-test counselled. 43 (4%) patients refused HIV testing.

However, the findings in this study are higher than a study in Uganda (Nansera, Bajunirwe, Kabakyenga, Asimwe and Mayanja-Kizza, 2010), where 55.6% were offered an HIV test, and in Rwanda (Pevzner, Vandebriel, Lowrance, Gasana & Finlay, 2011:550), where 76% of TB patients were offered HIV testing (Figure 4.11, below).



**Figure 4.11:** Have you been offered for HIV test and tested for it now during your TB treatment by Percent, TB patients (offered vs tested)?

The majority (79.8%) had accepted the HIV test offered, a finding less than that for Malawi, 91% (Zachariah et al., 2003:65), Rwanda, 99% (Pevzner et al., 2011:550) and Ukraine, 84% (van der Werf, Yegorova, Chechulin, Hasker, Veen & Turchenko, 2005:733). However, it is higher than the finding in Uganda, 65% (Nabbuye-Sekandi, Okot-Chono, Rusen, Dlodlo, Katamba, Tumwesigye & Fujiwara, 2010:896).

#### 4.5.2.2.17 In which department did you take the HIV test?

**Table 4.21:** If tested for HIV, who conducted the test?

Clinic where HIV test conducted	Frequency	Percent
TB clinic health worker	465	80.3
At HIV VCT room	80	13.8
At outpatient department	16	2.8
Inpatient room	1	0.2
Other	17	2.9
<b>Total</b>	<b>579</b>	<b>100.0</b>

Voluntary HIV testing and counselling should be offered at a TB clinic without further referral. It is recommended that provider-initiated HIV testing and counselling be conducted by TB clinic staff, or patients can be referred to HIV VCT clinic for a client-initiated counselling and testing service. However, the former is more cost-effective for the service provider, and 'one stop shopping' for the client. This study revealed that 80.3% had been tested by TB clinic staff and 13.8% by VCT clinic staff (Table 4.2.1, above).

#### 4.5.2.2.18 When have you been tested for HIV?

**Table 4.22:** If tested for HIV, when were you tested in reference to day first diagnosed for TB?

Time when HIV test was conducted	Frequency	Percent
During the same time of TB diagnosis	443	76.5
Within 2 months while on TB treatment	121	20.9
Within 3-5 months during TB treatment	8	1.4
After 5 months during TB treatment	6	1.0
I don't remember	1	.2
<b>Total</b>	<b>579</b>	<b>100.0</b>

More than three quarters (76.5%) of TB patients had been tested for HIV at the time of diagnosis for TB, the remaining (20.9%) during the intensive phase period. This could

be because some clients might have needed to decide on an HIV test for some other reason. However, it is highly recommended that patients be encouraged at every visit if they resist or decline HIV testing.

#### 4.5.2.2.19 How were your HIV test results?

**Table 4.23:** If tested for HIV, how were your results?

HIV test result	Frequency	Percent
Negative	456	78.8
Positive	117	20.2
Don't want to disclose	6	1.0
<b>Total</b>	<b>579</b>	<b>100.0</b>

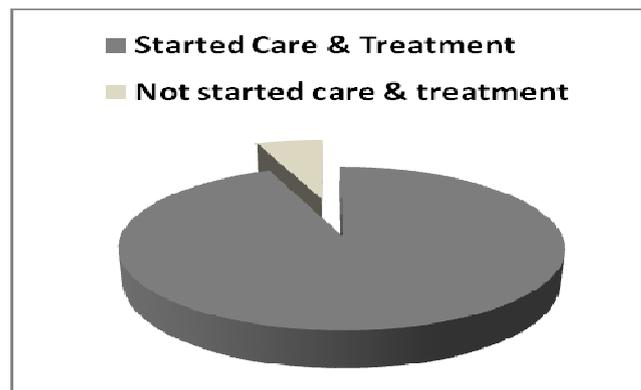
The HIV prevalence of TB patients in this study was 20.2%, which is similar to a previous study by Jerene, Endale and Lindtjørn (2007:4) in Southern Ethiopia, for which 20.6% were HIV-positive. On the other hand, this finding was much less than previous findings in other countries. For instance, in Cameroon, the prevalence of HIV infection among TB patients was 51.6%, (Sume, Etogo, Kabore, Gnigninanjouena, Epome & Metchendje 2008:529). In a cohort of TB patients between 1993 and 2003 in North Carolina, HIV was newly diagnosed in 34.2% of those TB presentations (Gadkowski, Hamilton, Allen, Fortenberry, Luffman, Zeringue & Stout, 2009:845). In South Africa, about 210,000 people with TB were tested for HIV in 2010 and 60% were identified as HIV-positive (SANAC 2011). HIV prevalence among TB patients in general has been estimated to be as high as 80%-90% in some areas of SSA (WHO, 2004g).

Despite the increasing trend of HIV testing for TB patients, researches revealed that the prevalence of HIV is decreasing among TB patients; for example, in a report from summarised HIV data collected from Kenya's extended TB surveillance system during 2006-2009, HIV testing among TB patients increased from 60% in 2006 to 88% in 2009, and the prevalence of HIV infection among TB patients tested decreased from 52% to 44% (CDC 2010:1514).

#### 4.5.2.2.20 Have you started on HIV care and treatment?

**Table 4.24:** If test results were positive, have you started HIV care and treatment?

Started of Care and Treatment	Frequency	Percent
Yes	110	94.0
No	7	6.0
<b>Total</b>	<b>117</b>	<b>100.0</b>



**Figure 4.12:** Started of HIV care and treatment by Percent, TB/HIV patients

To combat morbidity and mortality from the worldwide epidemic of HIV, the United States Congress implemented a President's Emergency Plan for AIDS Relief (PEPFAR) in 30 resource-limited countries to integrate combination antiretroviral therapy for both prevention and cure.

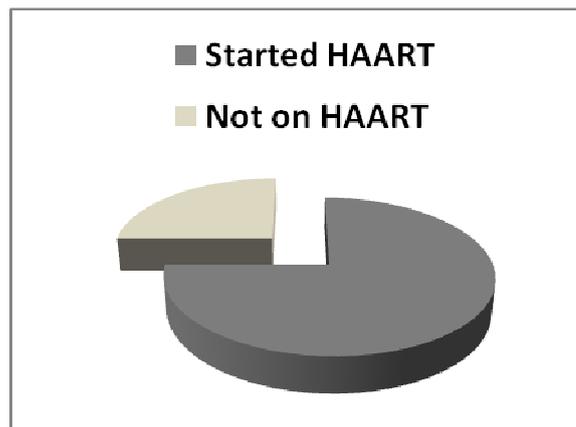
Technical assistance staff of one implementing partner representing seven African countries met to clarify domains of palliative care compared with the substituted term "care and support" to understand potential gaps in ongoing HIV care. They prioritised care needs as: 1) mental health (depression and other mood disorders); 2) communication skills (age-appropriate disclosure of HIV status); 3) support of care-providers (stress management for sustainability of a skilled HIV workforce); 4) tied Priorities: symptom management in opportunistic infections; end-of-life care; spiritual history-taking; and 5) tied priorities: attention to grief-related needs of patients, their families and staff; and management of HIV co-morbidities (Alexander, Memiah, Henley, Kaiza-Kangalawe, Shumbusho, Obiefune, Enejoh, Stanis-Ezeobi, Eze, Odion, Akpenna, Effiong, Miriti, Aduda, Oko, Melaku, Baribwira, Umutesi, Shimabale, Mugisa & Amoroso, 2012:279).

According to the finding in this research, 94% of the HIV-infected TB patients were already attached to the comprehensive HIV care and treatment centres in the health facility (Table 4.24).

#### 4.5.2.2.21 Have you already started HAART?

**Table 4.25:** If patient is tested HIV-positive (before or after TB disease), have you already started HAART?

Started HAART	Frequency	Percent
Yes	138	75.0
No	46	25.0
<b>Total</b>	<b>184</b>	<b>100.0</b>



**Figure 4.13:** Started HAART by Percent, TB patients

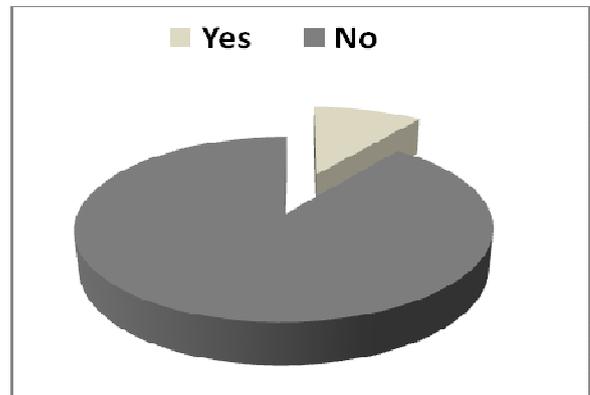
Flows of bilateral and multilateral aid over the past decade, combined with the domestic financial contributions of many countries, have fuelled a remarkable scale up in AIDS treatment and prevention programmes in low and middle income countries. Starting with just a few thousand patients in 2002, UNAIDS and WHO report that by the end of 2009 more than five million people were enrolled in ART programmes in these countries (UNAIDS, 2010a). Despite these impressive gains, only a third of the estimated 15 million HIV-infected persons with the most acute needs (WHO & UNAIDS, 2000) have access to treatment (UNAIDS, 2010b). Each year two million people still die from AIDS, most without having ever received ART, and approximately 2.7 million are newly infected by HIV (UNAIDS, 2011b).

Despite all these challenges, several countries are progressing in terms of providing ART to PLHIV. The finding in this study is encouraging, in that around 75% of those found HIV-positive from TB clinics are receiving HAART. The finding is far higher than those in seven other African countries, for which over 35% of PLHIV have been treated with HAART (Alexander et al., 2012:279).

#### 4.5.2.2.22 Have you been diagnosed with TB after you knew your HIV status?

**Table 4.26:** Have you been diagnosed for TB after you knew your HIV-positive status?

Ever been diagnosed for TB after knowing HIV status	Frequency	Percent
Yes	88	10.4
No	761	89.6
<b>Total</b>	<b>849</b>	<b>100.0</b>



**Figure 4.14:** Have you ever been diagnosed with TB after knowing HIV status by Percent, HIV patients

There is considerable scientific evidence supporting the use of ART in prevention of human immunodeficiency virus and tuberculosis infections. The findings in this study may support this. The proportion of PLHIV diagnosed with TB disease while on their follow-up care and treatment is 10.4%, which is approximately less than half those diagnosed (19.7%) before they knew their HIV-positive status.

These findings are a clear justification that PLHIV through care and treatment improves quality of life and decreases opportunistic infections associated with HIV infection. Several studies have suggested that the intrinsic value of the health gains generated from ART is worth the cost of treatment (Bishai, Colchero & Durack 2007:1333; Daniel, Rob, Chika, Jeremy & Joshua 2005:1431). The prevalence of TB among PLHIV in this research is less than previous findings in Saudi Arabia, where 34.4% of HIV patients had tuberculosis (Rajasekaran, Mahilmaran, Annadurai, Kumar & Raja 2007:58), and in Bangladeshi, 23% (Matin, Shahrin, Pervez, Banu, Ahmed, Khatun & Pietroni 2011:14).

#### 4.5.2.2.23 When were you diagnosed?

**Table 4.27:** When were you diagnosed?

<b>Time when being diagnosed for TB after knowing HIV status</b>	<b>Frequency</b>	<b>Percent</b>
During the same time up to 1 month of HIV test	38	43.2
Within 2-6 months after HIV test	23	26.1
Within 7-11 months after HIV test	5	5.7
Within 1-2 years after HIV test	15	17.0
Within 2.1-3 years after HIV test	4	4.5
More than 3 years after HIV test	3	3.4
<b>Total</b>	<b>88</b>	<b>100.0</b>

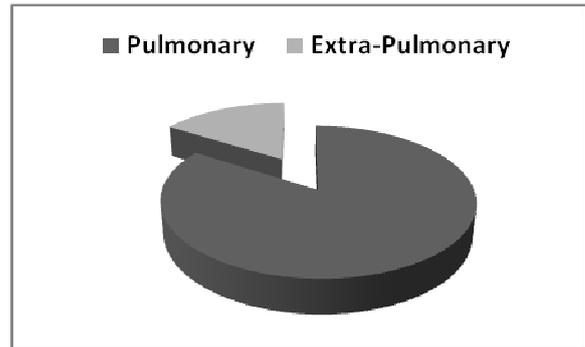
Table 4.27 above shows that the majority (43.2%) of HIV-positive individuals diagnosed for TB during the first one month of learning their HIV status. The second group, with the largest proportion, developed within 2-6 months following their HIV test result. This is an indication that delay in HIV testing resulted in increased susceptibility to opportunistic infections, including tuberculosis. These findings are consistent with previous researches on ART in prevention of HIV and TB by Granich, Gupta, Suthar, Smyth, Hoos, Vitoria, Bavicchi, Simao, Hankins, Schwartzlander, Ridzon, Bazin, Williams, Lo, McClure, Montaner and Hirnschall (2011:446), which states:

“Despite expanding access to ART to treat HIV infection in resource-limited settings, many individuals in need of therapy initiate ART too late and have already developed clinically significant TB by the time they present for care. Many co-infected individuals are in need of concurrent ART and anti-TB therapy, which dramatically improves survival, but also raises several management challenges, including drug interactions, shared drug toxicities and TB immune reconstitution inflammatory syndrome.”

#### 4.5.2.2.24 Which site of TB was that?

**Table 4.28:** Which site of TB was that?

Site of TB diagnosed	Frequency	Percent
Pulmonary	74	84.1
Extra-Pulmonary	14	15.9
<b>Total</b>	<b>88</b>	<b>100.0</b>



**Figure 4.15:** Site of TB disease by Percent, HIV patients

The proportion of pulmonary TB, compared with extra-pulmonary, before and after knowing HIV status for PLHIV is almost the same (82% before and 84.1% after). The proportion of being diagnosed for pulmonary TB in this study is slightly higher than previous research findings. For example, a study in 8 sub-Saharan African countries on incidence of TB in HIV-infected patients before and after starting HIV chronic care services indicated that, throughout patients' follow-up, the rates of pulmonary TB remained 2-3 fold higher than extra-pulmonary TB rates (Nicholas, Sabapathy, Ferreyra, Varaine & Pujades-Rodríguez, 2011:311). Another study in Saudi Arabia revealed that, out of the surveyed HIV patients, only 37% had pulmonary tuberculosis, 44% had either disseminated or extra-pulmonary tuberculosis and the remaining 19% had both (Omair, Al-Ghamdi and Alrajhi, 2010).

#### 4.5.2.2.25 Did/do you take your treatment?

**Table 4.29:** Treatment completion among those diagnosed for TB

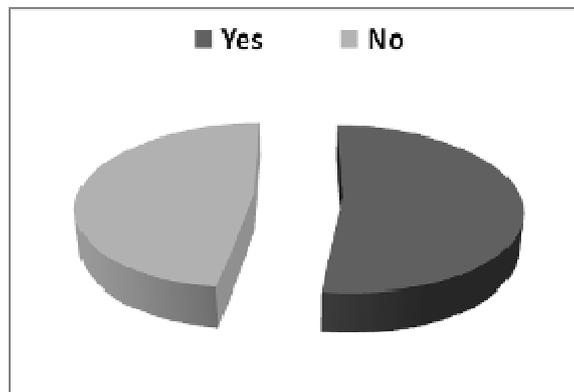
Completed of anti-TB treatment	Frequency	Percent
Yes	88	100.0
No	0	0
<b>Total</b>	<b>88</b>	<b>100.0</b>

According to the research finding, all of the TB patients completed their treatment based on the internationally recommended DOTS strategy (Table 4.29).

#### 4.5.2.2.26 Have you already started HAART during your diagnosis for TB?

**Table 4.30:** Have you already started HAART during your diagnosis for TB?

Started on HAART	Frequency	Valid Percent
Yes	46	52.3
No	42	47.7
<b>Total</b>	<b>88</b>	<b>100.0</b>



**Figure 4.16:** Started HAART by Percent, TB patients

More than half (52.3%) of those diagnosed with TB had already been on HAART while they developed TB. However, the finding contradicts those from previous research. Beginning combination antiretroviral therapy for patients infected with HIV has reduced morbidity of AIDS-related opportunistic infections and subsequently reduced HIV-related mortality. Effective ART leads to significantly reduced viral loads and increased CD4+ T cell counts, especially in the first few months after initiation. ART stimulates immune system reconstitution, thereby reducing the risk of exacerbation or acquisition of an opportunistic infection (Roberson & Bowers 2011:345).

#### 4.5.2.3 Section III: Activities to decrease the burden of TB/HIV

Section III of both TB and HIV questionnaires consisted of six items, the main aim being to determine the implementation status of activities to decrease TB/HIV among TB and HIV patients who were on their follow-up care.

The section also describes additional information about patients' awareness on key interventions to decrease the burden of TB/HIV. The questions asked whether:

- HIV testing was offered or encouraged at TB clinic for TB patients or whether TB screening was offered or encouraged at HIV chronic care clinics for HIV patients
- TB patients knew about Cotrimoxazole preventive therapy or HIV patients knew INH preventive therapy
- TB patients knew access of CPT and IPT as part of the package of HIV care in their health facility
- they had been provided with CPT or IPT ever and, finally, from which clinic patients refill Cotrimoxazole or Isoniazid drugs in the health facility.

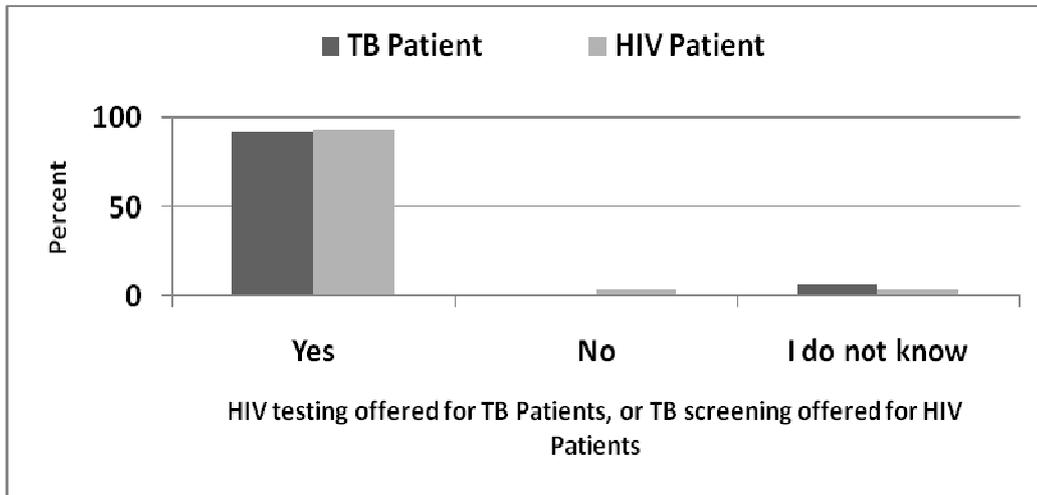
##### 4.5.2.3.1 *Is HIV testing offered or encouraged at TB clinic, or is TB screening offered or encouraged at HIV care centres?*

**Table 4.31:** Is HIV testing offered or encouraged (knowledge) at TB clinic, and Is TB screening offered or encouraged at HIV care centres by percent, Addis Ababa City Administration

HIV testing offered for TB Patients, or TB screening offered for HIV Patients	TB Patients		HIV Patients	
	Frequency	Percent	Frequency	Percent
Yes	771	92.4	788	92.8
No	7	.8	31	3.7
I do not know	56	6.7	30	3.5
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

Exactly 92.4% of TB patients witnessed that HIV counselling and testing had been offered at TB clinics for newly diagnosed TB patients and for those under follow-up treatments. However, 87.1% (section 4.4.7.1) of all TB patients were offered testing or

encouraged by TB clinic staffs to be tested for HIV. The difference among those witnessed to those offered is 5.3%, meaning this portion of TB patients were well aware of the service being given in the clinic but were not offered or encouraged to use it.



**Figure 4.17:** Is HIV testing offered or encouraged at TB clinics and Is TB screening offered at HIV care clinics? by percent

The annual risk of developing tuberculosis in a PLHIV who is co-infected with M tuberculosis ranges from 5-15% (Raviglione, Harries, Msiska, Wilkinson & Nunn 1997:115). In addition, HIV increases the rate of recurrent tuberculosis, which may be due to either endogenous reactivation (true relapse) or exogenous re-infection. Various research findings revealed that increasing tuberculosis cases in PLHIV pose an increased risk of tuberculosis transmission to the general community, whether or not HIV-infected (Daley, 1993:756; Fitzgerald, Desvarieux, Severe, Joseph, Johnson & Pape, 2000:1470).

Therefore, the WHO policy on collaborative TB/HIV activities, recommends offering and encouraging TB screening for all HIV-positive individuals on every contact with a healthcare provider (WHO, 2012a). The findings for this study are that 92.8% of HIV patients are screened routinely for TB at their care and treatment clinics. These findings are greater than in a previous study conducted in Addis Ababa, Ethiopia, which showed 89.7% (Wesen & Mitike 2009). From a study in South Africa, the results revealed almost 60% of the 3.9 million people in HIV care were screened for tuberculosis (SANAC, 2011). However, other research has provided evidence that people attending HIV care centres benefit from TB screening, i.e., those found to be both HIV-positive and with active TB needed referral for TB treatment, whilst those without active TB offered TB preventive treatment with Isoniazid (Godfrey-Faussett, Maher, Mukadi, Nunn, Perriens & Raviglione, 2002).

#### 4.5.2.3.2 Do you know about Cotrimoxazole preventive therapy for TB patients or INH preventive therapy for HIV patients?

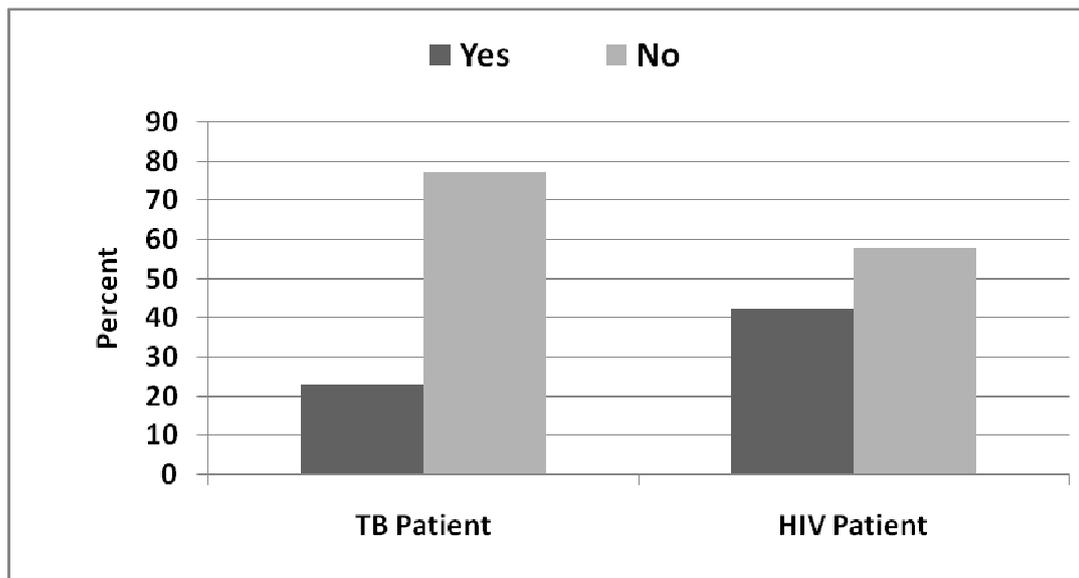
**Table 4.32:** Knowledge about Cotrimoxazole preventive therapy for TB patients and INH Preventive therapy for HIV patients?

Knowledge of CPT	TB Patients		HIV Patients	
	Frequency	Percent	Frequency	Percent
Yes	193	23.1	359	42.3
No	641	76.9	490	57.7
<b>Total</b>	<b>834</b>	<b>100.0</b>	<b>849</b>	<b>100.0</b>

Quite a small proportion of TB/HIV patients knew about CPT, 23.1%, but it is the responsibility of the healthcare system to make people aware of its benefits based on the national TB/HIV policy guideline (FMoH 2007b). The provision of Cotrimoxazole as a prophylaxis is an inexpensive and highly efficacious preventative intervention in HIV-infected individuals. In Africa it works by reducing bacterial infection, malaria, and isosporiasis, reducing morbidity by 43% and hospital admission by 23% among children with HIV/AIDS and reducing mortality by 31% and morbidity by 27% among adults with HIV/AIDS (Chintu, Bhat, Walker, Mulenga, Sinyinza, Lishimpi, Farrelly, Kaganson, Zumla, Gillespie, Nunn & Gibb, 2004:1865, Grimwade & Swingler, 2003:CD003108).

Two clinical trials on the efficacy of CPT undertaken in Cote d'Ivoire showed that CPT was effective at an early stage of HIV disease: reducing morbidity and mortality in HIV-infected TB patients, and reducing severe clinical events in HIV-infected adults (Anglaret, Chene, Attia, Toure, Lafont, Combe, Manlan, N'Dri-Yoman, Salamon & group C-CS, 1999:1463; Wiktor, Sassan-Morokro, Grant, Abouya, Karon, Maurice, Djomand, Ackah, Domoua, Yapi, Combe, Tossou, Roels, Lackritz, Coulibaly, De Cock, Coulibaly and Greenberg. 1999:1469).

A research on extended TB surveillance system of Kenya from 2006 to 2009 showed that 92% of HIV-infected TB patients received Cotrimoxazole prophylaxis for the prevention of opportunistic infections. Although the data showed the increase in HIV services provided to TB patients, only 34% of HIV-infected TB patients started ART while being treated for TB (CDC, 2010).



**Figure 4.18:** Knowledge of Cotrimoxazole Preventive Therapy for TB patients and INH Preventive Therapy for HIV patients by Percent, Addis Ababa City Administration, August 2011.

Therefore, besides the knowledge of HIV care providers on providing IPT, patients themselves should be aware of it for improved adherence. The finding in this study about the knowledge of HIV patients about IPT is less than half (42.3%).

#### 4.5.2.3.3 Do PLHIV who have TB have access to CPT as part of the package of care?

**Table 4.33:** Do PLHIV who have TB have access to CPT as part of the package of care in the health facilities?

Knowledge of access to CPT	Frequency	Percent
Yes	176	91.2
No	1	0.5
I do not know	16	8.3
<b>Total</b>	<b>193</b>	<b>100.0</b>

In the 1990s, two clinical trials on the efficacy of Cotrimoxazole Preventive Therapy (CPT) were undertaken in Cote d'Ivoire. The results showed that it was effective at an early stage of HIV disease, reducing morbidity and mortality in HIV-infected TB patients and reducing severe clinical events in HIV-infected adults (Anglaret et al., 1999:1463; Wiktor et al., 1999:1469).

The WHO and UNAIDS released provisional recommendations about CPT in 2000, stating that it can be given to all HIV-infected adults with a CD4 count of 500 cells/mm<sup>3</sup> or less, or with WHO clinical stage 2-4, to all infants HIV-infected or HIV-exposed; and to all children over the age of 15 months with symptomatic HIV disease (WHO & UNAIDS, 2000).

The value of Cotrimoxazole in reducing the morbidity and mortality associated with HIV infection has been well established through clinical trials conducted in industrialized (Institute for Global Health 2004; Jones, Hanson, Dworkin, Alderton, Fleming, Kaplan, and Ward, 1999:1) and developing countries (Nunn, Mwaba, Chintu, Mwinga, Darbyshire and Zumla, 2008:a257; Mulenga, Ford, Walker, Mwenya, Mwansa, Sinyinza, Lishimpi, Nunn, Gillespie, Zumla, Chintu and Gibb, 2007:77; Lowrance, Makombe, Harries, Yu, Aberle-Grasse, Eiger, Shiraishi, Marston, Ellerbrock & Libamba 2007:56).

Based on that, most countries have adopted CPT a policy on their HIV care package. For example, a study on 41 countries in all WHO regions showed, 38 (93%) had developed a national policy to provide CPT to people living with PLHIV, but only 66% (25/38) of the countries with a national policy had implemented it on a nationwide scale (Anand, Marco, Reuben, Mazuwa, Mayada & Charlie, 2010:253). Countries in all WHO regions have made progress in the development and nationwide implementation of a CPT policy, and of 25 countries with nationwide implementation a median of 90% of the facilities that provided ART (range: 80-100) and of 75% of the facilities that provided HIV care (range: 60-100) were providing CPT (Anand et al, 2010:253).

According to the WHO guideline (WHO, 2006a:5), CPT is a simple, well-tolerated and cost-effective intervention for people living with HIV. It should be implemented as an integral component of the HIV chronic care package and as a key element of pre-ART care. CPT needs to continue after ART is initiated until there is evidence of immune recovery (WHO, 2006a:5).

Ethiopia is one country which incorporated CPT on its guideline on implementation of TB/HIV collaborative activities (FMOH, 2005; FMOH, 2007b). People living with HIV through frequent contacts should know the packages of care for PLHIV.

According to the finding in this study, out of the 193 TB patients who know about CPT, 91.2% witnessed that CPT is provided as a package of care for PLHIV who have also active TB disease (Table 4.33).

4.5.2.3.4 *Do PLHIV who do not have active TB have access to IPT as part of the package of care?*

**Table 4.34:** Do PLHIV who do not have active TB have access to IPT as part of the package of care in the health facilities

<b>Knowledge of access to IPT</b>	<b>Frequency</b>	<b>Percent</b>
Yes	334	93.0
No	2	.6
I do not know	23	6.4
<b>Total</b>	<b>359</b>	<b>100.0</b>

In 1998, the WHO and the United Nations Joint Programme on HIV/AIDS (UNAIDS) issued a new IPT policy with six key steps as part of the package of care for PLHIV (UNAIDS, 2010c).

First, people living with HIV should be counselled to encourage early diagnosis and treatment of TB. Second, to avoid mono-therapy, all persons infected with HIV should be screened for active TB before administration of IPT. Third, programmes should target persons most likely to benefit from IPT, specifically individuals with a positive tuberculin skin test (TST) result. However, TST is not feasible in most settings, and therefore IPT without prior TST should be considered in populations with >30% prevalence of *M. tuberculosis* infection, healthcare workers, household contacts of patients with TB, prisoners, and miners. Fourth, IPT should be given as six months of daily, self-administered Isoniazid. The fifth and sixth key steps involve monitoring of adherence, toxicity, and outcomes (WHO, 1999a:385). The policy recommends a chest radiograph before initiation of IPT (UNAIDS 2010c). Studies suggest that IPT is cost-effective and beneficial, further supporting these policy recommendations (Fern, Lilani, Rokaya, Helen, Ignatius, Mary & Peter, 2008:2; Foster, Godfrey-Faussett & Porter, 1997:919).

The WHO recommends 12 collaborative TB/HIV activities, including the “Three I’s for TB/HIV” (Isoniazid preventive therapy (IPT), intensified TB case finding (ICF), and infection control (IC) for TB), which should be seen as core prevention, care, and treatment services for HIV infection (WHO, 2004d).

ART in some studies provides up to 80% reduction in the risk of TB; however, the incidence of TB remains higher among people living with HIV receiving ART than among HIV uninfected persons (Badri, Wilson & Wood, 2002:2059; Girardi, Sabin, d'Arminio, Hogg, Phillips, Gill, Dabis, Reiss, Kirk, Bernasconi, Grabar, Justice, Staszewski, Fätkenheuer & Sterne, 2005:1772; Lawn, Myer, Edwards, Bekker & Wood 2009:1717).

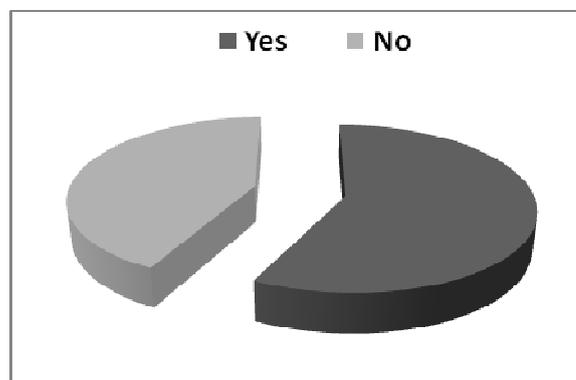
Even among persons with a good response to ART, other interventions (such as IPT) may be needed to prevent TB in people living with HIV. Observational cohort studies in Brazil and South Africa showed a 76%–89% reduction in TB risk among patients receiving both ART and IPT (Golub, Saraceni, Cavalcante, Pacheco, Moulton, King, Efron, Moore, Chaisson, & Durovni, 2007:1441; Golub, Saraceni et al., 2009:631).

TB prevention in the context of HIV infection demands a comprehensive approach that effectively marshals evidence-based interventions for prevention of HIV infection and TB, including earlier diagnosis of HIV infection and ART (WHO, 2008a).

#### 4.5.2.3.5 Have you ever been treated with CPT?

**Table 4.35:** Have you ever been treated with Cotrimoxazole preventive therapy among PLHIV?

<b>Ever been treated with CPT</b>	<b>Frequency</b>	<b>Percent</b>
Yes	111	57.5
No	82	42.5
<b>Total</b>	<b>198</b>	<b>100.0</b>



**Figure 4.19:** Ever been treated with CPT by Percent, HIV patients?

The provision of Cotrimoxazole as a prophylaxis is an inexpensive and highly efficacious preventative intervention in HIV-infected individuals. In Africa it works by reducing bacterial infection, malaria, and isosporiasis; reducing morbidity (by 43%) and hospital admission (by 23%) among children with HIV and reducing mortality (by 31%) and morbidity (by 27%) among adults with HIV (Chintu, Bhat, Walker, Mulenga, Sinyinza, Lishimpi, Farrelly, Kaganson, Zumla, Gillespie et al., 2004:1865; Grimwade et al., 2003:CD003108).

Despite widespread recommendations and availability of convincing evidence of the effectiveness of TMP-SMX, the implementation of its use has been poor (Zachariah, Harries, Luo, Bachman & Graham, 2007:686). In Africa, barriers to implementation include shortages of trained staff, stock-outs of Cotrimoxazole, and failure of healthcare systems to identify individuals eligible for Cotrimoxazole prophylaxis (Zachariah et al., 2007:686). In addition, there is anxiety that it may not be cost-effective. However new evidence of the intervention's cost-effectiveness may alleviate these concerns (Ryan, Griffin, Chitah, Walker, Mulenga, Kalolo, Hawkins, Merry, Barry, Chintu, Sculpher & Gibb, 2008:749; Yazdanpanah, Losina, Anglaret, Goldie, Walensky, Weinstein, Toure, Smith, Kaplan & Freedberg, 2005:1299).

According to a global TB report 2009 (WHO, 2009b), almost 80% of global TB patients who were known to be HIV-positive were started on CPT. The 2011 global TB report showed that, the number of global TB patients living with HIV who were enrolled on CPT levelled off between 2009 and 2010 was at just over 0.3 million, equivalent to 77% of TB patients known to be HIV-positive (WHO, 2011a).

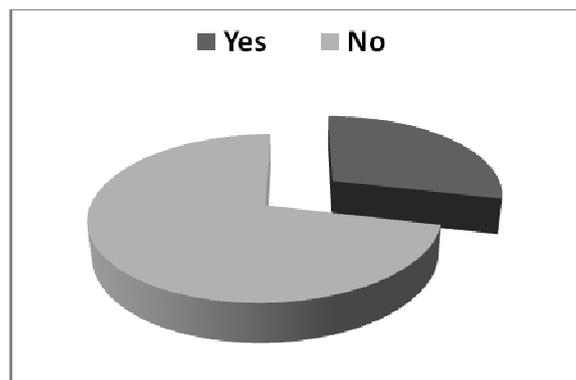
The African and South-East Asia regions achieved particularly high levels of enrolment on CPT, with 76% and 87% of TB patients known to be living with HIV provided with CPT, respectively (WHO, 2011a). Countries that achieved the highest rates of enrolment on CPT in 2010 included Burkina Faso (96%), Burundi (95%), India (90%), Kenya (100%), Lesotho (96%), Mozambique (97%), Malawi (94%), Mali (100%), Myanmar (100%), Namibia (92%), Rwanda (97%), Swaziland (93%), the United Republic of Tanzania (92%) and Uganda (90%), [WHO, 2011a]. The global Plan to Stop TB, 2011–2015 targets to reach 100% for provision of CPT (WHO, 2010a).

This study revealed that, 57.5% of TB patients co-infected with HIV have been provided with CPT, this result is less than the global achievement for 2010 (77%) and African region (76%). But it is close to the finding in Uganda in 2009 [52%] (Okot-Chono et al., 2009:955).

#### 4.5.2.3.6 Have you ever been provided with IPT?

**Table 4.36:** Have you ever been provided with IPT?

Ever been treated with IPT	Frequency	Percent
Yes	244	28.7
No	605	71.3
<b>Total</b>	<b>849</b>	<b>100.0</b>



**Figure 4.20:** Ever been treated with IPT by Percent, TB/HIV patients

Tuberculosis is the most frequent life-threatening opportunistic disease among people living with HIV and remains a leading cause of mortality, even among persons receiving ART. Clinical trials have shown that IPT dramatically reduces the incidence of TB among people living with HIV (Golub, Saraceni, et al., 2007:1441; Woldehanna & Volmink, 2004:CD000171).

According to the global TB report 2011 (WHO, 2011a), monitoring of access to IPT interventions at country level is considered weaker than for interventions such as ART. For example, in 2010, 2.3 million PLHIV were screened globally for TB (up from 1.7 million in 2009) and 178 000 of those without active TB were enrolled on IPT (double the level achieved in 2009), which is about 12% of the reported number of PLHIV newly enrolled in HIV care in 2010 (WHO, 2011a:66).

A 2004 Cochrane Review found that IPT reduced the risk of TB by 33% overall and by 64% when targeted at people living with HIV who had a positive tuberculin skin test (Golub et al., 2007:1441). A recent retrospective study also showed that IPT significantly reduced the incidence of TB, even among people living with HIV and receiving ART (Golub et al., 2007:1441). In 1998, the WHO and UNAIDS issued a statement that recognized the effectiveness of IPT among people living with HIV and recommended its use as part of an essential care package for these patients (WHO, 1998). This statement recommends IPT for all people living with HIV in areas with a prevalence of latent TB infection > 30% and for all people with documented latent TB infection or exposure to an infectious TB case, regardless of where they live. These recommendations were reinforced in a statement released by the TB/HIV working group

of the Stop TB Partnership in October 2007 (*Consensus statement of the core group of TB/HIV Working Group of STOP TB partnership*. Geneva: Stop TB partnership).

WHO (2008c) guidelines on essential prevention and care interventions for people living with HIV also recommend IPT for PLHIV without active TB disease. However, countries have been slow to adopt these recommendations and many limitations seem to be delaying effective nationwide implementation. In 2007, only 30 000 (0.1%) people living with HIV worldwide had started IPT (WHO, 2009d).

A study at 41 WHO region countries for the implementation of IPT for PLHIV revealed that 21 of the 41 respondent countries (51%) had developed a national policy, but only 28% (6/21) of these countries had implemented it on a nationwide scale (Anand et al., 2010:253).

Respondent countries in all WHO regions have experienced delays in the development and nationwide implementation of IPT policy. In the six countries with nationwide implementation, a median of 3% of the facilities that provided ART and HIV care were also providing IPT. A median of 50% of the facilities that provided TB services were providing IPT to people with HIV infection (Anand et al., 2010:253).

Of the 20 countries that reported having no IPT implementation policy, 14 provided reasons for not developing the policy. The main reasons were: (1) inadequate intensified TB case-finding because of the inability to exclude active TB, (2) logistic difficulties in performing tuberculin skin tests to diagnose latent TB infection, and (3) concerns regarding inadequate patient adherence potentially leading to Isoniazid mono-resistance. Other reasons included lack of consensus among policymakers and experts and uncertainty about the long-term benefits of IPT. Countries that had developed an IPT policy also faced the challenges mentioned above in achieving nationwide implementation. Interventions suggested by the respondent countries to encourage the development of an IPT policy or to improve nationwide implementation included: (1) advocacy of IPT at the national and international level; (2) dissemination of evidence-based information regarding the benefits and feasibility of IPT; and (3) developing operational guidelines for the implementation of IPT in HIV care and treatment settings (Anand et al., 2010:253).

The 2008 WHO Three I's Meeting for TB/HIV re-emphasised the importance of IPT for PLHIV as part of a comprehensive approach to prevention, care, and treatment of HIV infection (WHO, 2008a). Forty-two countries, including Botswana, South Africa,

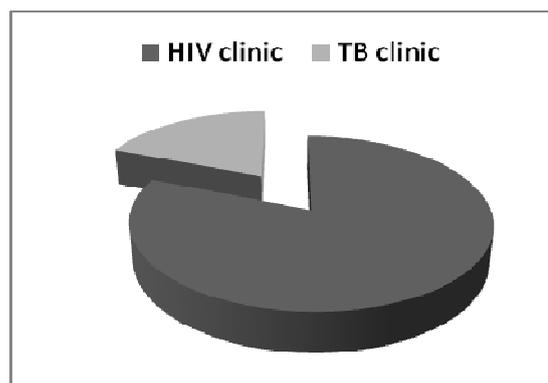
Mozambique, Ethiopia, and the USA use IPT for people living with HIV as part of their TB-control strategy (Mosimaneotsile, Talbot, Moeti, Hone, Moalosi, Moffat, Lee & Kenyon, 2003:1551; WHO, 2009d;). Globally, although access to IPT is still limited, from 2005 through 2007, IPT provision increased from 26,000 persons in 10 countries to 29,000 persons in 42 countries (WHO, 2008a).

This study showed that 28.7% of all PLHIV had ever been provided with IPT. This finding is higher than previous findings in Ethiopia and other countries, for example, the 2011 global TB report (WHO, 2011a) found that the IPT coverage for PLHIV, Bangladesh (3.6%), Cambodia (1.5%), Ethiopia (9.9%), Mozambique (21.9%), Myanmar (11.8%), Nigeria (2.4%); on the other hand, this finding was lower than the report from South Africa (58.2%) (WHO, 2011a:89)

#### 4.5.2.3.7 From where did/do you re-fill/collect Cotrimoxazole drug?

**Table 4.37:** If you were taking or currently under CPT, from where did/do you collect the drug?

Clinic where CPT is re-filled	Frequency	Percent
HIV clinic	90	81.1
TB clinic	21	18.9
<b>Total</b>	<b>111</b>	<b>100.0</b>



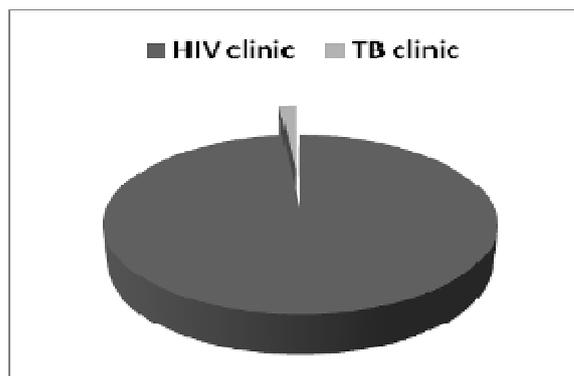
**Figure 4.21:** Clinic where CPT was re-filled in Percent, TB/HIV patients

As shown in Table 4.37 above, the majority (81.1%) of TB-HIV co-infected patients treated with CPT re-filled their drug from HIV clinics; whereas 18.9% collected them from TB clinics. According to the national TB/HIV implementation guideline (FMOH, 2005; 2007), the placement for Cotrimoxazole should be at an HIV clinic. This is because provision of CPT is more HIV chronic care than TB treatment care.

#### 4.5.2.3.8 From where did/do you re-fill INH drug?

**Table 4.38:** If you were taking or currently under IPT, from where did/do you collect the drug?

Clinic where IPT is re-filled	Frequency	Percent
HIV clinic	240	98.4
TB clinic	4	1.6
<b>Total</b>	<b>244</b>	<b>100.0</b>



**Figure 4.22:** Clinic where IPT was re-filled by Percent, HIV patients

As shown in Table 4.38 above, almost all (98.4%) TB-HIV co-infected patients treated with IPT re-filled their drug from HIV clinics, whereas, only 1.6% collected their drugs from TB clinics. According to the national TB/HIV implementation guideline (FMOH, 2005; 2007b), the placement for INH should be at an HIV clinic, because provision of IPT is, in a broader sense, more HIV care package than TB care.

### 4.5.3 Inferential Statistics

Inferential statistics, also known as statistical induction, is defined by Dodge (2003, cited in Wikipedia, [s.a]c) as the process of applying statistical methods in order to draw conclusions from sets of data that arise from systems affected by random variation. Upton and Cook (2008, as cited in Wikipedia [s.a]c) write that some of the sources of such variation are observational errors, random sampling, or random experimentation. In this study, inferences have been made for the different dependent variables.

**Table 4.39:** Association of selected variables with Ever had been tested for HIV before diagnosed for TB among TB patients in Addis Ababa City Administration, July 2011. n=826

Variable	Ever been tested for HIV before diagnosed for TB		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (445)	No (381)		
<b>Age Group</b>				
15-17	19	17	1.00	1.00
18-24	108	112	0.86(0.43-1.75)	0.83(0.39-1.73)
25-29	122	71	1.54(0.75-3.15)	1.54(0.71-3.34)
30-39	129	101	1.14(0.57-2.31)	1.12(0.51-2.47)
40-49	42	38	0.99(0.45-2.17)	1.10(0.45-2.59)
50+	25	42	0.53(0.23-1.21)	0.68(0.28-1.68)
<b>Marital Status</b>				
Single	192	161	1.00	1.00
Married	204	179	0.96(0.72-1.28)	1.10(0.76-1.58)
Divorced	29	19	1.28(0.69-2.37)	1.39(0.72-2.71)
Widowed	11	16	0.58(0.26-1.28)	0.84(0.35-2.01)
Separated	9	6	1.26(0.44-3.61)	1.49(0.49-4.50)
<b>Educational Status</b>				
Illiterate	79	99	1.00	1.00
Primary (1-6)	116	111	1.31(0.88-1.94)	1.27(0.82-1.96)
Secondary (7-12)	207	135	1.92(1.33-2.77)	1.89(1.22-2.91)
Tertiary (12+)	43	36	1.49(0.88-2.55)	1.47(0.79-2.72)
<b>Occupation</b>				
Housewife	73	74	1.00	1.00
Government employed	33	27	1.24(0.68-2.26)	0.93(0.48-1.81)
Non government	12	11	1.11(0.46-2.67)	0.77(0.30-1.95)
Private employee	120	79	1.54(1.00-2.37)	1.36(0.85-2.18)
Self employed/merchant	66	50	1.34(0.82-2.18)	1.13(0.66-1.91)
Unemployed	115	114	1.02(0.68-1.55)	0.99(0.62-1.57)
Other	26	26	1.01(0.54-1.91)	1.13(0.56-2.27)

As shown in Table 4.39 above, age group, occupation and marital status did not have significant association with being tested for HIV before they had been diagnosed with TB. In addition, occupation seems to have no statistical significant difference for being tested for HIV before TB disease, except for those who learnt up to secondary

education, who were nearly twice as likely to have been tested for HIV [AOR (95%CI): 1.89(1.22-2.91) than the illiterate patients. Otherwise, no other variables showed any significant association with the dependent variable under analysis.

**Table 4.40:** Association of selected variables with *Ever been offered for HIV test during TB treatment among TB patients* in Addis Ababa City Administration, July 2011. n=834

Variable	Ever been offered for HIV test during TB treatment		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (726)	No (108)		
<b>Age Group</b>				
15-17	23	13	1.00	1.00
18-24	194	29	3.78(1.73-8.28)	4.56(1.93-10.77)
25-29	170	25	3.84(1.73-8.55)	4.19(1.67-10.56)
30-39	208	23	5.11(2.29-11.43)	4.72(1.78-12.51)
40-49	75	5	8.48(2.73-26.31)	7.84(2.18-28.21)
50+	56	13	2.45(0.98-6.04)	2.32(0.78-6.89)
<b>Marital Status</b>				
Single	298	59	1.00	1.00
Married	348	38	1.81(1.17-2.80)	1.65(0.96-2.84)
Divorced	42	6	1.39(0.56-3.41)	1.29(0.49-3.43)
Widowed	24	4	1.19(0.39-3.55)	1.38(0.40-4.72)
Separated	14	1	2.77(0.36-21.49)	2.43(0.29-20.00)
<b>Religion</b>				
Christian	590	84	1.00	1.00
Muslim	136	24	0.81(0.49-1.32)	0.89(0.52-1.49)
<b>Educational Status</b>				
Illiterate	154	25	1.00	1.00
Primary (1-6)	196	36	0.88(0.51-1.54)	1.19(0.63-2.25)
Secondary (7-12)	304	40	1.23(0.72-2.11)	1.67(0.87-3.20)
Tertiary (12+)	72	7	1.67(0.69-4.04)	1.82(0.68-4.89)
<b>Occupation</b>				
Housewife	135	12	1.00	1.00
Government employed	57	4	1.27(0.39-4.09)	0.99(0.28-3.46)
Non government	21	2	0.93(0.19-4.47)	0.76(0.15-3.85)
Private employee	171	30	0.51(0.25-1.03)	0.51(0.23-1.09)
Self employed/merchant	105	13	0.72(0.32-1.64)	0.66(0.27-1.58)
Unemployed	190	41	0.41(0.21-0.81)	0.53(0.25-1.13)
Other	47	6	0.69(0.25-1.96)	1.36(0.43-4.30)

Comparing the above figures among the various age categories, those who were 18-24, 25-29, 30-39 and 40-49 years were 4.56, 4.19, 4.72 and 7.84 times more likely to have been offered for HIV test than those of 15-17 years of age [AOR (95%CI): 4.56(1.93-10.77), 4.19(1.67-10.56), 4.72(1.78-12.51) and 7.84(2.18-28.21)], respectively. None of the remaining independent variables showed significant differences on the adjusted odds ratio. HIV counselling and testing (HCT) is being offered by informed consent for all TB patients in Addis Ababa City Administration public health facilities. Those under

the age of 18 years were also offered HCT services through the consent of their guardians (AACAHB, 2009). Care givers for age group 15-17 years responded for most of the previous treatment services offered on their behalf.

**Table 4.41:** Association of selected variables with *is HIV testing offered at TB clinics among TB patients in Addis Ababa City Administration, July 2011. n=834*

Variable	Is HIV testing offered at TB clinic		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (726)	No (108)		
<b>Age Group</b>				
15-17	23	13	1.00	1.00
18-24	194	29	4.11(1.41-11.99)	4.43(1.87-10.49)
25-29	170	25	2.61(0.93-7.29)	4.05(1.60-10.23)
30-39	208	23	2.99(1.08-8.28)	4.46(1.67-11.95)
40-49	75	5	6.52(1.51-28.15)	7.23(1.97-26.52)
50+	56	13	3.59(0.93-13.91)	2.06(0.66-6.44)
<b>Sex</b>				
Male	319	45	1.00	1.00
Female	407	63	0.98(0.58-1.67)	0.85(0.52-1.37)
<b>Marital Status</b>				
Single	298	59	1.00	1.00
Married	348	38	2.04(1.14-3.67)	1.66(0.97-2.86)
Divorced	42	6	0.94(0.35-2.55)	1.37(0.51-3.68)
Widowed	24	4	1.29(0.29-5.72)	1.47(0.42-5.09)
Separated	14	1	1.46(0.19-11.51)	2.61(0.31-21.71)
<b>Religion</b>				
Christian	590	84	1.00	1.00
Muslim	136	24	0.83(0.44-1.58)	0.88(0.52-1.49)
<b>Educational Status</b>				
Illiterate	154	25	1.00	1.00
Primary (1-6)	196	36	0.69(0.32-1.50)	1.17(0.62-2.21)
Secondary (7-12)	304	40	0.89(0.43-1.88)	1.63(0.85-3.13)
Tertiary (12+)	72	7	1.02(0.34-3.05)	1.76(0.65-4.75)
<b>Occupation</b>				
Housewife	135	12	1.00	1.00
Government employed	57	4	1.28(0.33-4.89)	0.90(0.25-3.25)
Non government	21	2	0.71(0.14-3.49)	0.71(0.14-3.67)
Private employee	171	30	0.82(0.35-1.95)	0.47(0.21-1.04)
Self employed/merchant	105	13	0.69(0.27-1.77)	0.59(0.24-1.49)
Unemployed	190	41	0.59(0.27-1.35)	0.49(0.23-1.08)
Other	47	6	3.02(0.37-24.52)	1.27(0.39-4.09)

Comparing being offered for HIV test at TB clinic among the various age categories; those who were 18-24, 25-29, 30-39 and 40-49 years were 4.43, 4.05, 4.46 and 7.23 times more likely to had been offered for HIV test than those of 15-17 years of age [AOR (95%CI):4.43(1.87-10.49), 4.05(1.60-10.23), 4.46(1.67-11.95) and 7.23(1.97-

26.52)], respectively. None of the remaining independent variables showed significant differences on the adjusted odds ratio.

**Table 4.42:** Association of selected variables with 'Is screening for TB offered at HIV clinics among HIV patients?' in Addis Ababa City Administration, July 2011. n=819

Variable	Is screening for TB offered at HIV clinic		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (788)	No (31)		
<b>Sex</b>				
Male	240	9	1.00	1.00
Female	548	22	0.93(0.42-2.06)	1.00(0.44-2.29)
<b>Marital Status</b>				
Single	180	10	1.00	1.00
Married	387	12	1.79(0.76-4.22)	1.89(0.79-4.50)
Divorced	77	1	4.28(0.54-33.99)	4.55(0.57-36.34)
Widowed	117	5	1.28(0.43-3.83)	1.42(0.45-4.47)
Separated	29	3	0.54(0.14-2.07)	0.56(0.14-2.21)
<b>Educational Status</b>				
Illiterate	179	7	1.00	1.00
Primary (1-6)	227	12	0.74(0.29-1.92)	0.69(0.26-1.86)
Secondary (7-12)	305	10	1.19(0.45-3.19)	1.19(0.42-3.39)
Tertiary (12+)	77	2	1.51(0.31-7.41)	1.52(0.29-7.98)

There was no significant association of being offered TB screening among the various socio-demographic characteristics. Being divorced, married and widowed were more likely to be screened than those who were single in their marital status. In addition, the higher the educational status of study participants the more likely to be screened, despite the association being non-significant.

**Table 4.43:** Association of selected variables with *Ever been provided with CPT at TB clinics among TB patients* in Addis Ababa City Administration, July 2011. n=834

Variable	Ever been provided with CPT		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (111)	No (723)		
<b>Age Group</b>				
15-17	2	34	1.00	1.00
18-24	9	214	0.72(0.15-3.45)	0.73(0.15-3.67)
25-29	23	172	2.27(0.51-10.09)	2.51(0.53-11.95)
30-39	48	183	4.46(1.03-19.22)	4.86(1.01-23.33)
40-49	23	57	6.86(1.52-30.93)	7.19(1.40-36.96)
50+	6	63	1.62(0.31-8.46)	1.59(0.26-9.63)
<b>Sex</b>				
Male	44	320	1.00	1.00
Female	67	403	1.21(0.80-1.82)	1.07(0.63-1.81)
<b>Marital Status</b>				
Single	32	325	1.00	1.00
Married	52	334	1.58(0.99-2.52)	1.04(0.59-1.81)
Divorced	13	35	3.77(1.81-7.85)	1.65(0.73-3.73)
Widowed	10	18	5.64(2.40-13.26)	2.79(1.01-7.79)
Separated	4	11	3.69(1.11-12.27)	1.81(0.49-6.76)
<b>Religion</b>				
Christian	98	576	1.00	1.00
Muslim	13	147	0.52(0.28-0.95)	0.64(0.33-1.22)
<b>Educational Status</b>				
Illiterate	31	148	1.00	1.00
Primary (1-6)	26	206	0.60(0.34-1.06)	0.85(0.45-1.59)
Secondary (7-12)	47	297	0.76(0.46-1.24)	1.25(0.68-2.32)
Tertiary (12+)	7	72	0.46(0.19-1.11)	0.70(0.26-1.91)
<b>Occupation</b>				
Housewife	22	125	1.00	1.00
Government employed	7	54	0.74(0.29-1.83)	0.59(0.21-1.69)
Non government	4	19	1.19(0.37-3.85)	1.11(0.31-3.92)
Private employee	19	182	0.59(0.31-1.14)	0.65(0.30-1.41)
Self employed/merchant	17	101	0.96(0.48-1.89)	0.83(0.37-1.85)
Unemployed	40	191	1.19(0.68-2.09)	1.71(0.86-3.38)
Other	2	51	0.22(0.05-0.98)	0.49(0.10-2.36)

Comparing the figures among the various age categories, those who were 30-39 and 40-49 years were 4.05 and 7.19 times more likely to had been offered for HIV test than those of 15-17 years of age [AOR (95%CI): 4.86(1.01-23.33) and 7.19(1.40-36.96)], respectively. In addition, being widowed, from the marital status, was about 2.79 times more likely to have been provided with CPT than those who were single [AOR (95%CI): 2.79(1.01-7.79)]. None of the remaining independent variables showed significant association on the adjusted odds ratio.

**Table 4.44:** Association of selected variables with *Ever been provided with IPT at HIV clinics among HIV patients in Addis Ababa City Administration, July 2011. n=849*

Variable	Ever been provided with IPT		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (244)	No (605)		
<b>Age Group</b>				
15-17	2	9	1.00	1.00
18-24	28	82	1.54(0.31-7.54)	1.03(0.19-5.42)
25-29	57	141	1.82(0.38-8.68)	1.15(0.22-6.06)
30-39	108	226	2.15(0.46-10.12)	1.30(0.25-6.86)
40-49	34	92	1.66(0.34-8.09)	1.01(0.18-5.63)
50+	15	55	1.23(0.24-6.29)	0.79(0.13-4.69)
<b>Sex</b>				
Male	64	193	1.00	1.00
Female	180	412	1.32(0.95-1.84)	1.29(0.84-1.98)
<b>Marital Status</b>				
Single	48	150	1.00	1.00
Married	129	286	1.41(0.96-2.07)	1.19(0.77-1.85)
Divorced	16	64	0.78(0.41-1.48)	0.65(0.33-1.27)
Widowed	40	84	1.49(0.91-2.45)	1.35(0.75-2.43)
Separated	11	21	1.64(0.74-3.64)	1.53(0.65-3.61)
<b>Religion</b>				
Christian	202	499	1.00	1.00
Muslim	42	106	0.98(0.66-1.45)	1.04(0.66-1.63)
<b>Ethnicity</b>				
Amhara	132	301	1.00	1.00
Oromo	55	162	0.77(0.54-1.12)	0.78(0.53-1.13)
Gurage	26	74	0.80(0.49-1.31)	0.77(0.44-1.32)
Tigre	25	56	1.02(0.61-1.70)	1.06(0.62-1.81)
Other	6	12	1.14(0.42-3.10)	1.31(0.46-3.76)
<b>Educational Status</b>				
Illiterate	58	139	1.00	1.00
Primary (1-6)	74	173	1.03(0.68-1.54)	1.05(0.68-1.61)
Secondary (7-12)	89	236	0.90(0.61-1.34)	0.96(0.62-1.48)
Tertiary (12+)	23	57	0.97(0.55-1.72)	1.02(0.50-2.05)
<b>Occupation</b>				
Housewife	57	111	1.00	1.00
Government employed	21	47	0.87(0.48-1.59)	1.05(0.49-2.25)
Non government	8	21	0.74(0.31-1.78)	0.93(0.37-2.35)
Private employee	42	111	0.74(0.46-1.19)	0.91(0.53-1.56)
Self employed/merchant	47	112	0.82(0.51-1.30)	1.05(0.61-1.81)
Unemployed	63	162	0.76(0.49-1.17)	0.84(0.53-1.35)
Other	6	41	0.29(0.11-0.71)	0.35(0.13-0.93)

Provision of IPT among the various socio-demographic variables did not show any association (Table 4.44).

**Table 4.45:** Association of selected variables with *Ever had been diagnosed for TB before HIV positive among HIV patients* in Addis Ababa City Administration, July 2011. n=843

Variable	Ever been diagnosed for TB before HIV-positive		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (167)	No (676)		
<b>Sex</b>				
Male	67	188	1.00	1.00
Female	100	488	0.58(0.40-0.82)	0.52(0.34-0.79)
<b>Marital Status</b>				
Single	35	161	1.00	1.00
Married	73	338	0.99(0.64-1.55)	1.09(0.67-1.75)
Divorced	24	56	1.97(1.08-3.59)	2.23(1.19-4.19)
Widowed	30	94	1.47(0.85-2.55)	1.75(0.97-3.17)
Separated	5	27	0.85(0.31-2.37)	0.91(0.32-2.62)
<b>Religion</b>				
Christian	144	555	1.00	1.00
Muslim	23	121	0.73(0.45-1.19)	0.74(0.43-1.28)
<b>Ethnicity</b>				
Amhara	82	348	1.00	1.00
Oromo	48	166	1.23(0.82-1.83)	1.30(0.86-1.97)
Gurage	21	79	1.13(0.66-1.93)	1.35(0.73-2.47)
Tigre	14	67	0.89(0.48-1.66)	0.86(0.45-1.65)
Other	2	16	0.53(0.12-2.35)	0.63(0.14-2.89)
<b>Educational Status</b>				
Illiterate	35	160	1.00	1.00
Primary (1-6)	46	199	1.06(0.65-1.72)	0.99(0.60-1.66)
Secondary (7-12)	74	251	1.35(0.86-2.11)	1.29(0.79-2.13)
Tertiary (12+)	12	66	0.83(0.41-1.70)	0.58(0.24-1.38)
<b>Occupation</b>				
Housewife	24	140	1.00	1.00
Government employed	18	49	2.14(1.07-4.28)	1.79(0.76-4.25)
Non government	6	22	1.59(0.59-4.33)	1.05(0.36-3.06)
Private employee	24	129	1.09(0.59-2.01)	0.74(0.37-1.48)
Self employed/merchant	38	121	1.83(1.04-3.23)	1.20(0.63-2.29)
Unemployed	48	177	1.58(0.92-2.71)	1.29(0.73-2.31)
Other	9	38	1.38(0.59-3.22)	1.26(0.50-3.13)

Females were less likely than males to have been diagnosed for TB before HIV-positive by 48% [AOR (95%CI): 0.52(0.34-0.79)]. In addition, those who were divorced were about twice as likely to have been diagnosed for TB than those who were single [AOR (95%CI):2.23(1.19-4.19)]. However, the other variables did not show any significant association with the dependent variable under analysis.

**Table 4.46:** Association of selected variables with *Ever had been diagnosed for TB after HIV-positive among HIV patients in Addis Ababa City Administration, July 2011. n=849*

Variable	Ever been diagnosed for TB after HIV-positive		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (88)	No (761)		
<b>Sex</b>				
Male	32	225	1.00	1.00
Female	56	536	0.74(0.46-1.17)	0.64(0.36-1.14)
<b>Marital Status</b>				
Single	13	185	1.00	1.00
Married	46	369	1.77(0.94-3.37)	1.54(0.78-3.04)
Divorced	10	70	2.03(0.85-4.85)	2.03(0.82-4.99)
Widowed	16	108	2.11(0.98-4.55)	2.03(0.89-4.64)
Separated	3	29	1.47(0.39-5.48)	1.51(0.39-5.91)
<b>Religion</b>				
Christian	71	630	1.00	1.00
Muslim	17	131	1.15(0.66-2.02)	1.14(0.60-2.14)
<b>Ethnicity</b>				
Amhara	43	390	1.00	1.00
Oromo	21	196	0.97(0.56-1.68)	0.98(0.56-1.71)
Gurage	8	92	0.79(0.36-1.73)	0.84(0.36-1.98)
Tigre	12	69	1.58(0.79-3.14)	1.47(0.71-3.04)
Other	4	14	2.59(0.82-8.23)	2.74(0.80-9.33)
<b>Educational Status</b>				
Illiterate	26	171	1.00	1.00
Primary (1-6)	21	226	0.61(0.33-1.12)	0.62(0.33-1.17)
Secondary (7-12)	28	297	0.62(0.35-1.09)	0.65(0.35-1.21)
Tertiary (12+)	13	67	1.28(0.62-2.63)	1.20(0.46-3.11)
<b>Occupation</b>				
Housewife	21	147	1.00	1.00
Government employed	11	57	1.35(0.61-2.98)	0.82(0.28-2.38)
Non government	1	28	0.25(0.03-1.94)	0.21(0.03-1.78)
Private employee	17	136	0.88(0.44-1.73)	0.78(0.35-1.73)
Self employed/merchant	15	144	0.73(0.36-1.47)	0.67(0.29-1.52)
Unemployed	21	204	0.72(0.38-1.37)	0.71(0.36-1.42)
Other	2	45	0.31(0.07-1.38)	0.31(0.07-1.48)

Being diagnosed for TB after HIV-positive did not show any significant association among all socio-demographic variables in both adjusted and crude odds ratio (Table 4.46).

**Table 4.47:** Association of selected variables with *Knowledge about CPT among TB/HIV patients in Addis Ababa City Administration, July 2011. n=834*

Variable	Do you know about CPT		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (193)	No (641)		
<b>Age Group</b>				
15-17	2	34	1.00	1.00
18-24	9	214	1.08(0.31-3.85)	1.18(0.32-4.29)
25-29	23	172	3.69(1.08-12.57)	4.43(1.23-16.01)
30-39	48	183	5.72(1.70-19.23)	7.02(1.90-25.89)
40-49	23	57	6.26(1.76-22.20)	7.68(1.95-30.34)
50+	6	63	2.55(0.68-9.63)	3.45(0.82-14.59)
<b>Sex</b>				
Male	44	320	1.00	1.00
Female	67	403	0.98(0.71-1.35)	1.06(0.69-1.59)
<b>Marital Status</b>				
Single	32	325	1.00	1.00
Married	52	334	1.07(0.75-1.52)	0.72(0.46-1.12)
Divorced	13	35	3.35(1.79-6.25)	1.79(0.89-3.62)
Widowed	10	18	2.97(1.35-6.55)	1.87(0.75-4.69)
Separated	4	11	1.98(0.66-5.97)	0.85(0.26-2.80)
<b>Religion</b>				
Christian	98	576	1.00	1.00
Muslim	13	147	0.49(0.31-0.80)	0.65(0.39-1.09)
<b>Educational Status</b>				
Illiterate	31	148	1.00	1.00
Primary (1-6)	26	206	0.78(0.49-1.25)	1.09(0.64-1.86)
Secondary (7-12)	47	297	0.89(0.59-1.38)	1.27(0.75-2.16)
Tertiary (12+)	7	72	1.74(0.98-3.08)	2.08(1.02-4.25)
<b>Occupation</b>				
Housewife	22	125	1.00	1.00
Government employed	7	54	1.69(0.87-3.31)	1.03(0.47-2.26)
Non government	4	19	3.43(1.38-8.51)	2.14(0.79-5.79)
Private employee	19	182	0.74(0.43-1.27)	0.64(0.34-1.21)
Self employed/merchant	17	101	1.33(0.75-2.36)	0.96(0.49-1.89)
Unemployed	40	191	1.34(0.82-2.19)	1.55(0.86-2.79)
Other	2	51	0.57(0.23-1.38)	0.92(0.34-2.47)

Comparing knowledge about CPT among TB patients across the various age categories, those who were 20-29, 30-39 and 40-49 years were 4.43, 7.02 and 7.68 times more likely to had been informed about CPT than those of 15-17 years of age [AOR (95%CI): 4.43(1.23-16.01), 7.02(1.90-25.89) and 7.68(1.95-30.34)], respectively. In addition, being divorced and widowed, from the marital status, were about 1.79 and 1.87 times more likely to had been informed about CPT than those who were single, [AOR (95%CI): 1.79(0.89-3.62) and 1.87(0.75-4.69)]. In addition, those who had educational status of tertiary were about twice as likely to knew about CPT than those who were illiterate [AOR (95%CI): 2.08(1.02-4.25)] .

**Table 4.48:** Association of selected variables with *Knowledge about IPT among TB/HIV patients* in Addis Ababa City Administration, July 2011. n=849

Variable	Do you know about IPT		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (359)	No (490)		
<b>Age Group</b>				
15-17	3	8	1.00	1.00
18-24	38	72	1.41(0.35-5.62)	1.02(0.24-4.35)
25-29	77	121	1.69(0.44-6.59)	1.19(0.28-5.08)
30-39	161	173	2.48(0.65-9.52)	1.64(0.39-6.98)
40-49	54	72	2.00(0.51-7.89)	1.36(0.30-6.09)
50+	26	44	1.58(0.38-6.47)	1.18(0.25-5.54)
<b>Sex</b>				
Male	103	154	1.00	1.00
Female	256	336	1.14(0.85-1.53)	1.33(0.90-1.95)
<b>Marital Status</b>				
Single	74	124	1.00	1.00
Married	182	233	1.31(0.93-1.85)	1.08(0.73-1.61)
Divorced	32	48	1.12(0.66-1.90)	0.87(0.49-1.55)
Widowed	58	66	1.47(0.93-2.32)	1.26(0.73-2.18)
Separated	13	19	1.15(0.54-2.46)	0.99(0.44-2.25)
<b>Religion</b>				
Christian	299	402	1.00	1.00
Muslim	60	88	0.92(0.64-1.32)	1.06(0.70-1.60)
<b>Ethnicity</b>				
Amhara	192	241	1.00	1.00
Oromo	83	134	0.78(0.56-1.09)	0.78(0.55-1.09)
Gurage	39	61	0.80(0.52-1.25)	0.81(0.49-1.32)
Tigre	38	43	1.11(0.69-1.79)	1.09(0.67-1.79)
Other	7	11	0.79(0.30-2.10)	0.86(0.31-2.39)
<b>Educational Status</b>				
Illiterate	78	119	1.00	1.00
Primary (1-6)	105	142	1.13(0.77-1.65)	1.15(0.77-1.72)
Secondary (7-12)	133	192	1.06(0.74-1.52)	1.10(0.74-1.65)
Tertiary (12+)	43	37	1.77(1.05-2.99)	1.79(0.95-3.40)
<b>Occupation</b>				
Housewife	75	93	1.00	1.00
Government employed	35	33	1.32(0.75-2.31)	1.12(0.55-2.26)
Non government	16	13	1.53(0.69-3.37)	1.61(0.69-3.74)
Private employee	61	92	0.82(0.53-1.28)	0.95(0.57-1.57)
Self employed/merchant	69	90	0.95(0.61-1.47)	1.08(0.65-1.78)
Unemployed	92	133	0.86(0.57-1.29)	0.92(0.59-1.43)
Other	11	36	0.38(0.18-0.79)	0.46(0.21-1.02)

Knowledge of IPT by TB/HIV patients did not have any association with any of the socio-demographic characteristics in the adjusted odds ratio. However, study participants who learnt up to tertiary level, educationally, were about 1.77 times more

likely to know about IPT than those of illiterates on crude odds ratio [AOR (95%CI): 1.77(1.05-2.99)].

**Table 4.49:** Association of selected variables with *Ever had been tested for HIV before diagnosed for TB among TB patients in Addis Ababa City Administration, July 2011. n=826*

Variable	Ever been tested for HIV before diagnosed for TB		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (445)	No (381)		
<b>How long have you been diagnosed for TB?</b>				
Less than 2 months	199	193	1.00	1.00
2-5 months	177	140	1.23(0.91-1.65)	1.24(0.92-1.67)
6-8 months	44	34	1.26(0.77-2.05)	1.24(0.76-2.02)
More than 8 months	25	14	1.73(0.87-3.43)	1.72(0.87-3.42)
<b>Ever been offered for HIV test during TB treatment</b>				
Yes	377	341	1.00	1.00
No	68	40	1.54(1.01-2.33)	1.54(1.01-2.34)

Those who were not offered for HIV test during TB treatment were about 1.5 times more likely to had been tested for HIV before being diagnosed for TB than those who were offered during their TB treatment [AOR (95%CI): 1.54 (1.01-2.34)].

**Table 4.50:** Association of selected variables with *Ever had been diagnosed for TB after HIV-positive for HIV patients* in Addis Ababa City Administration, July 2011. n=849

Variable	Ever been diagnosed for TB after HIV-positive		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (88)	No (761)		
<b>How long have you been diagnosed for HIV?</b>				
Less than 6 months	7	117	1.00	1.00
6 -11 months	5	86	0.97(0.29-3.17)	0.83(0.24-2.89)
1-3 years	30	270	1.86(0.79-4.35)	0.82(0.26-2.53)
More than 3 years	46	288	2.67(1.17-6.08)	1.11(0.35-3.49)
<b>How long have you been on HAART?</b>				
Less than 6 months	7	142	1.00	1.00
6 months-1 year	9	96	1.90(0.69-5.28)	2.18(0.66-7.14)
More than 1 year	63	388	3.29(1.47-7.36)	3.53(1.17-10.65)
Not yet started	9	135	1.35(0.49-3.73)	1.29(0.45-3.72)
<b>Ever been diagnosed for TB before HIV-positive</b>				
Yes	7	160	1.00	1.00
No	79	597	3.03(1.37-6.68)	3.78(1.69-8.43)
Do not remember	2	4	11.43(1.78-73.30)	14.71(2.17-99.54)

HIV-positive study participants who had been on HAART for more than one year were about 3.5 times more likely to have been diagnosed with TB after their HIV-positive test result than those of less than six months on HAART [AOR (95%CI): 3.53(1.17-10.65)], which is statistically significant. In addition, those HIV patients who had never been diagnosed for TB before being HIV-positive were about 3.8 times more likely to have been diagnosed for TB after their HIV-positive test result than those who had been diagnosed for TB before their HIV-positive status [AOR (95%CI): 3.78(1.69-8.43)].

In addition these figures, those who knew their HIV-positive status for more than three years were about 2.7 times more likely to have been diagnosed for TB after their HIV-positive status than those who knew for less than six months on crude odds ratio.

**Table 4.51:** Association of selected variables with *Ever had been diagnosed for TB before HIV-positive for HIV patients* in Addis Ababa City Administration, July 2011. n=843

Variable	Ever been diagnosed for TB before HIV-positive		Unadjusted Odds Ratio(95%CI)	Adjusted Odds Ratio(95%CI)
	Yes (167)	No (676)		
<b>How long have you been diagnosed for HIV?</b>				
Less than 6 months	13	111	1.00	1.00
6 -11 months	12	79	1.29(0.56-2.99)	1.11(0.47-2.64)
1-3 years	55	242	1.94(1.02-3.69)	1.13(0.49-2.58)
More than 3 years	87	244	3.04(1.63-5.69)	1.64(0.71-3.79)
<b>How long have you been on HAART?</b>				
Less than 6 months	18	130	1.00	1.00
6 months-1 year	19	85	1.61(0.80-3.25)	1.51(0.67-3.39)
More than 1 year	114	334	2.47(1.44-4.22)	1.88(0.89-3.97)
Not yet started	16	127	0.91(0.44-1.86)	0.84(0.40-1.77)

On crude odds ratio logistic regression analysis, the longer the time to know HIV-positive status the greater the chance of being diagnosed for TB before their HIV-positive status. In addition, the longer on HAART the higher the chance of being diagnosed with TB before their knowledge of positive status. However, on the adjusted odds ratio there is hardly any association observed for being diagnosed for TB before HIV-positive status.

#### 4.5.4 Data from healthcare providers and/or facility TB/HIV coordinators

The findings from interviewer administered TB/HIV care providers and/or facility TB/HIV care coordinators' quantitative data is presented in the following sub-sections.

##### 4.5.4.1 Socio-demographic characteristics of study participants

**Table 4.52:** Socio-demographic characteristics of TB/HIV collaborative activity health facility coordinators and TB/HIV care providers, Addis Ababa City Administration. n=10

Age	Sex	Profession	Number of yrs of service in TB/HIV clinic
Average – 42.2 yrs	Male – 4	Medical Doctor - 1	Average – 2yrs+10mons
Minimum – 26 yrs	Female – 6	Nurse - 9	Minimum – 1yr
Maximum – 54 yrs			Maximum – 6 yrs

As shown in Table 4.52, most of the TB/HIV service providers were nurses and female. The average age was 42.2 years, which showed they had been highly experienced in other programmes before engaging in TB/HIV collaborative activities. However, their average length of experience in TB/HIV care service was slightly less than 3 years (2 years and 10 months), with minimum and maximum of 1 and 6 years, respectively.

#### **4.5.4.2 Implementation Status of collaborative TB and HIV Care services**

The TB/HIV policy (WHO, 2012a) recommends the establishment of a coordinating body; surveillance of HIV prevalence among TB patients; joint TB/HIV planning; and monitoring and evaluation. According to the participants in this study, eight of the ten study health facilities have functional coordinating body for TB/HIV activities effective at their health facility level. In all the eight health facilities, representatives from the TB clinic and HIV care clinics were in attendance. However, only in two of these facilities were representatives from partner organisations (NGOs) and sub-city health departments in attendance on the coordinating body. Surveillance of HIV prevalence among TB patients has not been conducted in any of the study health facilities at any time. In addition, in all of the eight health facilities that had a TB/HIV coordinating body, joint TB/HIV planning, monitoring and evaluation for activities have been conducted regularly.

All of the study TB/HIV collaborative activities health facility coordinators mentioned that they were providing services of routine screening for coughing of more than two weeks for HIV patients, routine diagnosis of tuberculosis being, based on cardinal signs for each of the HIV patients at their follow-up visits and prompt treatment being given for all confirmed TB cases among PLHIV within the health facility.

All but one of the ten participants from the study health facilities reported that they were providing IPT for all PLHIV having latent TB. Regarding TB infection control in the health facilities, six out of the ten health facilities' TB/HIV clinics had ventilation of rooms and enough waiting area for HIV-positive patients to prevent transmission of TB in health facilities; whereas, in only four of the health facilities, healthcare providers used personal protective masks to prevent transmission of TB for themselves and to patients. According to the report from the study participants, all except one health facilities provided regular health education to HIV-positive and/or TB patients about TB transmission and prevention at a session.

All interviewed health workers from the ten study health facilities reported that all TB patients were being offered HIV counselling and testing services, whilst all health workers at TB clinics in the health facilities conveyed messages of safer and more responsible sexual behaviour to reduce transmission of HIV. In addition, all health workers at the health facilities practiced measures to ensure the safety of the blood supply and medical equipments to reduce transmission of HIV. In addition, all participants reported that health facilities were providing ART treatment or prophylaxis for pregnant women infected with HIV for TB suspects and patients.

Concerning CPT, all health workers responded that their respective study health facilities had established a system to provide CPT to eligible PLHIV for those with active TB.

In addition, all the study health facilities ensured a continuum of care and support for people living with HIV during and after TB treatment, created mechanisms to provide ART to eligible TB patients and ensured continuity of ART after completion of TB treatment.

#### **4.6 CONCLUSION**

This chapter has presented the analysis, interpretation, and discussion of the quantitative data from both patients and healthcare providers. The presentation began with an introduction to the chapter and review of research questions of the study. The findings of the study were presented in the order stated on the questionnaires.

Both descriptive and inferential statistics were applied for data presentation, analysis and discussion. For descriptive analysis, data was analysed by person, place and time. Tables and graphs were widely used for presentation of data for these statistics.

On the other hand, inferential statistics were applied to draw inferences (cause and effect relationships) from associations of dependent variables against the various independent variables. Those variables with significant associations have been analysed and interpreted in comparison with similar research conducted elsewhere. Tables were extensively used to present data from inferential analysis.

Quantitative data from interviews of healthcare providers for TB/HIV care was presented, but only with descriptive statistics as the sample size was very small.

In the next chapter, the qualitative data is presented, analysed, interpreted and discussed in detail.

# **CHAPTER FIVE**

## **QUALITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION**

### **5.1 INTRODUCTION**

In this chapter, the findings on the qualitative study are presented, interpreted, analysed, discussed in detail. The chapter begins with an introduction then describes how the various qualitative questionnaires were administered. In addition, the qualitative findings were presented in themes and sub-themes. Finally, the findings of the qualitative data are described under sub-sections. The chapter will be summarised by key findings from the qualitative research.

Qualitative research is much more subjective than quantitative research and uses very different methods of collecting information, mainly individual, in-depth interviews and focus groups discussions. The nature of this type of research is exploratory and open-ended. Small numbers of people are interviewed in depth and/or a relatively small number of focus groups discussions are conducted (GuideStar, [s.a]).

The research objectives for the qualitative research were:

- Describe implementation status of collaborative TB and HIV care services (qualitative findings).
- Identify how programme implementation impacts on both TB and HIV patients.
- Identify how programme implementation impacts on staff development.
- Describe the programme implementation in relation to infrastructure.
- Recommend to policymakers and practitioners the technical basis to guide the implementation of collaborated TB/HIV activities based on findings of this study.

In this chapter, the qualitative findings which answer the exploratory research questions are presented.

The findings from interview of patients, healthcare providers, and coordinators of collaborative TB/HIV activities from regional health bureau (Addis Ababa City Administration) and health facility levels are discussed. Focus group discussions among patients are presented and discussed in the following sections.

## 5.2 ADMINISTRATION OF INTERVIEW GUIDES

The qualitative part for interview of patients, coordinators of health facility TB/HIV collaborative activities/health workers and focus group discussions were conducted by the researcher and supervisor of overall data collection process with the assistance of a note-taker. However, the regional TB/HIV coordinator was interviewed by the researcher alone using TB/HIV monitoring tool (WHO, 2006b).

The researcher took samples for short answer qualitative data for both TB and HIV patients conveniently, meaning, selected patients (keen on open-ended questions and able to respond evocatively) from those who had participated on the quantitative sections (part I-III) and were enrolled directly for part IV of the qualitative section (ANNEXURES F and G). The questionnaires for TB and HIV patients were similar, but designed in a different way based on their disease conditions, and purposefully to gather information for activities to decrease the burden of TB/HIV with respect to their current disease. The response rate for patient interviews among the total approached TB and HIV patients is presented in Table 5.1.

In addition, all 10 health facilities' collaborative TB/HIV care coordinators and/or (coordinators are also service providers of collaborative TB/HIV care) health workers were interviewed. In addition, eight out of the 10 planned FGDs were conducted among TB and HIV patients separately, which gives a response rate of 90%.

Data is presented according to the sequence of questions as it appeared on part IV of the short answered qualitative part for each of the groups of TB and HIV patients individually. On the other hand, ten interviews among TB/HIV collaborative activity coordinators/health workers of the health facilities and eight FGDs among the TB and HIV patients (each of four FGDs) were presented, based on the interview questions in themes and sub-themes. In addition, for the overall city administration, using the WHO TB/HIV monitoring tool (WHO, 2006b), data was collected to gather the overall regional TB/HIV collaborative activity implementation status by interviewing the regional TB/HIV collaborative activity coordinator.

### 5.3 RESPONSE RATE

**Table 5.1:** Response rate for the qualitative study, Addis Ababa City Administration, August 2011

<b>Data type</b>	<b>Number of questionnaires or sessions administered</b>	<b>Number of questionnaire or sessions completed or conducted</b>	<b>Percent (%)</b>	<b>Reason for difference</b>
Qualitative short answer interview questionnaire of HIV patients	865	843	97.5	No response or interrupted
Qualitative short answer interview questionnaire of TB patients	865	807	93.3	No response or interrupted
Qualitative FGD discussions	10	8	80.0	Saturation
Qualitative interview for health workers	10	10	100	
Qualitative interview of City Administration TB/HIV collaborative activity coordinator	1	1	100	
<b>Total number of usable questionnaires and sessions</b>	<b>1751</b>	<b>1669</b>	<b>95.3</b>	

### 5.4 DATA ANALYSIS

Analysis of the qualitative data collected from participants from interviews of patients, service providers, and TB/HIV collaborative activity coordinators are presented in the following sub-sections.

### 5.5 QUALITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION

Qualitative research is conducted by collecting, analysing and interpreting data by observing what study participants do or say. Hence, qualitative research yields very rich, detailed and valid data that gives in-depth understanding of a phenomenon.

Analysis of qualitative data relies on the continual interplay between the theoretical concepts and analysis of facts. Therefore, in analyzing qualitative data, researchers seek to discover trends in patterns of changes with time or possible causal links between study variables (Qualitative and Quantitative research, [s.a]).

### 5.5.1 Short Answered Interview Questions for Patients

In this section, 10 short answer questions for HIV patients and 7 questions for TB patients were presented to be noted the responses in short in two to three lines. The questions were, among others, as follows:

- 1) how collaborative TB/HIV service provision of health facilities affected patients' health
- 2) how patients thought health workers at TB and HIV clinics in their health facilities assisted them in improving their health regarding their HIV or TB risks and status
- 3) their opinion on whether provision of both HIV and TB care services at the same health facility was feasible or practical
- 4) their personal feelings of the service provision quality in general regarding TB and HIV in their respective health facilities
- 5) how they perceived the behaviour and performance of healthcare providers towards patients
- 6) the patients' general comments on improving the service provision of collaborative HIV and TB care in their health facilities.

In addition to these questions, participants of HIV-positive subjects were asked the approximate number of episodes of diarrhoea, upper respiratory tract infections (URTIs) and lower respiratory tract infections (LRTIs) for the preceding one year. However, the findings of numbers of episodes of morbidities of these diseases from HIV patients were not presented here. This was because data was frequently found to be too subjective and prone to recall bias.

The findings from interview of patients are presented in the thematic areas as follows.

#### **5.5.1.1 How does health facility TB/HIV service provision impact on your health?**

Various research in different countries has confirmed that a number of factors are associated with better health-related quality of life in TB/HIV patients besides healthcare delivery and including younger age, higher household income, low stigma, low depression and family support (Babikako, Neuhauser, Katamba & Mupere, 2010:93;

Deribew, Tesfaye, Hailmichael, Negussu, Daba, Wogi, Belachew, Apers & Colebunders, 2009:105; Kittikraisak, Kingkaew, Teerawattananon, Yothasamut, Natesuwan, Manosuthi, Chongsuvivatwong & Whitehead, 2012:1 e29775; Hansel, Albert, Wu, Chang & Diette 2004:639; Wig, Lekshmi, Pal, Ahuja, Mittal & Agarwa, 2006:3).

In this study, participants expressed various opinions on the impact of health facilities' services of collaborative TB/HIV care on their health. However, almost all (93.2%) of the interviewed TB and/or HIV patients reported that provision of collaborative TB and HIV services improved their health conditions. Of the responses obtained from 1579 patients, 963 (61.0%) had obtained significant improvement in their health conditions following collaborative TB/HIV care services, whereas 509 (32.2%) just appreciated services of collaborative TB/HIV, which was attributed to their better health conditions. On the other hand, 107 (6.8%) of the participants were not happy with provision of integrated TB and HIV care services.

Some patients expressed their feelings for or against the effect of collaborative TB/HIV care services on their health conditions, as follows.

A 17 year old female student HIV patient from Bole health centre said that:

*"I am absolutely healthy and it helped me to be strong and clever student on my education."*

A 21 year old female HIV patient from Lideta health centre said:

*"They (TB/HIV care service providers) have made me survive almost from my last breath; I was almost to die at my young age, thanks to God!"*

A 37 year old male HIV patient from Zewditu Memorial hospital said:

*"It helped me a lot; after I have known my HIV status, I am now protecting myself and my family."*

A 35 year female HIV patient from Menelik II hospital said:

*"There is great change on my health, initially I was depressed and anxious, but now I am taking care of myself and am very healthy."*

A 25 year old female co-infected with both TB and HIV from Yeka health centre said:

*“I was not healthy when I take anti HIV drugs alone, but after I have been diagnosed for TB and taking anti TB, I have much improvements on my health and I am now okay.”*

A 26 year old female TB patient from Lideta health centre said:

*“When I had being wasted, me and my family suspected HIV infection, but I have been diagnosed for TB only and after starting the drugs I have great improvement and found HIV negative.”*

A 40 year old female both TB and HIV patient from Zewditu Memorial hospital said:

*“I have survived because of the care of both TB and HIV which I get, but my husband has died of refusing for HIV test and the care then after.”*

A 19 year old male MDR-TB patient from Menelik II hospital said:

*“Initially I did not know that I have MDR-TB but while I was attending a family member I was diagnosed and now I am under treatment though I am not improving much.”*

A 27 year old female both TB and HIV patient from Nifas-Silk lafto health centre said:

*“Integrated TB/HIV care improves our health very fast; otherwise, if we get treatment for only one disease, while missing for the other one, will not protect from deterioration of health.”*

A 31 year male both TB and HIV patient from Kazanchis health centre said:

*“Initially life was so bitter for me and once I preferred to die but when I get treatment and care for both of my diseases I become very eager to live long.”*

A 42 year old male TB patient from Gulele health centre said:

*“I was tested for HIV when I came for tuberculosis treatment and now I knew that I am HIV negative and I will maintain my status.”*

#### **5.5.1.2 How did health workers at TB clinic assist you in improving your health regarding your HIV risks and status?**

Previous studies identified provider-level barriers to implementing HIV Counselling and Testing for TB patients in SSA and South Africa include lack of nursing staff, lack of space, increased workload, and work-related stress, including stress experienced by breaking bad news and handling ethical dilemmas (Coetzee, Hilderbrand, Goemaere &

Boelaert, 2004:A11; Okot-Chono, Mugisha, Adatu, Madraa, Dlodlo, Fujiwara, 2009:955).

In this study, the majority (91.8%) of the interviewed TB and/or HIV patients said that healthcare providers in the clinics of TB/HIV collaborative services assisted them to have improved health conditions, particularly regarding HIV risks and statuses. Of the responses obtained from 1,599 patients, 1,014 (63.4%) obtained significant improvement in their health conditions following keen support from health workers in the TB/HIV collaborative service clinics, whereas, 454 (28.4%) just appreciated for the support of health workers of collaborative TB/HIV services, which was attributed for their better health conditions. On the other hand, 128 (8%) of the participants were not happy with the support of health workers in the TB/HIV collaborative care service clinics to bring better health conditions. Study participants of three HIV patients were not happy with the professional ethics of their healthcare providers in the TB/HIV clinics.

Some interviewed patients expressed their feeling for or against the support of healthcare providers working in clinics of collaborative TB/HIV services, as follows.

A 40 year old female HIV patient from Woreda 7 health centre said:

*“I have being attending the follow-up care regularly, they regularly counsel and advice me like a family member; so I am very happy with their support and brought significant change on my health.”*

A 40 year male HIV patient from Kazanchis health centre said:

*“I regularly attend my follow-up care but I have no improvement on my health; health workers are not very keen and supportive for me.”*

This participants' perceptions are in contrast to those of healthcare providers in another study in South Africa, which revealed the opinion that, for increasing the acceptance of HIV Counselling and Testing, they needed to encourage and motivate TB patients (Christo, Edwin, Wynne, Michelle, Gladys, Anjali & Camille 2011:27).

A 35 year old male HIV patient from Kaliti health centre said:

*“I was desperate initially, but when I started attending regular counselling, advice and care from healthcare providers, I have much improvement on my health and now I am living for my child.”*

A 17 year old female HIV patient from Menelik II hospital said:

*“Health workers in TB/HIV clinics are very kind for me, they advice and treat me very well and I have significant change on my health, I am very well physically and mentally; once I was thinking to commit suicide.”*

A 28 year old female TB patient said:

*“I did not know that I had HIV until I was tested here while I was on anti-TB treatment through their counselling services; after I started integrated TB/HIV care services, I have improved and regained my health back.”*

A 42 year old female both TB and HIV patient said:

*“Once, I had stopped taking anti-HIV drugs as it was very boring for me, but due to their advice, counselling and close follow-up care, I have re-started and now on my regular follow-up care with improved health condition.”*

A 28 year female TB patient from Yeka health centre said:

*“Health workers at TB clinic helped me to take my daily pills through their directly observed treatment scheme, which helped me to stick to my treatment and benefited from better health condition.”*

A 20 year old female TB patient form Woreda 7 health centre said:

*“When I was told that I had TB, I felt loneliness and hopelessness but due to their kind advice, counselling and support I have started my treatment to bring significant change on my health condition.”*

Finally, a 52 year old male TB patient from Zewditu Memorial hospital said:

*“Health workers at the TB clinic advised and supported me to live hopefully and the treatment helped me to improve very well”*

### **5.5.1.3 Do you think provision of both HIV and TB care services at the same health facility be feasible or practical? How is that?**

The Majority (92.2%) of the interviewed TB and/or HIV patients agreed that integrated TB/HIV care services in the same health facility were feasible and practical. Of the responses obtained from 1,593 patients, 1049 (65.9%) strongly supported the feasibility and practicability of integrated TB/HIV care services, whereas, 419 (26.3%) just appreciated for the feasibility of collaborative TB/HIV care services being provided in

one health facility. The reasons mentioned in favour of integrated TB/HIV care services were: less transportation cost and time spent to get services than had been in more than one centre; reduction of stigma and discrimination while visiting one service provider; avoidance of overlapping of treatments if it were given in different centres; and belief it would be '*one stop shopping*'. On the other hand, 96 (6.0%) of the participants thought, integrated TB/HIV care services in single health facility would not be practically feasible. The reasons mentioned not to favour integrated TB/HIV care services were: belief that one healthcare worker cannot address both diseases; patients may be exhausted getting more than one treatment at a time; and an assumption that TB and HIV care services need separate specialised centres. In addition, 28 (1.8%) participants from both TB and HIV patients strongly disagreed on the practicality of collaborative TB/HIV care services which exposed them to long waiting time for services.

Some interviewed patients expressed their feelings in favour of or against the support of integrated TB/HIV care services, in one centre as follows:

A 26 year old HIV patient from Kazanchis health centre said:

*"The services are very fast, we are getting all the necessary medical services in one centre without any problem."*

A 40 year old female HIV patient from Zewditu hospital said:

*"Getting all the services in one place is very comfortable for patients; it increases the confidentiality of TB/HIV patients as we are not mixing with other patients coming for other services."*

A 42 year old male HIV patient from Yeka health centre said:

*"Both TB and HIV care services are given at once in one place, which saves time and expenses for transportation."*

A 24 year old female HIV patient from Kaliti health centre said:

*"Integrated TB/HIV care services help to stick to the recommended treatment schedules besides saving money and patients' effort to get the services if it were provided in different centres."*

An 18 year old male HIV patient from Nefasilik Lafto health centre said:

*"Getting both services in one health facility avoids the exhaustion of patients to go here and there."*

On the other hand, a 41 year old male HIV patient from Menelik II hospital said:

*“The coordination of the services is not always the same, sometimes it becomes fast and other times they become disorganized; they do not have sustained and systematized services.”*

A 29 year old female TB patient from Zewditu Memorial hospital said:

*“Integrated TB and HIV care service helps to adjust appropriate treatment for TB patients, and it maintains the confidentiality of patients’ history.”*

A 24 year old TB patient from Gulele health centre said:

*“Integrated TB/HIV service is successful, because TB and HIV diseases are inter-related so that the patient benefit from getting the services in one centre.”*

A 28 year old female TB patient from Yeka health centre said:

*“Getting both services in one place is ‘killing two birds with one stone’, because a patient who comes for TB can get also services for HIV and vice-versa.”*

A 15 year old female TB patient from Woreda 7 health centre said:

*“Integrated health centres also help patients to share ideas and experiences among themselves, besides shortens the time to get both services in one place.”*

A 24 year old male TB patient from Kazanchis health centre said:

*“It is good to get both services in one centre because it reduces ignorance and tiresome.”*

On the contrary, a 24 year old male TB patient from Lideta health centre said:

*“Providing both services in one centre is not feasible because healthcare providers may not focus on one disease which becomes cumbersome.”*

#### **5.5.1.4 What do you think of the service provision quality in general regarding TB and HIV in this health facility?**

Almost all (94.5%) of the interviewed TB and/or HIV patients believed that the quality of TB and HIV care services were good. Of the responses obtained from 1,620 patients, 757 (46.7%) strongly trusted the quality of the services which they believed contributed to the improvement of their health conditions, whereas, 774 (47.8%) just appreciated for the quality of the services of collaborative TB/HIV, which was attributed to their better

health conditions. On the other hand, 82 (5.1%) of the participants were not happy with the quality of integrated TB and HIV care services.

Some participants expressed various feeling towards or against the quality of collaborative TB/HIV care services as follows:

A 45 year old male HIV patient from Zewditu Memorial hospital said:

*“The quality of integrated TB/HIV service is very high, I see a lot of change from time to time; for example, fixed dose therapy is more convenient and acceptable by patients.”*

A 34 year old female HIV patient from Menelik II hospital said:

*“They (health workers) need slight improvement; otherwise the services are at high quality to the best satisfaction of patients.”*

A 53 year old female HIV patient from Kazanchis health centre said:

*“As I am getting a lot of change on my health condition, I can say the quality of the service is excellent.”*

A 38 year old female HIV patient from Yeka health centre said:

*“The service quality is at high standard, because we are benefiting from the treatment to live healthily and productively.”*

On the other hand, some participants commented on the need to improve the quality of the services. A 61 year male HIV patient from Gulele health centre said:

*“I think the quality is low, because I don’t see any change on my health condition.”*

A 28 year old female HIV patient from Nefas-Silik lafto health centre said:

*“Despite the service is at good quality, it needs to improve more in the future.”*

A 28 year old female TB patient from Lideta health centre said:

*“The quality is at high standard; rather it is more than that for me.”*

Another 28 year old male TB patient from Yeka health centre said:

*“It is an excellent service, because we are getting all the services at one centre.”*

A 33 year old male TB patient from Menelik II hospital said:

*“I can say it is of good quality as I have benefited from improved health condition.”*

A 22 year old female TB patient from Gulele health centre said:

*“I suggest if they can improve the quality of care, as they did not identify my TB disease in the health centre.”*

A 72 year old male TB patient from Lideta health centre said:

*“I believe it is in good quality, previously we have been given many drugs but now it is changed to one tablet only.”*

A 28 year old male TB patient from Bole health centre said:

*“I have to say the quality is good as I have benefitted from the existing services.”*

A 27 year old female TB patient from Kazanchis health centre said:

*“The quality is good, as I have been given care and treatment for the two diseases while I came for one problem.”*

A 29 year old female from Kality health centre said:

*“It is because of the good quality that I have improved health conditions now.”*

#### **5.5.1.5 How do you evaluate the behaviour of healthcare providers towards their patients?**

Of the responses obtained from 1,650 participants, 1,504 (91.2%) of the interviewed TB and/or HIV patients believed that the behaviour of TB and HIV care service providers was good. On the other hand, 146 (8.8%) of the participants were not happy with the behaviour of TB/HIV care service providers. Some complained of poor maintenance of confidentiality of their clients history and favouritism for some clients. In addition, some healthcare providers were not opening services on time and/or there was a long waiting time.

Some patients expressed different feelings towards or against the behaviour of TB/HIV care service providers, as follows.

A 24 year's old female HIV patient from Yeka health centre said:

*“Most of them are very kin to their patients but some are not behaving well.”*

A 20 year old female HIV patient from Zewditu hospital said:

*“They are not bad, but those working at the registration room are nagging.”*

A 34 year old female HIV patient from Lideta health centre said:

*“Some health workers are consulting while facing patients at the back on the circulating chair.”*

A 29 year old female HIV patient from Kazanchis health centre said:

*“In general, their behaviour is good, but sometimes they feel dull.”*

A 32 year old female HIV patient from Woreda 7 health centre said:

*“Some service providers have downhearted me and need to be improved.”*

A 45 year old female HIV patient from Menelik II hospital said:

*“Their behaviour varies; some are good and some are rude.”*

A 21 year old male TB patient from Nefasilk Lafto health centre said:

*“Their behaviour is good; they advice, encourage and support us to continue our follow-up care.”*

A 38 year old male TB patient from Bole health centre said:

*“The behaviour of health workers helped me to be patient until I see my progress, so they have good behaviours towards their patients.”*

A 47 year old male TB patient from Zewditu hospital said:

*“Most of the time they have good behaviour, but sometime they become rude and rough.”*

A 34 year old male TB patient from Kaliti health centre said:

*“I am very comfortable with TB/HIV healthcare workers’ behaviour; for example, for questions I raise, they respond me politely to my satisfaction”*

#### **5.5.1.6 How do you evaluate the performance of healthcare providers in your opinion towards their patients?**

Of the responses obtained from 1,547 patients, 1,410 (91.1%) of the interviewed TB/HIV patients believed that the performances of TB and HIV care providers were good. On the other hand, 129 (8.3%) of the participants were not happy with the performances of TB/HIV care providers; participants were not happy with service providers regarding maintaining their confidentiality.

Some patients expressed their feelings towards or against the performances of TB/HIV care providers, as follows.

A 35 year old female HIV patient from Kazanchis health centre said:

*“They do not have enough knowledge; they just give the drugs without enough advice.”*

A 29 year old female HIV patient from Zewditu Memorial hospital said:

*“They are the safeguard of patients, they have enough knowledge.”*

A 35 year old female HIV patient from Menelik II hospital said:

*“Sometimes they don’t listen to our complaints, maybe they lack enough knowledge.”*

A 40 year old female HIV patient from Zewditu hospital said:

*“They have very good knowledge; if health workers were not there, I would have died; they supported me a lot.”*

A 35 year old male HIV patient from Yeka health centre said:

*“Their knowledge is medium; I have very small change on my health, I am decreasing weight; when I tell them, they are not serious.”*

A 39 year old female HIV patient from Gulele health centre said:

*“They are knowledgeable; they are the ones responsible for the well fare of our health next to God; therefore, they are competent.”*

A 28 year old male TB patient from Zewditu Memorial hospital said:

*“They have very good knowledge, because they advice us on the medications very well; in my opinion, they have enough knowledge.”*

A 50 year old female TB patient from Zewditu Memorial hospital said:

*“I have observed weakness in their advice and education; for example, I have been informed about my disease after 5 months, until then, I did not know that my MDR-TB is communicable.”*

A 27 year old female TB patient from Kaliti health centre said:

*“Their knowledge is low; because, whenever TB patients have some complaints, they only associate to the anti-TB drug adverse effect and do not investigate for other diseases.”*

A 36 year old female TB patient form Woreda 7 health centre said:

*“I believe that they have enough knowledge.”*

A 48 year old male TB patient from Gulele health centre said:

*“It is because of their good knowledge that I become healthy.”*

A 27 year old female TB patient from Lideta health centre said:

*“Their knowledge is not as such competent; they had treated me for pneumonia with wrong diagnosis.”*

A 28 year old female TB patient from Kazanchis health centre said:

*“I believe their knowledge to be comprehensive; the ways they handle patients differ from provider to provider.”*

A 29 year old female TB patient from Yeka health centre said:

*“I believe their knowledge is enough; they listen and understand to my problems to give me solutions to my satisfaction.”*

#### **5.5.1.7 What comments do you have on improving the service provision of HIV and TB care?**

Out of the responses obtained from 1,523 TB and/or HIV patients on their comments to improve the service provision of collaborative TB/HIV care services, half (773, 50.8%) said the services in general was fairly good, whereas the remaining half commented on different issues to be improved, including those who frankly just said ‘not good’ (1.1%).

The most important comment was on improving the long waiting time to receive services, and commencing service strictly at the official working hours in the morning and afternoons, which was commented on by 207 (13.6%) of participants. 106 (10.9%) suggested availing sustainable drug supply; whereas, 145 (9.5%) said healthcare providers should abide by their professional ethics in maintaining patients’ confidentiality and be free of favouritism. In addition, 98 (6.4%) of study participants commented on providing continuous health education on prevention of HIV and TB for patients attending collaborative TB/HIV care clinics. 62 (4.1%), 45 (3.0%) and 10 (0.7%) of the participants recommended provision of food and shelter for patients attending TB and/or HIV clinics, availing all TB and HIV laboratory investigations at all health facilities, and preparation of anti-HIV drugs with injectable formulations, respectively.

## **5.5.2 Interview of TB/HIV Collaborative activity Health Facility Coordinators**

Ten TB/HIV collaborative activity health facility coordinators from all the study health facilities were interviewed using a semi-structured questionnaire. Fortunately, all the coordinators at health facility level were also service providers for either TB or HIV care clinics in their respective health facility. Therefore, for the sake of this study, interview of TB/HIV collaborative activity facility coordinator means interview of healthcare provider; i.e., the interviews were conducted for TB/HIV health workers who at the same time were TB/HIV care coordinators for the respective health facilities.

The qualitative part of this group had two sections, comprising:

- 1) impacts of TB/HIV collaborative care implementation on staff development, performance and other allied resources, and
- 2) impacts on infrastructure.

The findings are presented according to the thematic areas described above, as follows.

### ***5.5.2.1 Impacts of TB/HIV collaborative care implementation on health human resource development, performance and other allied resources***

TB/HIV collaborative activity facility coordinators/TB/HIV care providers were interviewed on issues of on-the-job training, flow of systematic logistics supply for TB/HIV care, support from the administrative environment for the clinics, major problems encountered, and recommendations for TB/HIV care improvement.

#### ***Staff training and career development***

According to the responses, all study participants had trained on some kind of TB and HIV services. Most of them trained on TB/HIV care, TB and leprosy control programme, MDR-TB, ART, PIHCT, STIs prevention and control and VCT for HIV. So, in general, all of them had trained for the specific clinical care and treatment protocols of TB or HIV control programmes.

Regarding the effect of integrated TB and HIV care services in the same facility on their technical performances, all except one said it did not have any effect on their performance, but one said it was good for professional competency and in reducing burden on healthcare workers when both diseases were dealt with vertically. Therefore,

a patient having two diseases does not necessarily visit two or more healthcare providers to get the services for the two diseases. One health worker in the same room would address both diseases, as '*one stop shopping*', which reduces the time or cost of both patients and healthcare workers if dealing with two or more healthcare providers. This finding was consistent with a similar study in Cameroon, which reported that "... collaboration between TB and HIV units has been beneficial both to the patients and the staff" (Barnabas, Kerstin, Miguel & Anna-Karin, 2011)

In addition the professional developments which care providers believed attained, it was expressed by most that being a TB/HIV care provider needs sympathy and willingness. Participants felt a caring attitude for TB and HIV patients involved patience and acceptance. The finding in this study is similar to a research finding from Cameroon, in which a participant from '*Voices from the frontline: counsellors' perspectives on TB/HIV collaborative activities*' in the Northwest Region, said: "It is because of my sympathy for humans. It is my joy when I assist people in need and I see some of them picking up health wise, I am very happy, that inspires me to go on" (Female counsellor, 32 years old) [Barnabas et al., 2011].

### *Logistics and supplies*

Supply for TB/HIV care is the backbone of sustained service provision. Interviewed healthcare providers reported that logistics supply for the TB and HIV care services had not been a major problem, but three of the interviewed ten healthcare providers reported that they had experienced some supplies being out of stock, especially, INH and TB diagnostic reagents.

### *Administrative support*

Concerning health facilities' administrative support for the TB/HIV care clinics, eight of the ten study health facilities said that they used to receive good support and have good relationships, whereas two of the coordinators from two study health facilities (a health centre and a hospital) frankly expressed their frustration of being either neglected or having poor communication with them for no reason.

The interviewed coordinators expressed some of their challenges and problems encountered while delivering TB/HIV care services in their respective health facilities. Six mentioned key challenges they encountered. The most serious challenge for health workers was absence of personal infection prevention protective materials. As a result,

healthcare providers were working in an un-conducive environment, not only for them but also for patients. The second challenge collaborative TB/HIV care service delivery was facing was poor adherence of some patients to their treatments. Patients disappeared during their course of treatment and care, for which, most of the time, defaulter tracing mechanisms were either ill equipped or non-existent.

In addition these, inadequacy of the service provision rooms, which were either very narrow or unventilated rooms, exposed healthcare providers to stress and frustration on their service provision performance. Frequent stock-outs of the drug INH for IPT was mentioned as a challenge for health workers in maintaining the quality of comprehensive TB/HIV care service provision. In addition, fear of patients having the dual disease stigma was mentioned as a major challenge by most of the study health facilities. Healthcare providers also expressed their concerns of ever increasing TB/HIV patient load with the existing infrastructure, which gained very little attention from administrators of the healthcare care delivery system.

However, reports from other studies outline additional factors affecting the implementation of collaborative TB/HIV services. For example, a study in Uganda identified a range of health systems factors, including poor TB-HIV planning; weak coordination and leadership; inadequate dissemination of policy; inadequate provider knowledge; limited TB-HIV inter-clinic referral; poor service integration and recording; logistical shortages; and high costs of services (Mukherjee & Eustache, 2007:S73).

An earlier study in South Africa identifying constraints to integrating TB and HIV care services in primary healthcare facilities pointed out high service loads at both the TB and HIV entry points, duplication of services and underutilization of staff, and independent functionality of TB and HIV services (Chopra, Doherty, Jackson & Ashworth, 2005: 357).

A recent qualitative study on patient and delivery level factors related to constraints for HIV testing services for TB patients in South Africa revealed that both interviewed health workers and programme managers referred to infrastructural problems, concern about lack of information, education, and communication materials, as well as concern about limited access to antiretroviral treatment (Christo et al., 2011:27).

Finally, the TB/HIV collaborative activity facility coordinators recommended improved TB/HIV care in their respective health facilities. Based on this, seven out of the ten participants recommended different issues relevant to their respective health facilities as

follows: regarding *staff training and deployment*, health workers recommended: continuous training of healthcare workers on all TB/HIV collaborative care services, both saying basic and refresher schemes, staff rotation among the different clinics in the health facility should be regular, incentives for healthcare workers and increasing additional staffs in relation to the continual patient loads.

*Regarding service expansion of collaborated TB/HIV care*: rooms for TB/HIV care clinics should be either renovated or changed, or standardised rooms with minimum clinic facilities (e.g., hand washing, window); availing laboratory and pharmacy services close to the TB/HIV clinics in the same corner; decentralisation of the services to other health facilities (private or new facilities) and improvement in linkage of the TB/HIV services with care and support programmes. These were among other recommendations.

### **5.5.2.2 Impacts of TB/HIV collaborative care implementation on infrastructure**

TB/HIV collaborative activity health facility coordinators were also interviewed on changes to the infrastructure of the health facilities following the commencement of TB/HIV integrated services. Questions related to renovation, re-arrangement of existing facilities, other cross-cutting services commenced, restructuring of existing services, effect on provision of other services and needed infrastructural changes.

Of the ten health facilities (two hospitals and eight health centres), only in one of the hospitals had a new building for TB and HIV care clinics been constructed. This was initiated and financed by an NGO, which supported the TB/HIV care services. The intention of the construction of a new separate new building specifically for TB/HV care clinic was with the intention of having a centre of excellence for integrated TB/HIV care for the Addis Ababa City administration. There were no renovations made for the remaining nine study health facilities, but rearrangement of rooms, office furniture and waiting areas in most of the health facilities.

Additional supportive services for the TB and HIV collaborative activities were established in all of the health facilities:

- ART pharmacy/drug store
- data management specifically for TB and HIV care services,
- mother support group,

- VCT/PITC rooms
- nutritional rehabilitation service
- youth-friendly services

However, the mentioned services were not established in all of the health facilities.

Services restructured due to the change in infrastructure of the health facilities as a result of the TB/HIV collaborative activities commencement included:

- administrative service restructured in one health facility
- VCT service restructured in one health facility
- PMTCT service restructured in one health facility
- ART pharmacy in one health facility.

Otherwise, in the remaining health facilities, there was no restructuring of existing facility services.

Responses of participants on the effect of the TB/HIV collaborative activity on the provision of other services showed that in six of the health facilities there were no reported changes, whereas, in four of the health facilities it affected either of the following: sharing of rooms with other services and waiting area, negative effect on performances of IMCI, EPI, FP, adolescent reproductive health services, shortage of health workers and workload of existing healthcare providers.

The facilities' physical structures were assessed briefly from the TB/HIV collaborative coordinators' perspectives. Specifically, the TB and HIV care clinics rooms were focused on, to get opinions of the healthcare providers. Based on their responses, six of the facilities had good conducive rooms for both TB and HIV care services. That means, both clinics were wide enough, had windows for ventilation and close to patient waiting areas, and had good natural illumination. On the other hand, four facility coordinators were not comfortable with either the TB or HIV clinic rooms, concerning ventilation, water supply, lighting or adequacy of the rooms to accommodate a convenient working environment.

This finding is similar to a study result in South Africa which identified several factors that contributed for the success of integrating TB and HIV services, including buy-in from management, clinicians and other service providers, providing training that improves competencies to treat both diseases, mentoring TB staff on ARV care in the

initial stages of integration, and changing management processes to clarify defined areas of accountability for health staff (Bernhard, Katherine, Andrew, David, Eric, Virginia & Gilles, 2012).

Participants commented on the requirement of some additional infrastructural set-ups for improved implementation of TB/HIV collaborative activities. Convenient and wider rooms for HIV and TB clinics, waiting areas for TB and HIV patients and additional staff rooms were mentioned by two of the participants. The remaining eight study participants responded that there was no need for additional infrastructure, except mentioning additional staff. These recommendations are similar to findings in other study which include improving staff constraints, space, patient flow, provision of drugs, and clinical challenges (Bernhard et al., 2012).

### **5.5.3 Focus group discussion among patients of TB and HIV**

A focus group is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs and attitudes towards a product, service, concept, advertisement, idea, or packaging (Henderson & Naomi 2009:28). Questions were asked in an interactive group setting where participants were free to talk with other group members.

Group discussion produces data and insights that would be less accessible without interaction found in a group setting-listening to others' verbalised experiences. It stimulates memories, ideas, and experiences in participants, which is also known as the 'group effect', where group members engage in "a kind of 'chaining' or 'cascading' effect; talk links to, or tumbles out of, the topics and expressions preceding it" (Lindlof & Taylor, 2002:182).

A total of 10 FGDs (each of 5 FGDs among TB and HIV patients; i.e., 50% of study health facilities) were planned for this research, but due to saturation of information on the eighth FGD, the last two FGDs were cancelled. The participants were selected randomly from four health facilities among the 10 study facilities. However, none of the participants who participated for the FGD participated in the individual quantitative and short answer questions. In addition, for an FGD, participants from the same facility were selected from each of TB and HIV separately. Four FGDs were conducted for TB patients alone and four among HIV patients. This allowed the researcher to compare the findings among the two groups. For both clusters of participants, similar discussion

guide points were used and efforts made to mix participants for the two groups from different age groups, sex proportion and venues for discussion.

After brief introductions among participants (age and sex only) and moderators, the discussions were conducted. Before the start of each discussion, participants gave consent to participate in the group and for confidential use of a tape-recorder to retain discussion points.

The discussion points for both groups of participants contained:

- 1) their knowledge about TB and HIV in general,
- 2) how the healthcare delivery system assisted people of these two diseases
- 3) what services were being rendered by health facilities to decrease the burden of TB/HIV in their health facilities
- 4) how provision of service by health facilities for both TB and HIV patients affected their health
- 5) how they thought health workers at TB/HIV clinics in their health facilities assisted them in improving their health regarding their TB/HIV risks and statuses
- 6) whether they thought provision of both HIV and TB care services in the same health facility was feasible or practical
- 7) how they felt about the service provision quality
- 8) behaviour and performances of healthcare providers and their opinions regarding TB and HIV care in their health facilities.

Finally, participants were probed to give comments to improve the service provision of HIV and TB care in their health facilities. The findings from the two groups were transcribed separately, based on the discussion point thematic areas. These are analysed as follows.

#### **5.5.3.1 Focus group discussion among TB patients**

A total of four focus group discussions were conducted among TB patients each in four study health facilities (Lideta HC, Nefasilk Lafito No 2 HC, Yeka HC and Kazanchis HC). As socio-demographic characteristics, age and sex were taken from each of the participants. The average number of participants per session was 8, with minimum of 7 and maximum 8 participants. Sixteen were female and 15 males. The average age of

the participants in all the four FGD participant was 28.3 years, with minimum and maximum age of 15 and 47, respectively. The findings are presented in the following thematic areas.

*Knowledge about TB and HIV, and their relationship*

Participants among TB patients expressed their understanding of the meaning of the diseases TB and HIV quite differently. Some of them defined TB as, for example one participant said:

*'... a disease which affects different body parts, but I don't know its cause';*

whereas, an others participant said:

*'... a disease which is caused by cold and malnutrition, which can transmit from infected person to healthy person'.*

In addition, a third study participant said:

*'... a disease which can transmit from person to person and unless treated well, can be converted to HIV.*

This finding is similar to the result from a study on Lay beliefs of TB and TB/HIV co-infection in the same area by Mekdes, Gunnar and Jan (2011:277) that pointed out the most common factor patients thought caused TB was '*bird*' (wind), which literally means cold. Many patients recalled being "hit" by *bird* some time before they started coughing. A participant with from the same study (Mekdes et al 2011:277), explained:

*"I have been in Italy, and there is a lot of snow there, and that is what predisposed me to TB. It is very cold there, and we wear a lot of clothes, but sometimes, mainly when you are working, you forget to wear good clothes, and the bird hits you. That is why I had TB. Bird had gone into my body."*

Another group of participants agreed that TB could be treated but not HIV, but both diseases affect similarly in terms of socially, psychologically and physiologically. On the other hand, they defined HIV as a disease caused by a virus and transmitted by unprotected sexual intercourse, by living together, eating together, sharing cups and plates with infected persons and being transmitted by sharing sharp materials. In contrary to these, a 21 year female TB patient defined TB as:

*"TB is a disease caused by mycobacterium tuberculosis; which affects the human body which is transmitted by coughing, talking, sharing cups. The disease*

*can be identified by prolonged cough, chest pain and decreasing in body weight or swelling of glands. It can be treated by effective drugs if taken properly."*

Knowledge of participants among TB patients varied significantly among themselves.

A 38 year male patient from Yeka health centre honestly expressed his knowledge about TB:

*".. I don't have much knowledge on the differences between the two diseases TB and HIV; for me both are the same, if a person has one of the diseases I perceive he must has also the other disease..."*

This participant's view was similar to those in a similar study in Addis Ababa (Mekdes et al., 2011:277), where a patient explained how TB changed into HIV in her case:

*"It is from TB that I got this disease (HIV). They go side to side. The samba (TB) went into HIV. Initially, I was saying, can it be from sharp objects, but it is not. It is the samba that changed"*.

Another young TB patient, aged 19 years, from Lideta health centre said:

*".. if a person has TB, he may have also HIV, this is because HIV decreases the body's disease protection capacity so it can expose to TB disease. And if both diseases occur together, they affect the person seriously."*

Previous researches reported misperceptions about etiology and transmission of TB (Edginton, Sekatane & Goldstein, 2002:1075; Getahun, Aragaw, 2001: 283; Sagbakken & Bjune, 2008:1356;)

It has been found from the focus group participants that knowledge on the diseases TB and HIV was poor and they had a wide knowledge gap among themselves. Even their knowledge of their own current TB disease was so low that most could not define how TB disease came about, how it was transmitted, how it could be prevented, or the availability of effective treatments. Some blamed healthcare workers for not giving them regular health education on the diseases during their follow-up cares.

#### *The support of the healthcare system to assist patients of TB and HIV*

The focus group participants expressed their view that the healthcare systems were well equipped and capable of assisting people with the diseases. Some of them said that health workers were keen to encourage them to know their HIV status through counselling and testing services. All services were available in the same health facility,

so, if a TB patient was found to have HIV s/he would be referred to an HIV clinic within the facility to get the necessary medical care. Services mentioned by participants being rendered to assist patients were:

- 1) follow-up counselling
- 2) laboratory check-ups
- 3) nutritional counselling
- 4) encouraging patients to complete anti-TB treatment, among others.

Most of these services were being offered by health workers at TB clinics, but during service provision it was common to see certain defects from both the healthcare system's and patients' sides. For example, patients sometimes missed their appointment (follow-up) dates to attend their follow-up care, so it affected the scheduled health facilities' service provision and treatment outcome.

On the other hand, participants expressed their feelings on what they perceived to be challenges from the healthcare system. For example, frequent changes of healthcare providers of TB clinics results in perceived effects on quality of services, psychological feelings of patients to get relationships with new staff due to patients' sense of being attended to by a health worker who had little knowledge of their diseases, and possible change in norm of service provision. A 42 year male patient from Kazanchis health centre expressed the frustration he encountered during his initial HIV testing process.:

*... on the first day of my visit to the health centre, the health worker in the TB clinic opted me to have HIV test without any counselling and my consent; I was feeling anxious about that sudden HIV testing process. Later, the health worker became so nervous to inform my HIV-positive status, which she realized she did not counselled me before the test. Finally, I convinced myself to accept the result remembering the information which I had 'people can live positively' from media and other sources; but had it been other person, s/he would have committed suicide."*

#### *Services provided by health facilities to decrease the burden of TB and HIV*

Participants of TB patients among the different health facilities mentioned a wide range of services rendered by health facilities to decrease the burden of TB and HIV. Most of them agreeably mentioned intensive care treatments for TB, health education on how TB disease transmission to others, prevention of TB transmission (mouth covering

during coughing and sneezing, using personal cups to spit sputum, ventilating rooms to protect family members and use of personal cups for drinking), routine HIV testing for all TB patients, follow-up laboratory examinations, counselling services and referral services.

On the other hand, some expressed their negative feelings on lack of certain services. Some basic laboratory investigations (x-ray, FNA, CD4 count, liver function tests) were ordered to be done at private health facilities, which became expensive for most of the patients. Health education about TB and HIV was not being rendered regularly and did not use attractive teaching aids (video, drama) in a manner that increased the level of understanding of patients.

#### *Effect of integrated TB/HIV services on patients' health*

Focus group participants from the different health facilities expressed their feelings about the benefits of integrated TB and HIV services provided by health facilities on their health. Most of the study participants appreciated the encouragement by service providers and offering of HIV test for TB patients, which gives an opportunity to know their HIV status before the debilitated effect of the virus. Participants agreed on the benefit of knowing early HIV status for informed decisions of HIV prevention, care, treatment and support interventions. In addition, implementation of integrated TB/HIV care services help people know better about TB and HIV for early notification of signs and symptoms and for early medical care. TB patients who are tested positive for HIV benefit from the care and treatment services within the facility, without delaying for further investigation and at no cost of time and transportation. It helped them also to be more conversant with both diseases during family and community interactions, at which time the basic facts of TB and HIV were easily disseminated.

#### *Support of health workers at TB clinics regarding HIV risks and status*

A 39 year female TB patient from Yeka health centre reported that:

*..had the nurse in the TB clinic not encouraged me the HIV test through her good counselling session, I would have not known my HIV-positive status early and I would have not been healthy by now."*

Participants who become HIV negative said that they gained a better understanding and knowledge about HIV transmission risks and become more protective. A 26 year old male TB patient from Kazanchis health centre expressed his feeling:

*".. I now know my negative HIV status after being tested in TB clinic, since then I have never committed risky sexual practices and am very curious for my health."*

Most of the participants were happy with the services of HIV testing and counselling offered in the TB clinic. But some of them expressed their concerns with the quality of the pre-test counselling for HIV test.

#### *Perceived feasibility and practicality of integrated TB/HIV services provision at the same health facility*

Most of the participants in this group (TB patients) supported the feasibility of integrated TB/HIV care services in one health facility. They reasoned in terms of saving resources needed to implement the integrated services compared to vertical services; time and costs incurred for transportation for patients if services were in two different centres; and the stigma and discrimination imposed if HIV care service were offered in separate health facility. On the other hand, some felt integrated TB/HIV care to be unfeasible and non-practical. The reasons given were: the quality of services would be compromised if services were integrated; and sharing of resources undermines the attention given to individual diseases separately. A 22 year female participant from Nefas-Silk lafto #2 health centre disagreed about integrated TB/HIV services in one health facility, and did not think that would be feasible or practical:

*"..I don't think it is feasible, there is crowding of both TB and HIV patients; the health centre does not have all diagnostic equipments, and; for example, if I have both diseases, I need to take some rest after I dealt with one disease to get dealing for the second disease; therefore, I prefer TB and HIV care services to be provided in separate health facilities each alone."*

#### *Perceived quality of integrated TB/HIV services in health facilities*

Participants of TB patients from most of the health facilities expressed their perceived opinion on quality of collaborated TB/HIV care services to be fair and good. Though some were unsure of the technical quality, they expressed their concern over lack of important laboratory examinations and some investigations for tuberculosis (x-ray and

FNA). Lack of these investigations incurred extra expenses for patients at private diagnostic centres.

Some participants were not happy with the quality of the services. There was crowding of the clinics with patients; very long waiting times; disorganised service provision; waiting areas not convenient and/or sufficient; no confidentiality or privacy of services; care givers spent very brief consultation time with each patient; health workers too few in number; service usually started late in the morning and closed early; and delays in laboratory results. These are among other factors that were mentioned as compromising quality.

A 32 year male patient from Yeka health centre complained:

*“.. I am a daily labourer, I do not get daily permission from my boss, I have to come to collect my daily anti-TB pills, I had told the nurse to give me for at least for one week period or to my relatives so that I do my work, she refused; and now I have stopped work... on the other hand, they teach us to get nutritious food, how can I buy to get those foods?”*

#### *Perceived behaviour of healthcare providers towards their patients*

Most focus group participants among the different health facilities witnessed that healthcare providers working at TB and HIV clinics were sympathetic, caring, concerned and supportive of their patients. Most of the healthcare providers were young, easily understood the feeling of patients and acted accordingly. A 29 years female patient commented that *“...even the experienced providers are cooperative, they advice us to adhere on our treatments and willing to listen our problems patiently.”*

On the other hand, some participants were not happy with the behaviour of some service providers. A 29 year female patient from Kazanchis health centre expressed her feeling that:

*“.. I am not happy with their behaviour, they are rough and insults us if we fail to act accordingly, I feel depressed when I come to this health centre because of their bad facial expression, they undermine us, so they have to improve their approach.”*

Other participants in general expressed their concern about the behaviour of some health workers:

*“They do not start work on time, they rush during patient examination and discussion; they are not communicative to patients about our disease conditions; they do not accommodate patients’ excuses; they are rough and not counselling patients very well”,* A 39 year old housewife TB patient expressed.

#### *Perceived performances of healthcare providers for integrated TB/HIV services*

Most focus group participants from all the groups felt that their health workers were performing well. They thought that health workers were trained and qualified for the services they provided for their patients, but some had concern about the performances of young health workers. Participants perceived they had little experience or maturity to deal with all patients problems during the consultation. Behaviourally, they were good compared to the mature health workers, but during patient care and counselling they usually rushed and simplified things.

Most participants debated on government health workers’ performances, especially during the initial diagnosis of TB diseases. Most complained about the delay in diagnosing their diseases, which was aggravated by the scarcity of important diagnostic equipments (eg X-ray), and health workers at public health facilities delaying diagnosis of TB. If a patient is referred from private health facilities with adequate documents, they receive and automatically enrol on their treatments schedule immediately.

A 39 male patient from Nefas-Silk lafto #2 health centre said:

*“.. initially I came to this health centre with cough of 3 weeks and they gave me a one week injection drug; but I did not get better and they prescribed me again a two weeks oral tablets but I refused and went for a private clinic for examination. I came back with an x-ray result and referral paper from the private clinic and they enrolled me immediately for the treatment. I would have died, if I had not been referred from the private clinic, so I doubt their professional competency.”*

#### *Comments to improve the service provision of HIV and TB care*

Finally, all focus group discussion participants among TB patients commented on some actions to be taken to improve provision of HIV and TB care in public health facilities.

Recommendations included:

*The first recommendation was to improve laboratory services and x-ray services. Though very difficult for the government to equip all public health facilities with those diagnostic machines, it may be enough to establish one public diagnostic*

*centre per sub-city to serve for patients from public health facilities in that respective sub-city.*

*Improvement of counselling quality and health education for patients of TB and HIV at each of the follow-up care was emphasised.*

*Motivating of healthcare providers through additional on-the-job training and improving payments would help staff behave politely in their patient interaction.*

*Participants also recommended retaining mature and aged health workers, who they perceived to be more knowledgeable and expert than the younger practitioners.*

*It was recommended that the physical structure of some health facilities be improved; specifically, here should be consultation rooms, waiting area, seats for patients at waiting areas, clean toilets, and separation of TB and HIV clinics from the other patients buildings.*

*Some participants recommended hiding the HIV counselling room sign, as it exposed clients to stigma and discrimination once identified in that area by the public. In addition, participants recommended deployments of additional health workers in public health facilities, so that each health worker would manage a reasonable number of patients per day with quality care.*

*Finally, participants recommended to avail suggestion boxes at each of the clinics, should patients want to write their comments. In addition, patients suggested to implement performance appraisal of health workers to upgrade those who need training and to reward those who are doing well.*

### **5.5.3.2 Focus Group Discussion among HIV Patients**

A total of four focus group discussions were conducted among TB patients each in four study health facilities (Zewditu Hospital, Kaliti HC, Gulele HC and Bole HC). The socio-demographic characteristics, age and sex were noted for each of the participants. The average number of participants per session was 8, half of whom were female. The average age of the participants who participated in all the four FGDs was 30.6, with minimum and maximum age of 17 and 47 years, respectively. The findings are presented in the following thematic areas.

### *Knowledge about TB and HIV, and their relationship*

Participants among HIV patients defined TB and HIV differently, based on their prior knowledge about the diseases. Some groups defined TB as a disease caused by micro-organisms transmitted from an infected person to healthy person by coughing, which is an HIV-related opportunistic disease that damages human body. Some said HIV damages the disease prevention capacity of the body and exposes it to TB disease. On the other hand, they defined HIV as a disease which has to be treated to keep the patient alive; *“HIV means possible to live”; HIV means .. a disease which comes from sexual intercourse”,* said a 21 year old female HIV patient from Menelik II hospital.

Regarding the relationship between TB and HIV, participants had inconsistent and/or poor understanding:

*“...if a person is infected with both TB and HIV, it is very difficult to treat the HIV, but if treated early, it is possible to live longer. HIV is not comfortable for human beings and to treat it; whereas, TB can be cured, but HIV is very difficult to cure, unless people get tested for HIV and know their status early, it is very difficult to survive.”*

*“PLHIV should not be involved in heavy labour work and should not eat raw foods as their body becomes very weak.”*

Some participants frankly expressed that they did not know the exact relationship between the two diseases. In general, PLHIV had very low and inconsistent knowledge about HIV and TB and most were unaware of the relationship between the two diseases. It was very clear to surmise from the discussion sessions that most of the participants were low in educational and socio-economic status. In addition, most of the participants' level of understanding seemed very low, and the moderator had to simplify the questions to a level they could understand. However, participants in this study were more knowledgeable about the major routes of transmission of HIV than those of TB. This finding is similar to previous studies (Mekdes et al 2011:277; Ngamvithayapong, Winkvist & Diwan, 2000:1413).

It was clearly understood from most focus group discussions that the health education system of health facilities about TB and HIV for patients either not using appropriate teaching aids or not being delivered on a level which most of them could understand, were important issues.

*The support of the healthcare system to assist patients of TB and HIV*

Participants of the focus group discussion from the different public health facilities expressed their belief in favour of the support of the healthcare delivery system for the lives of patients with both diseases, particularly HIV.

Participants praised the benefits of the public health facilities in supporting them while dealing with their disease conditions. The following was typical:

*“...for patients of either of TB and/or HIV, treatment is free, laboratory investigation is also free, provided that, the test is available in the facility. There is no discrimination of patients based on social, economic or educational status. There are gradual improvements of quality of services by increasing health workers, upgrading physical infrastructure, increasing medical supplies [drugs, laboratory investigation] and in strengthening referral linkages to care, support and treatment facilities.”*

The follow-up adherence counselling has paramount benefit in increasing the motivation and attitude of HIV and TB patients on sticking to their intensive treatment schedules and exercising with healthy living practices. Participants added that nutritional counselling, preventive therapy for TB and other bacterial infections, and health education on personal and environmental hygiene helped to improve the life style of patients with TB and HIV. In addition, the counselling given to patients helps to decrease risks of transmitting the diseases to the community, particularly to family members.

A 30 years male patient from Zewditu memorial hospital witnessed the following:

*“...I have benefited a lot from this hospital, initially I was very emaciated, weak and hopeless but now as you can see me, I am strong physically and psychologically, so I really thank the government and health workers for establishing free treatments centres and for their continued support for us”*

Participants also raised their concerns of shortages of some drugs, which sometimes exposed them to extra expense, and, if not able to take them, worsened their disease conditions. Drugs mentioned were vitamins, anti-helmentics and antifungal treatments.

*Services provided by health facilities to decrease the burden of TB and HIV*

Participants of all groups mentioned a wide list of services which they received from their respective health facilities and in their areas. Among these were:

- 1) counselling services,
- 2) health education on personal care to be taken during treating their disease and prevention of disease transmission to others
- 3) risk reduction and knowledge and skills
- 4) HIV testing
- 5) TB screening and TB prevention therapy
- 6) laboratory services
- 7) treatment services
- 8) referral to care and support giving organisations.

Some participants were also frank in expressing their concerns about the rough behaviour of some health workers, limited laboratory services, frequent change of health workers, long waiting time and sustained drug supply.

A 23 years female patient from Bole health centre said:

*“.. the services were good, but sometimes they prescribe some drugs to buy outside the health centre, sending out for some laboratory investigation and frequent change of health workers.”*

#### *Effect of integrated TB/HIV services on patients' health*

The focus group participants in all groups raised similar ideas in support of the health facilities on benefits of integrated TB/HIV care services. Participants agreed on ‘one stop shopping’, meaning a patient having concerns that patients with both diseases benefit from services provided in the same clinic at no expense. They mentioned, a health worker who considers both disease and harmonises the investigations and treatment to be of most benefit to the patient.

A 46 years male participant from Gulele health centre pointed out his experiences during his follow-up care in the health centre:

*“I have learnt my HIV-positive status while I had been on my anti-TB treatment follow-up in this health centre two years back. Since then, I have been enrolled in the HIV clinic and getting my monthly treatment drugs and check-ups every three months at no cost. I am healthy now, I am doing my daily business without limiting myself as an HIV-positive person; so, I can say because of the collaborative TB/HIV services, I benefited a lot.”*

*Support of health workers at HIV clinics regarding TB risks and status*

The focus group discussion participants from all groups appreciated the integrated TB/HIV care services and benefited from TB screening and preventive therapy for TB from the HIV clinics. Participants reported that health workers continually asked and screened for signs and symptoms for TB at each of the follow-up visits. In addition, provision of INH preventive therapy is one of the basic package of care provided for all HIV patients. Health workers are conducting health education about TB disease; how it comes, its route of transmission, disease prevention and availability of free diagnostic and treatment services at all of the public health facilities.

A 25 years old female participant from Kaliti health centre reported that:

*“I know very well about TB disease; health workers teach me at every visit; whenever I have some cough, I report to my doctor and he orders sputum examination; in addition, I have taken INH for prevention of TB for six months; therefore, I have never had TB disease.”*

*Perceived feasibility and practicality of integrated TB/HIV services provision at the same health facility*

Most HIV positive focus group participants mentioned some advantages of integrated TB/HIV care service provision in the same health facility, among others:

- Getting all the services at one place reduces the time spent and costs incurred for transportation to less than the time it would have been separately.
- It also increases the acceptance of getting both services from one health facility; as the diseases usually occur in one patient.

A female participant of 19 years of age HIV patient from Kaliti health centre expressed her view that:

*“...in my opinion providing services for TB and HIV should be continued in one health facility. This was set by educated people with clear evidences due to the fact that TB and HIV are highly related and occur commonly on one patient. In addition, the drugs and counselling services are similar, so there should not be any negotiation for TB/HIV integrated services.”*

Some participants felt that integrated TB/HIV care services were not practical or feasible. The reasons included:

- the stigma and discrimination attached to HIV may discourage TB patients from attending the clinics publicly, as the public may consider all patients attending those clinics to be HIV-positives.
- participants worried about disease transmission from TB patients to others in the waiting area.
- HIV patients prefer to be treated in a separate health facility where other people, including TB patients, have limited access, due to the widespread stigma attached to HIV disease.

#### *Perceived quality of integrated TB/HIV services in health facilities*

The quality of integrated TB/HIV services in general was discussed by focus group discussion participants of all groups. Even though most were unsure of the quality, some were confident in expressing their views in this regard. For example, they mentioned that patients of HIV and TB were benefiting from the services. Currently, HIV patients have a better status than before because of the comprehensive care, support and treatment services available in the country. Once an HIV-positive status had been considered a death sentence.

Participants argued that TB and HIV diseases were highly inter-related diseases and health workers were professionals assigned by government to serve the public with certain qualities and standards. For patients to benefit from the services, there must be an organised physical structure. Health workers counsel patients professionally, examine and treat them, conduct essential investigations and advise them on their disease conditions. Therefore, the quality of TB and HIV care services in public health facilities, in general, is good and to the optimal satisfaction of TB and HIV patients.

Participants also appreciated the government's commitment to gradual improvement and upgrading of the services given to TB and HIV patients in public health facilities. In general, focus group participants felt that the service provision quality regarding TB and HIV care was good.

#### *Perceived behaviour of healthcare providers towards their patients*

Participants of all groups of HIV patients shared their views and opinions on the behaviour of healthcare providers of TB and HIV in general. Most seemed to be happy with the behaviour of healthcare providers. According to most participants, health

workers are keen to serve their patients, behave professionally, encourage patients to adhere to their care and treatment schedules, supportive, patient, are sympathetic, respond to questions and respect their patients. In addition, participants thought that most health workers were in the younger age group, therefore, they tend to simplify things so they are understood, solve patients issues promptly and be cooperative in general.

On the other hand, some participants were very worried about the unprofessional behaviour of some healthcare providers towards their patients. They mentioned some of the behaviour which they did not like to see from healthcare workers:

- lack of respect for time, i.e., they started late and closed early
- shouting at patients, demoralising them, being impolite and unfeeling
- complicated services which are not educative for patients
- rushing uncaringly to finish work early and close the clinic
- not receiving late comers and approaching them rudely.

A 20 years male participant from Gulele health centre angrily witnessed:

*“If it were for the behaviour of healthcare workers, I would have interrupted my follow-up care and died by now; they do not consider us as a human being, some of them consider because of our promiscuous behaviour that we infected with HIV, but the reality is not that!; therefore, they need training and advice how to behave and handle especially HIV patients.”*

#### *Perceived performances of healthcare providers for integrated TB/HIV services*

Though most participants found this discussion point somewhat difficult to evaluate, some shared their opinions. Most believed that health workers at TB and HIV clinics were competent and knowledgeable, and capable of solving most of the problems of patients, as they were deployed by the government after being licensed.

Some mentioned lack of important investigations in most of the health centres, such that they found it very difficult to evaluate performances. Other participants thought that health workers at public health facilities were less experienced and less qualified. This made initial diagnosis of disease very difficult and delayed conclusions.

In addition, they performed very well during the initial contact with the patient, but there was a perception that during follow-up care they left everything to the patients and failed to continue counselling and educating the patient. For example, a 39 years male HIV-positive participant from Kality health centre said:

*“When I first come to this health centre, the advice and encouragement I received was very good, but during my follow-up visits, I have never been given any advice and encouragement; the health workers become very fast and even they do not greet us; in addition, there is long waiting time in the health centre to get the consultation”*

#### *Comments to improve the service provision of HIV and TB care*

HIV-positive focus group participants were given the chance to comment for improvement of the service provision of integrated HIV and TB care in their respective health facilities in general. Recommendations included:

- improve the laboratory services
- increase the number of health workers
- improve the service quality (waiting time, behaviour of health workers),
- separate the HIV clinic building from the other health centre health service building
- remove the sign of ‘*HIV clinic*’ as it exposes people to stigma and discrimination once a patient is seen by outsiders or other patients in the health centre
- improve the counselling and health education services during the follow-up visits
- make system flexible so as to provide continuation treatment drugs for relatives; at times patients are unable to go to the health centre
- Avoid rotation of health workers and assign experienced and mature health workers.

#### **5.5.4 TB/HIV Policy Implementation in Addis Ababa City Administration**

The WHO’s Interim Policy on Collaborative TB/HIV Activities outlines a set of concrete recommendations for joint TB/HIV activities and calls upon countries to establish and implement mechanisms to decrease the burden of TB among people with HIV/AIDS and

the burden of HIV among TB patients (WHO, 2004d). According to the policy document, there are 12 activities to be implemented at various levels of the healthcare system. The findings from interviews with the regional (Addis Ababa City Administration) TB/HIV collaborative activity coordinator have been presented in the following sub-sections under three main TB/HIV collaborative activities themes, as follows.

#### **5.5.4.1 Mechanisms for Collaboration**

The TB/HIV Policy recommends the establishment of a coordinating body; surveillance of HIV prevalence among TB patients; joint TB/HIV planning; and monitoring and evaluation.

##### *5.5.4.1.1 Set up a coordinating body for TB/HIV activities at all levels*

According to the Addis Ababa City Administration Health Bureau TB/HIV collaborative activity regional coordinator, there are joint coordinating bodies for TB/HIV activities at national, regional and sub-city levels, but not at community level. The reason given was the existing regional health service structure does not have a well established system at community level. However, public health research suggests that in the absence of public awareness and engagement around TB and HIV, political and financial accountability for TB/HIV control efforts falters (Open Society Institute, 2006).

The structure of the joint TB/HIV coordinating body at regional level was integrated by the newly developed regional business processing re-engineering (BPR), which is under one sub-process (section). Based on the regional adaptation, TB and HIV programmes are being run together with one regional coordinator. However, the planning, implementation, monitoring and evaluation of the activities is being carried out by experts from both TB and HIV control programmes. Therefore, members from both are included in the joint coordinating body at regional and sub-city levels. However, representatives from TB/HIV co-infected communities, PLHIV organisations or TB patient support groups are not included on the coordinating body.

##### *5.5.4.1.2 Conduct surveillance of HIV prevalence among TB patients*

Information about HIV prevalence among TB patients is being collected at regional level, where there are two hospitals and two health centres as sentinel sites from which blood specimens (serum) from TB patients are collected every month, and sent to the

Ethiopian Health and Nutrition Research Institute (EHNRI) for anonymous HIV testing. The information for collecting blood specimens is not available for the community, as it is being done in unlinked anonymous mechanisms. However, all TB patients are being offered voluntary HIV testing and counselling at each of the health facilities. The data from sentinel sites and populations is only utilised at national and regional level as a summary. According to the findings from EHNRI, the HIV prevalence among TB patients reflects the trend of the routine data from the health facilities' recording and reporting (EHNRI, 2010).

#### *5.5.4.1.3 Carry out joint TB/HIV planning*

The regional TB/HIV coordinating body has a strategic plan for TB/HIV care, a copy of which is available (Genet, 2011). Neither community activists nor people infected with TB/HIV participate in the formulation of the plan, therefore it is very difficult to conclude on this research whether the strategic plan reflects community's priorities or not. The role of community advocates was not outlined on the implementation of the plan. There is a plan to incorporate community's participation in the planning, monitoring and evaluation of TB/HIV collaborative activities through the currently deployed urban health extension workers (AACAHB, 2009). These are frontline health cadres deployed at community level, whereby the community will actively participate in the planning, implementation, monitoring and evaluation of health programmes outlined for them, among which TB and HIV programmes are inclusive.

Funding for TB/HIV collaborative activity implementation is exclusively available from non-governmental sources. The government's role is to solicit and plan for activities based on the allocated fund, but the information is publicly available on how international funds are being used to support TB/HIV collaborative activities. The government at regional, sub-city and health facility level is implementing the TB/HIV activities outlined on the policy with the current available funding. When the fund for TB/HIV activities is insufficient, activities which are not supported are surveillance of HIV among TB patients or vice-versa, INH preventive therapy and Cotrimoxazole preventive therapy. In addition, activities which are not supported, though not main umbrellas, are community sensitisations, production, distribution of health education materials and health education activities. In general, there is no funding gap or, if there is, it is minimal. The cause is mostly lack of capacity for absorbability of the available

funds. This is because there is international funding for TB/HIV activities through the global fund to fight TB, HIV, and Malaria.

Regarding training of healthcare providers on TB/HIV cares, the health bureau is using guidelines developed at national level. There is a national training manual for TB/HIV collaborative activities which clearly outlines how to manage co-infected patients (FMOH, 2007b). In addition to healthcare workers, PLHIV networks are involved in the training and capacity-building preparations.

Associations of PLHIV, NGOs, community representatives, urban health extension workers and private for-profit health facilities working on TB and HIV care services are also key stakeholders in the TB/HIV collaborative activity implementation. However, the TB/HIV plan does not include training for community organisations or advocates.

The training manual is modular and involvement of PLHIV in the training adds extra value for more firsthand experience and practical knowledge, especially for healthcare providers, who are responsible for care and support of patients of TB and HIV. TB and HIV testing services are available in all health facilities, including private-for-profit and non-profit. The government is supporting private-for-profit and non-profit health institutions with supplies and training to provide these testing services at subsidised prices. Special emphasis is given by the government to supporting private-for-profit and non-profit health facilities for HIV testing by providing test kits, working protocol and training on HIV testing and counselling for healthcare providers. The services are mostly given free of charge or at subsidised prices.

There is functional system of referral linkage at health facilities, both intra- (among the various clinics in the same facility) and inter-facility (among the different health facilities) for patients with TB and HIV.

There is a referral feedback system, whereby both the sender and receiver facilities (health workers) communicate on the outcome of their patients. In addition, the referral systems' implementation obstacles are being discussed on the bi-annual review meeting, in which all stakeholders from both governmental and non-governmental (for profit and non-profit) organisations meet, which is organised by the regional health bureau.

Concerning advocacy, programme communication and social mobilisation on TB/HIV care services, the government is providing continuous information to the public about the elevated risk of TB among PLHIV, dangers of TB/HIV co-infection, prevention

methods, signs/symptoms, availability of free services, care, treatment and support options.

The joint coordinating body has a plan to make sure this information reaches the communities through leaflets, radio broadcasts, television advertisements, printed advertisements, posters and billboards. The effectiveness of this use of the media to transmit relevant information to the affected communities may vary. For example, people of low educational status may not have access to printed materials, those with low economic status may not have access to television, and those in wealthier communities may not give attention to television and radio transmissions.

Therefore, effectiveness of the media depends on the timing of transmission, selection of appropriate media and target audience, message type (e.g., dramatic, poetic) and mixture of methods. Sometimes live radio transmission is effective, whereby the community participates directly. People affected and infected by the diseases can participate in the live transmission and experts will be invited to deliver appropriate messages for the community. In addition, public holidays and major events can be an opportunity to convey messages on TB and HIV.

There are no community activists on TB and HIV control programmes in the city participating in the advocacy activities with decision makers to ask for improved TB/HIV care services. Sensitisation workshops for community leaders (religious leaders, *EDIR* leaders, prominent individuals) will help to motivate community groups to become more involved in TB/HIV social mobilisation and advocacy activities. In addition, the principles of community voluntary services need to be developed to sensitise the community to TB/HIV.

Community-based and non-governmental organisations have integrated TB prevention, diagnostic and care services into the HIV prevention, care and support services under the coordination of the government. These are implemented in some private for profit and private for non-profit health facilities who are providing TB and HIV collaborative services for the community in their catchment areas.

People living with HIV are not involved in the planning, implementation or evaluation of TB/HIV care services in the city administration. In addition, there is no plan to involve them currently. There were no reasons given by the regional TB/HIV collaborative activity coordinator.

#### *5.5.4.1.4 Conduct monitoring and evaluation of TB/HIV collaborative activities*

There are official efforts to monitor and evaluate TB/HIV collaborative activities through TB programmes, however, the monitoring data is not readily available to community organisations. During the evaluation activities, people who use TB and HIV care services were being consulted for information on the implementation status of TB/HIV care services. These evaluation findings are being used to improve the quality of TB and HIV services.

The government is producing a report on the core TB/HIV indicators as recommended by the WHO (2012a). The regional health bureau has a comprehensive Health Management Information System (HMIS) through which all health activities at all levels are registered and reported to the next level. TB/HIV collaborative activities are also included on the HMIS tools, compiled regularly on the stated indicators at all levels. On the other hand, the Interim Policy for collaborative TB/HIV activities recognises community-led monitoring and advocacy as an important way to promote and increase public demand for accelerated and improved TB/HIV programmes and services. Nevertheless, community groups are not involved in the monitoring and evaluating of TB/HIV activities and services in Addis Ababa City Administration.

#### **5.5.4.2 Activities to Decrease the Burden of TB among PLHIV**

There are three main recommended activities (WHO, 2004d) to be done regularly at HIV clinics to decrease the burden of TB among PLHIV. Sometimes it is called the 3Is, which is an output of the Joint World Health Organization HIV/AIDS and TB Department Meeting report in 2008 (WHO, 2008a). The finding from the Addis Ababa City Administration Health Bureau TB/HIV coordinator on these activities implementation is presented as follows.

##### *5.5.4.2.1 Establish intensified TB case-finding*

Screening for TB is being offered or encouraged at HIV testing and counselling centres. In addition, PLHIV who are on their follow-up cares at HIV care clinics are eligible for these services at each of their follow-up visits. The screening is done clinically and by history. If a patient is found to have some clinical justifications for TB, sputum smear and radiographic examinations would be made to rule out tuberculosis. However, there is no system of tuberculin skin test examinations in Addis Ababa. If a patient is found to

have active TB disease, referral to TB clinics will be done immediately and a TB clinic health worker automatically registers him or her for DOTS management.

#### *5.5.4.2.2 Introduce Isoniazid preventive therapy*

Isoniazid preventive therapy (IPT) is offered to PLHIV in all public health facilities for those who do not have active TB. People living with HIV have access to information for IPT through group and individual health education, leaflets or pamphlets and electronic teaching aids in the health facilities. The information provided is also part of the adherence counselling for all PLHIV in their follow-up cares. It is believed that once patients have had accurate and full information about their disease conditions and treatment modalities, adherence to treatment will be high (Jin, Sklar, Oh &, 2008; Lindval, Colstrup, Wollter, Klemenz, Loogna, Grønhaug & Thykjaer, 2006). Therefore, all PLHIV who do not have active TB have access to IPT as part of the package of care in all HIV care clinics of public health facilities in the city. The drug (INH) is available in HIV clinics at ART pharmacy free of charge.

#### *5.5.4.2.3 Ensure control of TB infection in healthcare and congregate settings*

There is a guideline for TB infection control in healthcare and congregate settings, developed by the WHO (2009e). The guideline outlines how people presenting with TB symptoms would be managed and isolated from the rest of people living with HIV and others at high risk of TB (WHO 2009e). The guideline describes TB infection control at TB clinics, waiting areas, HIV chronic care clinics and outpatient departments, which are available for all healthcare providers working on TB/HIV care services. The guideline addresses four sets of interventions: managerial, administrative measures, environmental and personal protective measures.

According to the response by the regional TB/HIV collaborative activity coordinator, infection control of TB in the health facilities is being carried out.

#### **5.5.4.3 Activities to decrease the burden of HIV among TB patients**

There are five main recommended activities (WHO 2004d) to be implemented regularly at TB clinics to decrease the burden of HIV among TB patients:

*Primary HIV preventive interventions:*

- *HIV testing and counselling and*

- *HIV prevention methods,*

*Secondary HIV prevention interventions (treatment and care):*

- *Cotrimoxazole preventive therapy and*
- *ART,*

*Tertiary HIV prevention interventions (support and rehabilitative care):*

- *Ensure HIV/AIDS care and support.*

The findings from interviews with the regional TB/HIV collaborative activities are presented under each of these five activities, as follows.

#### *5.5.4.3.1 Provide HIV testing and counselling*

HIV testing and counselling is being offered to all TB patients as a provider-initiated testing and counselling strategy. HIV testing and counselling services are offered free of charge at all public health facilities. The service is being offered by TB clinic health staff and is part of the TB control programme activity. However, if patients want the services to be offered at Voluntary Counselling and Testing (VCT) centres, intra-facility referral linkage will be made to the VCT clinic. Currently, all public as well as private health facilities in Addis Ababa city administration are providing HIV counselling and testing services.

To explore how VCT for HIV can contribute to a more coherent response to TB, the WHO is coordinating the ProTEST Initiative. The name "ProTEST" is derived from the 'Promotion of voluntary testing' as an entry point for access to the core interventions of intensified TB case-finding and Isoniazid preventive treatment. Other interventions may be added to finally provide a comprehensive range of HIV and TB prevention and care interventions. Under the ProTEST Initiative, pilot districts are establishing links between centres for VCT for HIV and TB prevention and care. This will pave the way for large-scale operationalisation of the comprehensive range of interventions needed to control TB in settings with high HIV prevalence (Godfrey-Faussett et al., 2002).

In addition, voluntary counselling and testing for HIV can link TB and HIV programme activities. The benefits of VCT for HIV to TB patients include referral for appropriate clinical care and support for those testing HIV-positive (Godfrey-Faussett et al., 2002).

#### *5.5.4.3.2 Introduce HIV prevention methods*

The TB programme has an HIV prevention strategy. There is regular health education for TB patients at their follow-up treatment care, at which times HIV prevention messages are being conveyed through leaflets, brochures and electronic media, as well as through face-to-face education. In addition, there is a strong referral linkage with HIV treatment, care and support programmes at intra- and inter-facility level. These HIV prevention services are available through the TB control programme.

All TB clinic staffs offer HIV prevention services and information on mother-to-child transmission, harm reduction, reduction of work place and hospital acquired exposure to HIV infection. In addition these, all TB centres have HIV prevention services. When a TB patient is found to be HIV-negative, there is counselling, supporting partner testing, counselling on faithfulness, and encouragement of consistent condom use and abstaining from sex until marriage. However, there is no trend of screening for other STIs for TB clients, as was reported by the regional coordinator.

#### *5.5.4.3.3 Introduce Cotrimoxazole preventive therapy*

Cotrimoxazole preventive therapy is available to eligible PLHIV who have active tuberculosis in the TB clinics. The preventive therapy is given after thorough adherence counselling and ongoing patient monitoring of drug side effects is being done regularly. It has been reported that there is no shortage of Cotrimoxazole and the drug is available at HIV clinics in all health facilities to be given free of charge.

#### *5.5.4.3.4 Ensure HIV/AIDS care and support*

People living with HIV who are diagnosed with tuberculosis are provided with nutritional support, palliative care, HIV prevention, PMTCT and ART services in the same health facility. Therefore, the TB programme has established a referral linkage with the HIV control programme to provide the continuum of care and support for PLHIV who are receiving or have completed TB treatments. When a TB patient is found to be HIV-positive, the patient is immediately linked with HIV clinic through intra-facility referral linkage for chronic HIV care.

#### 5.5.4.3.5 *Introduce antiretroviral therapy (ART)*

All HIV-positive TB patients are assessed for eligibility of ART, which is available for all HIV-positive TB patients within the public health facilities. Efavirenz-based ART drugs are available for someone who is co-infected with TB and HIV to prevent drug-drug interactions. In addition, side effects are monitored during the follow-up care by the treating health worker. In general, HIV-positive TB patients have access to many kinds of treatment, care and support through intra- and inter-facility referral linkage to all TB/HIV care centres in the Addis Ababa City Administration. The administrative TB/HIV collaborative activities coordinator commented that the IPT uptake in Addis Ababa is very low, because of the debate between clinicians and public health experts, and for fear of INH drug resistance and lack of objective screening to rule out active tuberculosis.

The TB/HIV collaborative activities implementations are stronger on the TB clinic side than on the HIV care clinic side. Activities to decrease the burden of HIV among TB patients are thus more operational than those to decrease the burden of TB among HIV patients, according to the report from the coordinator. However, the findings from the quantitative data revealed that there were high rates of intensified TB case finding among PLHIV though provision of IPT is low (Chapter 4, section 4.1.1.3). Also, 92.8% of HIV patients were screened for TB (Chapter 4, section 4.1.1.3.1) at HIV clinics.

The suggestion can be reinforced by the findings from the quantitative data, i.e., the proportion of TB patients offered for HIV is nearly 90%, i.e., out of 834 TB patients, 726 patients were offered for HIV test (Chapter 4, section 4.1.1.2.16).

## 5.6 CONCLUSION

This chapter presented the analysis, interpretation, and discussion of qualitative data. The presentation began with an introduction to the chapter and review of research questions of the study. The findings of the qualitative study were presented on the order stated on the questionnaires:

Qualitative data presentation, analysis, and discussion

- Short answered qualitative questions for both TB and HIV patients:
  - Effect of integrated TB and HIV care service on patients' health.

- Support of health workers at TB and HIV clinics in improving the health of patients regarding TB and HIV risks and status.
- Feasibility and practicality of integrated HIV and TB care services at the same health facility, from patients' perspectives.
- Quality of the service provision in general regarding TB and HIV care, from patients' perspectives.
- The behaviour of healthcare providers towards their patients.
- Performances of healthcare providers from patients' perspectives.
- Comments of patients to improve the service provision of TB/HIV care.
- Interview of TB/HIV collaborative activity facility coordinators:
  - Programme implementation of collaborative TB and HIV services.
  - Programme implementation impacts on staff performances.
  - Impacts of programme implementation on infrastructure.
  - Impact of TB/HIV collaborative activities on human resources.
- Focus group discussion among patients of TB and HIV:
  - Patients' knowledge about TB/HIV and their relationship.
  - Healthcare delivery system support for people of those diseases.
  - Knowledge of patient for types of services provided by health facilities to decrease the burden of TB and HIV.
  - Effect of integrated TB and HIV care service on patients' health.
  - Support of health workers at TB and HIV clinics in improving the health of patients regarding TB and HIV risks and status.
  - Feasibility and practicality of integrated HIV and TB care services at the same health facility, from patients' perspectives.
  - Quality of the service provision in general regarding TB and HIV care, from patients' perspectives.
  - The behaviour of healthcare providers towards their patients.
  - Performances of healthcare providers from patients' perspectives.
  - Comments of patients to improve the service provision of TB/HIV care.

- TB/HIV policy implementation in Addis Ababa city administration, interview with regional TB/HIV collaborative activity coordinator:
  - Mechanisms for collaboration.
  - Activities to decrease the burden of TB in PLHIV.
  - Activities to decrease the burden of HIV in TB patients.

Each theme was discussed under several sub-themes which were also sub-divided into numerous categories.

The research findings indicated that collaborative TB/HIV care services are being implemented in a satisfactory way to the extent patients' benefit to become healthier and more productive in their life. In addition, the uptake of public health facilities for TB and HIV care service clients was very high.

Despite all these achievements and benefits to patients, many activities need to be improved to promote implementation of collaborative TB/HIV care services in the city administration. Among the factors which were hindering the activities were: shortage of well trained health human power; poor educational schemes for patients about their disease conditions; inadequate infrastructural set-ups; shortages of medical supplies and drugs; and absence of vital investigation equipment and laboratory examinations in the public health facilities.

The healthcare providers were generally of the view that improvement of both the intrinsic and extrinsic motivational factors would boost the performance of TB/HIV collaborative service providers. Specifically noted were: improvement of infrastructural set-ups, sustained supply of medical supplies, continuous upgrading of healthcare providers performances by training, improvement in the laboratory investigation services and continuous health education of patients on their disease conditions for better prevention, care and treatment of TB and HIV diseases.

Although the current practices of collaborative TB/HIV care services in Addis Ababa city administration are encouraging, boosting mechanisms have to be put in place to accelerate better care and treatment services. These include availing up to date guidelines on collaborative TB/HIV care, training new cadres of health workers, cascading the activities down to the community levels and ongoing monitoring of activities are paramount. Also, health workers and patients who participated in this

research mentioned a range of recommendations in promoting better implementation of collaborative TB/HIV care services; among others:

- Improved coordination and evaluation of collaborated TB/HIV care services by regional and central experts,
- Involvement of TB/HIV patients in the planning, implementation, monitoring and evaluation of the activities,
- Sustained supply of medical supplies and upgrading some of the facilities to more specialised centres which serve as tertiary level referral and research centres.

The next chapter presents the conclusions, limitations, and recommendations of the study.

## **CHAPTER SIX**

### **CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS**

#### **6.1 INTRODUCTION**

This chapter presents the summary of the main findings, implications of the findings, limitations and concluding remarks of the study. In addition to these, the researcher outlines practical recommendations for promoting the implementation of collaborative TB/HIV care services in public health facilities in Addis Ababa city administration, as well as areas for further research. The proposed modalities for promoting the implementation of collaborative TB/HIV care services arising from the research findings are outlined.

#### **6.2 THE AIM AND OBJECTIVES OF THE STUDY**

This concluding chapter is presented in line with the aim the objectives of the study. The overall aim was to assess the implementation of collaborative TB and HIV care services in support of local health services in Addis Ababa City Administration, Ethiopia.

The objectives of this research were to:

- Determine HIV prevalence among TB patients in Addis Ababa.
- Determine TB prevalence among HIV patients in Addis Ababa.
- Describe implementation status of collaborative TB and HIV care services.
- Identify how programme implementation impacts on both TB and HIV patients.
- Identify how programme implementation impacts on staff development.
- Describe the programme implementation in relation to infrastructure.
- Recommend to policymakers and practitioners the technical basis to guide the implementation of collaborated TB/HIV activities based on findings of this study.

### **6.3 RESEARCH DESIGN AND METHOD**

The study used both quantitative and qualitative research methodologies. Patients of TB and HIV at TB and HIV clinics, respectively, were interviewed at exit using an interviewer-administered structured questionnaire to determine the implementation status of recommended (see Chapter 3) TB/HIV collaborative care services as the package of follow-up cares. On the other hand, selected patients from the same participating units were interviewed for short-answered qualitative questions for exploration of how the service provision affected their health condition, how health workers assisted in improving their health, how feasible and practical was collaborative TB/HIV care services, how they evaluated the quality of the services, the behaviour and performances of healthcare providers, and finally their recommendations to improve collaborative TB/HIV care services.

Qualitative data included focus group discussions conducted among separate groups of TB and HIV patients to further explore and validate the individual short-answered questions and quantitative questions. Healthcare providers at all levels (service providers, TB/HIV collaborative activity health facility and regional coordinators) were interviewed to understand the status of implementation of collaborative TB/HIV care services in respect to both technical and administrative aspects. Data collection and analysis for both qualitative and quantitative was done concurrently (see Chapter 3).

#### **6.3.1 Quantitative data**

The population for this level of data collection comprised TB and HIV patients from TB and HIV care clinics. Data was collected using an interview-administered structured questionnaire, encircling the relevant answer (Annexures F and G). Hence, a total of 834 TB patients and 849 HIV patients participated in this level of data collection, all selected from 10 study health facilities proportional to the size of the cumulative TB/HIV patient load. Sample size was calculated using EPI info for comparative cross sectional study. The data analysis was done using SPSS version 15.0.

#### **6.3.2 Qualitative data collection**

The population for this level of data collection also comprised TB and HIV patients from TB and HIV care clinics. The same participants from the quantitative data collection

were individually interviewed for open short-answered questions, whereby, 834 TB patients and 849 HIV patients were interviewed. In addition, a total of 8 FGDs among TB or HIV patients separately were conducted until saturation. In addition, 10 TB/HIV care providers and health facility TB/HIV care coordinators from all study health facilities were purposively interviewed for open-ended questions. Finally, the regional TB/HIV collaborative activity coordinator was interviewed using a checklist for assessing the overall regional TB/HIV collaborative activity implementation status. The data analysis was done manually with themes and sub-themes.

## **6.4 CONCLUSIONS**

The findings of the study are summarised according to the study objectives as follows.

### **6.4.1 Determine HIV prevalence among TB patients in Addis Ababa**

The study enrolled 834 TB patients of both types (extra and pulmonary tuberculosis) from the ten study public health facilities. Nearly half (51.3%) of these study participants were interviewed while in their intensive phase therapy (0-2 months). According to the findings of this study, a little more than half 445 (53.4%) of TB patient participants had been tested for HIV before they knew their current TB disease. Of these patients who tested for HIV before, slightly less than half (43.1%) had been tested within the preceding six months before the current diagnosis of TB disease; whereas, 42.3% had been tested before 6-24 months prior to the current TB disease; the remaining 14.6% had been tested before they were diagnosed more than two years preceding their current disease.

The prevalence of HIV among study participants who tested for HIV before they knew their current TB disease was 19.6% (87 of 445). Of these HIV-positive patients, 77 had already enrolled at HIV care and treatment clinics in public health facilities. On the other hand, (87.1%) of all TB patients who participated in this study were offered for HIV testing during their current treatment. Of these who had been offered for HIV test, 79.8% had been tested for HIV. The majority, 80.3%, tested at TB clinics and the remaining in other departments. The majority of these tested TB patients (76.5%) had been tested during the same time as being diagnosed for the TB disease. According to the findings, 20.2% were found to be HIV-infected, which is nearly the same proportion (19.6%) as those who had been tested before they diagnosed for their current TB

disease. Similarly, 94.0% of these HIV-positive patients had been enrolled at HIV care and treatment centres.

From these findings, HIV prevalence among TB patients was found to be high, but the proportion of TB patients who had been tested before (53.4%) they knew their current disease was less than those who had been tested during (79.8%) their TB treatment. This implies that offering HIV test for TB patients as a package of care increases the uptake of available services. In addition, collaborative TB/HIV care services promoted HIV testing for all TB patients irrespective of their previous test history.

#### **6.4.2 Determine TB prevalence among HIV patients in Addis Ababa**

The study enrolled 849 HIV patients from the ten study health facilities. The majority (74.6%) of the patients were interviewed within at least one year of having learned their HIV status, whereas a quarter (25.4%) of all study participants were less than a year into knowing their status at the time of the interview. According to the finding in this study, for a little more than half (53.1%) it was more than one year since they started HAART.

A total of 167 (19.7%) of the interviewed HIV patients had been diagnosed and treated for TB before they knew their HIV-positive status. The Majority (60.4%) of these TB-diagnosed HIV study participants had had TB disease within the preceding one year of being tested HIV-positive. A significantly higher proportion (82.0%) of the diagnosed TB/HIV patients had pulmonary tuberculosis. Of those diagnosed TB patients, all except 2.4% had already completed their anti-TB treatment.

On the other hand, 88 out of 849 (10.4%) of all HIV patients have been diagnosed for TB after they knew their HIV-positive status. Quite large proportions (69.3%) of these diagnosed TB patients were detected during the first six months following their positive HIV status. Similarly, 84.1% of those cases were pulmonary tuberculosis. In addition, more than half, 46 out of 88 diagnosed TB patients had already started HAART after they learnt their HIV status.

From these findings, TB prevalence among study participants was high (19.7%) before they knew their HIV-positive status and low (10.4%) after knowing HIV-positive status. However, the proportion of HIV patients who had been diagnosed for TB (19.7%) before they knew their current HIV disease was the same as the proportion of TB patients who had become HIV-positive (19.6%) before they knew their current TB disease. From this

finding it can be concluded that HIV care and treatment decreases the prevalence of opportunistic diseases such as TB.

On the other hand, the prevalence of TB among HIV patients after they enrolled at HIV clinics was very low (10.4%) compared to the proportion of HIV-positives (20.2%) among TB patients during anti-TB treatment follow-up. This can be explained as HIV patients having a better quality of life after enrolling at HIV chronic care clinics due to the package of care following TB/HIV collaborative activities implementation. In addition, some people may not be ready for HIV test unless there is a reason to go to a health facility for diseases associated to HIV, in this case tuberculosis. Therefore, according to this study, prevalence of TB among HIV patients is lower than prevalence of HIV among TB patients (see Chapter 4, section 4.1.1.3).

### **6.4.3 Describe implementation status of collaborative TB and HIV care services**

In this section, the implementation status of TB/HIV collaborative activities at public health facilities in Addis Ababa city administration are summarised. The section is subdivided into three parts, from both quantitative and qualitative data obtained from patients, TB/HIV care service providers and coordinators at health facility and regional health bureau levels.

#### **6.4.3.1 *Activities to decrease the burden of TB/HIV, quantitative findings***

Section 4.5 (chapter 4) described the findings of implementation status of activities to decrease the burden of TB/HIV from interviews with both TB and HIV patients who, at the time of interview, were on their follow-up care.

Key activities to decrease the burden of TB/HIV which are included in the package of care for TB and HIV patients are, among others:

- encouraging and offering of HIV testing for all TB patients at TB clinics and TB screening for all HIV patients at HIV clinics,
- provision and awareness creation of TB/HIV patients for Cotrimoxazole preventive therapy and INH preventive therapy for HIV patients,

According to the findings, a larger proportion (92.4%) of TB patients reported that HIV counselling and testing was being offered for all TB patients at TB clinics, whereas,

almost the same proportion (92.8%) of HIV patients observed that TB screening was being offered regularly for all HIV patients at their respective HIV clinics.

Knowledge about CPT among TB patients was found to be low, only 23.1% of all interviewed TB patients knew the importance of CPT as a package of care for TB/HIV patients. This may be because not all TB patients had HIV and awareness creation about CPT might be restricted to HIV clinics only. On the other hand, 42.3% of HIV patients were aware that IPT was one of the packages of care for all HIV patients at their health facilities. Still, the proportion of HIV patients who had the knowhow of IPT was very low; in principle, all HIV patients should have some knowledge of all the packages of care available as collaborative TB/HIV care services.

Among those TB patients who knew CPT as one of the package of care for TB/HIV patients, the implementation of provision of CPT was asked. Based on the findings, 91.2% of these were aware that all people living with HIV who also have TB have access to CPT as part of the package of care in their health facilities.

On the other hand, among HIV patients who have awareness about IPT as a package of care for all HIV patients who do not have active TB, were some who inquired whether the service was available in their health facilities. Based on that, 93.0% reported that people living with HIV who did not have active TB did have access to IPT as part of the package of care in their follow-up health facilities.

Of those TB patients who had the know how (193), about CPT, 57.5% had not been provided with CPT. The reason for not including all interviewed TB patients in this analysis was that not all TB patients were eligible for CPT, as most of them did not have HIV infection. On the other hand, 28.7% of all interviewed HIV patients (849) had not been provided with INH during their follow-up care at HIV clinics.

The findings in this study also revealed that, the placement of drugs Cotrimoxazole and INH were mainly at HIV clinics, 81.1% and 98.4%, respectively. Nearly a fifth (18.9%) of TB/HIV patients re-filled their Cotrimoxazole tablet from the TB clinics.

#### **6.4.3.2 Findings from interview of service providers and coordinators**

The TB/HIV collaborative activity has 12 activities under three major classifications, as described in chapter 2, sections 2.7.1 – 2.7.3:

- Mechanism for collaboration:
  - *Set up a coordinating body for TB/HIV activities at all levels, Conduct surveillance of HIV prevalence among tuberculosis patients, Carry out joint TB/HIV planning, Conduct monitoring and evaluation for TB/HIV care.*
- Activities to decrease the burden of TB in PLHIV:
  - *Establish intensified TB case-finding, Introduce Isoniazid preventive therapy and Ensure control of TB infection in healthcare and congregate settings*
- Activities to decrease the burden of HIV in TB patients:
  - *Provide HIV testing and counselling, Introduce HIV prevention methods, Introduce Cotrimoxazole preventive therapy, Ensure continuum of HIV care and support and Introduce antiretroviral therapy*

Implementation statuses of these 12 collaborative TB/HIV activities were explored during the interview and presented in Chapter 6. The summary of the findings are presented below.

According to the findings in this study, eight out of the 10 study health facilities have coordinating bodies for TB/HIV collaborative activities effective at the health facility level. The coordinating bodies for collaborative TB/HIV care services in those health facilities were represented by professionals from both TB and HIV control programmes. In addition, there was operational joint TB/HIV planning, monitoring and evaluation for TB/HIV collaborative activities, but surveillance of HIV prevalence among TB patients has never been conducted in all of the study health facilities..

Provision of routine screening for tuberculosis among HIV patients, diagnosis and treatment for active TB cases were being done routinely in all of the study health facilities. Nine out of the 10 study health facilities provide IPT for all PLHIV without active TB disease. In addition, six out of 10 had some kind of TB infection control mechanisms in the health facilities, such as ventilated rooms and wide waiting areas for patients to prevent transmission of TB in health facilities. On the other hand, healthcare providers from only four of the health facilities used personal protective masks to prevent transmission of TB to themselves and to patients.

Concerning activities to decrease the burden of HIV among TB patients, interviewed healthcare providers and/or TB/HIV facility coordinators reported that all TB patients were being offered HIV counselling and testing services, and health workers promoted

safer and responsible sexual behaviour to reduce HIV transmission. In addition, health facilities were practicing measures to ensure the safety of blood supply and medical equipments to reduce transmission of HIV. All health facilities were providing ART services for treatment of HIV or prophylaxis for eligible PLHIV as a package of care. Participants also reported that Cotrimoxazole preventive therapy was being provided for eligible PLHIV in all of the study health facilities.

Finally, the interview findings revealed that all the study health facilities ensured a continuum of care and support for PLHIV, created mechanisms to provide ART to eligible TB patients and ensured continuity of ART after completion of TB treatment.

#### **6.4.3.3 Findings from interview of regional coordinator**

In section 4.6.4 (Chapter 4), collaborative TB/HIV policy implementation in Addis Ababa city administration was discussed from the findings of interviews with the city administration coordinator for TB/HIV collaborative activity using a WHO monitoring tool (WHO, 2006b) for the programme. The findings were discussed based on the 12 key thematic areas of activities of collaborative TB/HIV activities, as follows.

#### **6.4.3.4 Set up a coordinating body for TB/HIV activities at all levels**

According to the response of the Regional Coordinator of collaborative TB/HIV care activities for Addis Ababa City Administration, there is a joint coordinating body for TB/HIV activities at national, regional and sub-city level. The joint TB/HIV coordinating body at regional level was integrated into the newly restructured administrative health Bureau Business Processing and Re-engineering (BPR), which is under one department. Therefore, TB and HIV programmes are facilitated by a regional coordinator, but the planning, implementation, monitoring and evaluation of the activities is being carried out by representatives from both TB and HIV prevention and control programmes. In addition, the coordinating body is represented by the two programmes at sub-city and health facility levels. Nevertheless, the joint coordinating body at all levels is not represented by TB/HIV co-infected communities, associations of PLHIV or TB patient support groups.

#### **6.4.3.5 Conduct surveillance of HIV prevalence among TB patients**

Surveillance of HIV prevalence among TB patients was being collected at regional level but it is under the national HIV surveillance activity. Two health facilities (a hospital and a health centre) are serving as sentinel sites from which random blood samples are collected from TB patients every month and being sent to Ethiopian Health and Nutrition Research Institute (EHNRI) for anonymous and unlinked HIV testing.

However, the information for collecting blood specimens was not communicated to the community, as it is using leftover blood collected for other purposes and was using unlinked anonymous techniques to be analysed collectively. However, all TB patients were being offered voluntary HIV testing and counselling services at each of the health facilities. The data from sentinel sites and populations is only utilised at national and regional levels as an input for developing policy in designing better implementation strategies.

#### **6.4.3.6 Carry out joint TB/HIV planning**

The Addis Ababa City Administration Regional Health Bureau has a strategic plan for TB/HIV care activities which was developed by representatives from both TB and HIV care programmes. In order for a strategic plan to be more representative, it should be developed by all stakeholders for the programme (Office of Quality Improvement, 2003). The joint TB/HIV planning did not include representatives from either the community activists or from people infected with TB/HIV; therefore, it is very difficult to conclude whether the regional strategic plan reflects community's priorities. In addition, the roles of community advocates and people infected with TB and HIV were not outlined on the implementation of the strategic plan.

According to the finding, funding for TB/HIV collaborative activity for the city administration is available only from NGOs. The role of the government is to solicit and plan for activities based on the allocated funds. However, the information on funding of TB/HIV collaborative activities is publicly available, notably how they are being used to support the programme. The government at regional (City Administration health Bureau), sub-city health department and health facility level are implementing the TB/HIV activities outlined on the policy with the available funding.

#### **6.4.3.7 Conduct monitoring and evaluation**

There is some effort to monitor and evaluate TB/HIV collaborative activities in the city administration, but the information for monitoring and evaluation activities is not available to community organisations. During the evaluation activities, people who are utilizing TB and HIV care services were consulted for information of beneficiaries.

Findings from the evaluation activities are being used for planning of TB and HIV services. The government is producing a report on the core TB/HIV indicators as outlined on the policy on implementation of TB/HIV care services (WHO 2012a). The Addis Ababa City Administration Health Bureau has a comprehensive Health Management Information System (HMIS) through which all health activities at all levels are registered and communicated to the next level. Information about TB/HIV collaborative activities are also included on the HMIS tools which is regularly compiled to the relevant indicators at all levels. However, the research findings also showed that, community groups and people infected with HIV and/or TB are not involved in the monitoring and evaluation activities of collaborative TB/HIV activities.

#### **6.4.3.8 Intensified TB case-finding**

In section 4.9.2 (Chapter 4), the three main activities to decrease the burden of TB among HIV patients were discussed in detail. As a summary, the interview findings from the regional coordinator confirmed that screening for TB is being encouraged and offered at HIV prevention, care and treatment centres in the study health facilities. According to the report, the screening for TB was being done clinically and by history, but if care takers suspected apparently, the patient would be referred to a clinician for further physical examinations and investigations. In addition, if patients were found to have active TB disease, referral and linkage to TB clinics would be undertaken for disease classification and DOTS management.

#### **6.4.3.9 Isoniazid preventive therapy**

Based on the interview finding in this study, IPT was being offered to PLHIV found to be negative for active TB. In addition, PLHIV have access to information for IPT in the health facility through routine health education. In general, all PLHIV who do not have active TB have access to IPT as part of the package of care in all HIV care clinics of the

study health facilities. The drug (INH) is also available free of charge in HIV clinics dispensed at ART pharmacy.

#### **6.4.3.10 Tuberculosis infection control in healthcare settings**

The findings in this study revealed that TB infection control in healthcare facilities was being implemented partially. TB patients in the waiting area were separated from the rest of the patients to prevent transmission of the disease to non-diseased patients. Some health facilities have separate waiting areas for TB and HIV so that other patients of the health facility have very low contact with these patients. In addition, TB clinics were being ventilated by opening the windows during service delivery. On the other hand, it has been found that most healthcare providers were not using mechanical protective devices (gloves, goggles) while providing the service, which might expose them to infection. Some health facilities have poor infrastructure to organise the clinics and waiting area so as to comply with implementation of the standards of infection prevention (WHO, 2009e). Some of the TB and/or HIV clinic rooms were narrow, lacked proper windows, had no separate waiting area, only a narrow waiting area, and/or shortages of infection prevention materials (goggles, gloves).

#### **6.4.3.11 Provide HIV testing and counselling for TB patients**

In section 4.9.3 (Chapter 4), the five main activities to decrease the burden of HIV among TB patients were discussed in detail. As a conclusion, the findings in this study revealed that HIV testing and counselling was being offered to all TB patients on their follow-up care, using a technique of provider-initiated testing and counselling strategy by service providers at TB clinics of all study health facilities (WHO 2007d). In addition, if TB patients wanted the services of HIV testing at Voluntary Counselling and Testing centres (VCT), intra-health facility referral linkage would be linked to the VCT clinics. In general, the uptake of HIV testing for TB patients in all the study health facilities was very high (section 4.5.1).

#### **6.4.3.12 Introduce HIV prevention methods for TB patients**

According to the interview findings in this study, the TB control programme of the city administration has HIV prevention and control activities. Among the services, regular

health education on HIV prevention skills for TB patients at TB clinics was being rendered in group and individual health education schemes, which use face-to-face education, leaflets, brochures and electronic media. In addition, there is a referral linkage with HIV treatment, care and support programmes at intra- and inter-facility level. In addition these, the TB control programme of the city administration offers HIV prevention services, information on mother-to-child transmission of HIV, harm reduction, reduction of workplace- and hospital-acquired exposure to HIV infection.

#### **6.4.3.13 Introduce Cotrimoxazole preventive therapy**

The interview with the regional coordinator found out that Cotrimoxazole preventive therapy was being offered to all PLHIV who had active tuberculosis in the TB clinics to prevent bacterial infections. The therapy was being given with appropriate adherence counselling and ongoing patient support for drug side effects.

#### **6.4.3.14 Ensure HIV/AIDS care and support**

The regional TB/HIV care coordinator reported that, TB-HIV co-infected patients were being provided with palliative care, HIV prevention, PMTCT and ART services in the same health facility and referral linkages for nutritional support to care- and support-giving organisations. Therefore, the TB control programme has an established referral linkage with the HIV control programme to provide the continuum of care and support for all PLHIV who were receiving or had completed anti-TB treatments.

#### **6.4.3.15 Introduce antiretroviral therapy**

This study confirmed that all HIV-positive patients had access to free HAART at all of the public health facilities in the city administration. The ART drug of Efavirenz based were being available for patients co-infected with TB and HIV to prevent drug-drug interactions. In addition, side effects were being monitored during the follow-up care by the treating healthcare provider. In general, an HIV-positive TB patient has access to many kinds of treatment, care and support through intra- and inter-facility referral linkages at all public TB/HIV care centres in the Addis Ababa City Administration.

The City Administrative TB/HIV collaborative activities coordinator reported that, the uptake for IPT was very low in almost all of the study facilities; reasoning that the

debate between clinicians and public health experts regarding drug resistance and objective screening to rule out active tuberculosis remained inconclusive. In addition, the coordinator mentioned that, the TB/HIV collaborative activities were stronger at TB clinics than at HIV care clinics. In other words, activities to decrease the burden of HIV among TB patients were being effective more than activities to decrease the burden of TB among HIV patients.

#### **6.4.4 Identify how programme implementation impacts on both TB and HIV patients**

Chapter 5 sections 5.2.1 - 5.2.3, qualitative short-answered patient interviews, and interview of TB/HIV collaborative activity facility and regional coordinators/service providers outlined the findings in detail.

In this concluding chapter, findings directly related to the impacts of TB/HIV collaborative activity on patient health and knowledge is summarised in the relevant sub-sections as follows.

##### **6.4.4.1 Findings from the Focus Group discussion among patients**

Focus group discussion among TB and HIV patients revealed findings on:

- the knowledge status of TB and/or HIV patients on their disease conditions,
- the support of TB/HIV healthcare delivery system, in general, in improving their health conditions,
- effect of integrated TB/HIV care on patients' health,
- support of the healthcare providers at TB and HIV clinics, and
- patients' comments to improve the services in promoting collaborative TB/HIV care services, as summarised below.

##### **6.4.4.1.1 Knowledge about TB and/or HIV, and their relationship**

In general, the findings in this study (Chapter 5 of section 5.2.3) revealed that, knowledge and understanding about diseases of TB and HIV among TB and HIV patients was low.

Some participants defined HIV as a disease caused by a virus and transmitted from person to person by unprotected sexual intercourse, living together, eating together, sharing cups and plates with infected persons and sharing sharp materials. However, TB participants agreed that there was a cure for TB but not HIV, albeit both diseases affect similarly in terms of socially, psychologically and physiologically.

However, few of the participants from either TB or HIV groups understood well the diseases TB and HIV or gave correct definitions. In general, this study showed that knowledge about the diseases TB and HIV among HIV patient participants was better than their TB counterparts, but HIV participants also had poor understanding of the relationship between the two.

Therefore, it was clearly understood from most focus group participants in this study that, patient health educational system of health facilities about TB and HIV for patients was neither using appropriate teaching aids nor being delivered on a level which most of them could understand.

#### *6.4.4.1.2 The support of the healthcare system to assist patients of TB and HIV*

Both TB and HIV patients, in general, expressed sincerely the indispensable support of the healthcare delivery system of collaborative TB/HIV care services in improving their quality of lives, particularly for HIV patients. In other words, participants expressed their view that the healthcare system was well equipped and capable of assisting people with both diseases. Some TB patients reported that health workers were keen to encourage them to know their HIV status through counselling and testing services.

Participants raised the benefits of the integrated TB/HIV care in supporting them while dealing with their disease conditions. They said treatment was free; the laboratory investigation was free; and there was no discrimination of patients based on social, economic or educational status. There is a gradual improvement of quality of services by increasing the number of health workers, upgrading physical infrastructure, increasing medical supplies (drugs, laboratory investigation) and in strengthening referral linkages to care, support and treatment centres.

In addition, adherence counselling during their follow-up cares has significant impact on increasing the knowledge of and improving attitudes to HIV and TB, as patients adhere to their intensive treatment schedules, particularly TB patients, and they practice healthy living styles. Nutritional counselling, preventive therapy (IPT and CPT) for TB and other

bacterial infections, health education on personal and environmental hygiene, helped to improve the lifestyle of patients with TB and HIV. In addition, the counselling given to patients helped them to decrease risks of transmitting the diseases to the community, particularly to family members.

On the contrary, participants from both groups indicated their concerns with absence of some laboratory investigations and some drugs in public health facilities, which sometimes expose them to extra expense. For example, drugs which they mentioned were, vitamins, anti-helmentics and antifungal treatments, whilst laboratory investigations mentioned were, x-ray, FNA, and CD4 count. In addition, frequent changes of healthcare providers in some clinics resulted in perceived effects on quality of services, psychological feeling of patients to get relationships with the new staff due to sense of being attended by a health worker who has little knowledge of their disease, and fear of possible change in norm of service provision.

#### *6.4.4.1.3 Effect of integrated TB/HIV services on patients' health*

The findings from both TB and HIV patients' focus group discussions revealed that the support of integrated TB/HIV care services was paramount in improving their health conditions. Participants agreed on '*one stop shopping*', meaning a patient having concerns of both diseases benefitting from services provided in the same health facility at no extra expense. Participants mentioned healthcare providers who consider both diseases and integrate the investigations and treatments to be of most benefit.

Participants of TB patients, for example, expressed their feelings about the benefits to their health of integrated TB and HIV services provided by public health facilities. Most of the study participants appreciated the encouragement and offering of HIV tests for TB patients, as it gave them an opportunity to know their HIV status early. In addition, early HIV test helped them for informed decisions of HIV prevention, care, treatment and support interventions. Implementation of integrated TB/HIV care services helped people to know about TB and HV better for early notification of signs and symptoms of the diseases for early medical care.

#### *6.4.4.1.4 Support of healthcare providers at TB and HIV clinics regarding HIV or TB risks and status*

The focus group participants from both TB and HIV groups appreciated the support of service providers at integrated TB/HIV care clinics and benefited from their keen and

kind service provision. Healthcare providers continually asked and screened for signs and symptoms for TB at each of the follow-up visits for all HIV patients, and encouraged and offered HIV testing for all TB patients. In addition, health workers were giving health education about TB and HIV diseases, how it transmits, disease preventions and availability of free diagnostic and treatment services at all of the public health facilities.

In general, most participants reported that health service providers of collaborative TB/HIV care were encouraging and enduring to solve many kinds of patients' concerns regarding TB/HIV diseases along the continuum of care in the prevention, care and support services of these two diseases.

#### *6.4.4.1.5 Comments to improve the service provision of HIV and TB care*

Finally, most participants who participated in this study felt some action should be taken to further improve the implementation of integrated TB/HIV care services. Issues related to improvement of TB/HIV laboratory services, improving the counselling and patient awareness creation services, motivating service providers (trainings and top-up payments) and improving the physical structure of some of the TB/HIV clinics.

#### **6.4.4.2 Individual patient interview findings**

Individual TB and HIV patients' interviews revealed findings on the effect of collaborative TB/HIV care services on their health conditions, how health workers assisted them in improving their health regarding TB and HIV risks and status, and how to improve the services in promoting collaborative TB/HIV care services. The findings are summarised below.

##### *6.4.4.2.1 How does the service provision of health facilities for both TB and HIV patients affect on your health?*

The finding in this study revealed that study participants believed provision of collaborative TB and HIV services improved their health conditions. Most obtained significant improvement on their health conditions from collaborative TB/HIV care services. However, a few participants were not happy with the overall service provision of collaborative TB and HIV care services.

*6.4.4.2.2 How do you think health workers at TB/HIV clinics assisted you in improving your health regarding your TB or HIV risks and status?*

The study found that TB/HIV service providers at TB and HIV care clinics assisted patients to get improved health conditions. The majority of the study participants witnessed significant improvement in their general health conditions. However, there were some participants who were dissatisfied with the services of health workers in dealing with their TB or HIV diseases. Amongst the practices which made patients unhappy were poor professional ethics, as reflected by some healthcare providers working at TB or HIV care clinics.

*6.4.4.2.3 What comments do you have to improve the service provision of HIV and TB care in this health facility?*

About half (50.8%) of all interviewed TB/HIV patients said that the services in general were fairly good, whereas, the remaining half commented on different issues to be improved, including those who frankly just said 'not good' (1.1%).

The most common comments are listed below, in the order of higher number of study participants favour:

- Improving the long waiting time to get the services and commencing service on the scheduled official working hours on time.
- To avail sustainable TB-HIV drugs supply to the public health facilities.
- Healthcare providers ought to abide by their professional ethics in keeping patients' confidentiality and they should be free of favouritism.
- Providing continuous health education on prevention of HIV and TB for patients attending collaborative TB/HIV care clinics.
- Providing food and shelter for some poor patients attending TB and/or HIV clinics during the follow-up days,
- Availing all TB (FNA and X-ray) and HIV (CD4 count) laboratory investigations at all public health facilities, and
- Preparation of anti-HIV drugs with injectable formulations.

#### **6.4.5 Identify how programme implementation impacts on staff development**

In section 5.2.2 (Chapter 5), the impact of collaborative TB/HIV care activities on healthcare providers working at public health facilities was discussed in detail. The findings were discussed based on impacts on the-job trainings, flow of logistics supply of TB/HIV care, support from the administrative environment for the clinics, major problems encountered and recommendations for collaborative TB/HIV care improvement. In this summary chapter, the key findings are outlined below.

##### **6.4.5.1 *On the-job trainings***

This study revealed that all the interviewed TB/HIV care facility coordinators and/or service providers had been trained in at least one course type on TB and/or HIV care services. The majority were trained in collaborative TB/HIV care service protocol, TB and leprosy control programme, MDR-TB, ART adherence counselling and treatment protocols, HIV counselling and testing skills and knowledge (PITCT or VCT), STIs prevention and control and on palliative care. Generally, all were trained for the type of clinical care that they were providing on TB or HIV care services.

##### **6.4.5.2 *Flow of logistics supply for TB/HIV care***

Study participants of TB/HIV care providers reported that sustained supplies of medical and pharmaceutical items for TB and HIV care services did not pose a major problem, but some reported that they had occasional stock-outs of some supplies, mainly, INH tablet and TB diagnostic reagents.

##### **6.4.5.3 *Support from the administrative environment for the clinics***

According to the interview findings from healthcare providers, the facility's general administrative support for the TB/HIV care clinics in most of the study health facilities (8 out of 10) were good and had good workable relationships. However, some (2 out of 10 study facilities) frankly expressed their frustration of being either neglected or had poor communication with them. This study could not explore the reasons behind this.

#### **6.4.5.4 Major challenges/problems encountered**

Interviewed TB/HIV care providers mentioned some challenges and problems they had in the process of delivering TB/HIV care services. They mentioned: shortages of personal infection protective materials, poor adherence of some patients to their treatments, inadequacy of consultancy rooms, frequent stock-outs of INH tablet, fear of patients of having the dual disease stigma, high patient load and less attention from administrators.

#### **6.4.5.5 Recommendations of health workers for improvement of collaborative TB/HIV care services**

TB/HIV collaborative activity facility coordinators/healthcare providers recommended for the improvement of TB/HIV care in their health facilities. Some of the recommendations mentioned by most of the interviewed study participants were:

- Continuous on-the-job trainings of healthcare workers on all TB/HIV collaborative care services both with basic and refresher schemes,
- Improvement in linkage of the TB/HIV services with care and support programmes,
- Staff rotation among the different clinics in the health facility should be regular,
- Deploying additional staffs to the clinics in relation to the continual patient loads,
- Decentralisation of the services to other health facilities (private-for-profit and non-profit facilities),
- Incentives for healthcare workers (training, pocket money, appreciation),
- Consultation rooms of some TB/HIV care clinics should be either renovated, changed or constructed,
- Laboratory and dispensary services should be integrated with TB/HIV clinics in the same compound.

#### **6.4.6 Describe the programme implementation in relation to infrastructure**

Changes in infrastructure of health facilities since the commencement of collaborative TB/HIV care services were assessed by physical observation and interview of service providers, as discussed in sections 5.2.2.4 (Chapter 5).

According to the interview findings from healthcare providers and/or coordinators, only one out of the 10 study health facilities (a hospital) had constructed a new building for TB/HIV care clinic. In addition, there were no major renovations made for the remaining nine study health centres. However, re-arrangement of rooms, shifting of office furniture and/or arrangement of waiting areas had been done in most of the study health facilities. Based on these re-arrangements, allied services for the TB/HIV collaborative care were established in all of the health facilities. These were: ART dispensary, TB/HIV data management, HIV/AIDS mother support group, VCT rooms, nutritional rehabilitation service and youth friendly services. All the mentioned services were not established in all of the study health facilities.

On the other hand, re-structuring of one or more related services was done as a result of the commencement of TB/HIV collaborative care in all study health facilities, among which an administrative office was relocated in one health facility, VCT service relocated near to TB/HIV care clinic in one health facility, PMTCT service in one other health facility and ART dispensary in one health facility.

Regarding the effect of collaborative TB/HIV care on the pre-existing facility services, the majority (six out of 10) study health facilities did not have any effect; whereas, in four of the study health facilities it affected one or more of the following resources: sharing of rooms with other services and waiting area, sharing of rooms/health workers on performances of IMCI, EPI, FP, adolescent reproductive health services, shortage of health workers and workload on existing healthcare providers. However, this study could not explore how collaborative TB/HIV care affected the abovementioned services.

Some interviewed health workers/coordinators requested additional infrastructures for improved TB/HIV collaborative activities. Among others were suitable and wider rooms for HIV and TB clinics, separate waiting areas for TB and HIV patients and additional staff rooms. The majority of study participants responded that there was no need of additional infrastructure.

The researcher visited all the study health facilities to assess the level of the infrastructural set-ups of collaborative TB/HIV care clinics. Based on the observation,

six of the facilities had convenient rooms for both TB and HIV care services. In other words, both clinics were wide enough, had enough windows for ventilation, were close to the waiting area and had good natural illumination. On the other hand, four study health facilities did not have convenient rooms for both the TB and HIV care (poor ventilation, lack of water supply, lighting problem and narrow rooms).

## **6.5 LIMITATIONS OF THE STUDY**

The following limitations may affect the generalisation of the study results.

- This study was conducted only in Addis Ababa City administration, capital city of Ethiopia, which may not reflect the situation in other regional administrations; hence, the results may not be generalised to the whole country.
- The study did not include private health facilities; therefore, the findings may not be generalised to the entire health facilities (private-for-profit, private for non-profit and public) in the City Administration.
- Study participants were inquired to remember disease occurrence in the relatively distant past, which may introduce recall bias.

Despite these limitations, the study findings are reliable, valid, and trustworthy. The use of quantitative and qualitative data collection and analysis methods (triangulation), and the large sample size of study participants increased the validity, reliability and trustworthiness of the research findings.

## **6.6 RECOMMENDATIONS**

Based on the results of the study, the researcher makes the following recommendations for promoting the implementation of collaborative TB/HIV care services in Addis Ababa City Administration. The researcher also recommends specific areas for further research in this section.

### **6.6.1 Recommendations to decrease the burden of TB/HIV**

The research clearly showed that the burden of TB/HIV among patients of TB and HIV was high, which needs strengthening and acceleration of activities of collaborative

TB/HIV care services. For better implementation strategies, all stakeholders should contribute for synergistic outcomes, as per the following recommendations.

#### **6.6.1.1 Recommendations to the Addis Ababa City Administration Health Bureau and Sub-city Health departments**

It is recommended that:

- The City Administration health Bureau strengthen training of the general health service providers on TB control programme in ensuring proper TB case detection and management, to complete a course of effective anti-tuberculosis treatment and avoid the risk of drug resistance.
- The City Administrative Health Bureau avail and supply medical supplies and infection prevention materials for health facilities for effective implementation of Intensified TB case finding and TB infection control in healthcare facilities.
- The City Administrative health Bureau be organised and routinely conduct periodic review meetings among all stakeholders implementing collaborative TB/HIV care, including healthcare providers to create experience sharing forum.
- Therefore, the City Administrative health Bureau gives special emphasis to strategies of HIV prevention activities to these sub-groups of the population.
- The City Administrative Health Bureau continually update the effectiveness of IPT for clinicians to convince for effective implementation.
- Decentralisation of the services to other health facilities (private-for-profit and non-profit facilities) should be well implemented.
- The City Administration Health Bureau develop and coordinate implementation of researches to improve the prevention, early diagnosis and rapid treatment of TB in people living with HIV and incorporate results into the City Administration TB/HIV care plan.

#### **6.6.1.2 Recommendation to health facilities/healthcare providers**

- Tuberculosis control programmes have to be more effective in diagnosing more infectious cases earlier and maximising achievable treatment success

rates in order to interrupt transmission. The most efficient approach to detecting more cases and with shortened duration of infectivity involves intensified case-finding in settings where HIV-infected people are concentrated. Hence, health workers should place special emphasis on people with respiratory symptoms attending general health service providers in the public, private and NGO sectors (out-patients, in-patients and healthcare workers), people attending centres for voluntary counselling and testing for HIV, prisoners, and household contacts with infectious tuberculosis cases.

- The high burden of TB among PLHIV underlies the importance of TB diagnosis, treatment and prevention for clinicians involved in HIV care.
- Health facilities should exert maximum effort to use the scarce facility resources efficiently for implementation of collaborative TB/HIV care services.
- Healthcare providers should be abided by their professional ethics and code of conducts at any time of their patient care.
- Health workers should be punctual in commencing services on time and should serve patients during the full official working hours.
- Health workers should conduct regular group and individual health education for TB and HIV patients on their disease conditions: TB/HIV prevention, care, support and treatment modalities as part of the package of care for TB/HIV patients.
- Health facilities should avail suggestion boxes in their facilities to collect suggestions and comments on the overall service provision process for timely corrective actions.
- Health facilities should monitor and evaluate TB/HIV care providers for performance appraisal which helps for planning trainings, reshuffling of care providers, so as to maintain the quality of the service.
- Healthcare providers should maintain the privacy and confidentiality of their patients for maximum compliance of patients on their follow-up cares.
- All health facilities should establish and/or strengthen TB/HIV coordinating body at facility level, represented by TB and HIV control clinics, and with representatives from TB and HIV patients.

- Health facilities administrative unit should support effective implementation of collaborative TB/HIV care services.
- Adherence counselling to all TB/HIV patients should be a continuous service to ensure regular follow-up of patients for their treatment and care services.

#### **6.6.1.3 Recommendations to academic and research institutes**

The researcher recommends that:

- Research institutes should conduct ongoing research, specifically on the implementation status of activities to decrease the burden of TB/HIV. Focus should be on outcome and impact assessment on patients' quality of life following enrolled at TB/HIV care clinics so that policymakers, implementers and evaluators of the activities can use them for better implementation strategies.

#### **6.6.1.4 Recommendation to the community and TB/HIV patient support groups**

It is further recommended that:

- The community establish TB/HIV prevention, care and treatment support groups to support patients for effective utilisation of TB/HIV care services.
- Members of the community need to develop a culture to refer patients suspected of having TB and HIV to public health facilities rather than focusing on traditional medical services and association of diseases occurrence with supernatural factors or 'curse'.

### **6.6.2 Recommendations to promote the implementation of collaborative TB/HIV care services**

According to the research findings, the implementation status of collaborative TB/HIV care services in Addis Ababa City Administration needs further promotion and boosting modalities. As the outcome of this research was to promote well functioning collaborative TB/HIV care services in the City Administration, stakeholders at all levels need to contribute for synergistic effect, as recommended as follows.

### **6.6.2.1 Recommendation to City Administration Health Bureau and sub-city health departments**

- The City Administrative Health Bureau should coordinate improving the linkage of the TB/HIV services with care and support programmes through facilitation, guidance, advocacy and promotion.
- Staff rotation among the different clinics in the health facility should be regular and training-oriented.
- Consultation rooms and waiting areas for some collaborative TB/HIV care clinics should be either renovated or constructed.
- Laboratory and dispensary services should be integrated with all TB/HIV services in the same compound vicinity to TB and HIV clinics.
- The City Administration Health Bureau should establish well functioning separate TB/HIV coordinating body for the region for planning, implementing, monitoring and evaluation of the collaborative TB/HIV care services at each of the health facilities. The coordinating body should include members from TB control programme, HIV control programme, representatives from TB and HIV patients, community representatives and NGOs supporting collaborative TB/HIV activities.
- The Administrative Health Bureau should continually refine the prioritised research areas for collaborative TB/HIV activities and support operational research in TB/HIV at city administrative and sub-city level
- The City Administrative Health Bureau should initiate the establishment of community activists for TB/HIV care services through facilitation of community sensitisation workshops and coordination of sub-city health department and urban health extension workers.
- Monitoring and evaluation of collaborative TB/HIV care services in the City Administration should be conducted periodically for better implementation strategies which ultimately decrease the burden of TB and HIV.
- Information from surveillance of HIV prevalence among tuberculosis patients should be readily available to the community and policymakers at the City Administration levels, and punctually. The information should be used for the planning, advocacy and community sensitisation purposes.

- There should be governments' contribution in funding for collaborative TB/HIV care services, which creates sense of ownership, a landmark for sustainable services to the community.
- The City Administration Health Bureau should strengthen continual training of the general health workers based on the national TB/HIV training manual for uniform service provision across all the health facilities. During the training, associations of PLHIV, NGOs, community representatives, urban health extension workers and private-for-profit health facilities working on TB and HIV care services should be involved.
- The regional Health Bureau should strengthen mobilising technical, financial, and human resources.
- Advocacy, programme communication and social mobilisation on collaborative TB/HIV care services should be planned, advocated and implemented by TB/HIV coordinating body for information to reach the public about the elevated risks of TB among PLHIV, dangers of TB/HIV co-infection, prevention methods, availability of local services of care, treatment and support options.
- Develop a multi-sectoral approach to collaborative TB/HIV activities with strong programme planning, management and sustainable financing.
- Increasing the health service coverage of the city administration indirectly increases access to health services for people infected with TB and/or HIV.
- The City Administration should prepare and produce appropriate TB/HIV educational materials to be utilised for advocacy and social mobilisation activities.
- Strengthen laboratory capacity for collaborative TB/HIV care activities.
- Engage people with TB and HIV and affected communities in planning, delivering, monitoring and evaluation of collaborative TB/HIV activities.
- The City Administrative Health Bureau should prepare an updated directory for TB/HIV prevention, care, support and treatment centres in the City for coordinated implementation of collaborative TB/HIV care services.

- Special emphasis should be given for capacity building of health human resource on collaborative TB/HIV care; capacity-building (including training and supervision) should be in line with the national policies and standards.
- Though most health facilities have minimum infrastructures for implementation of TB/HIV care services, some facilities need additional rooms which should be constructed by the City Administration Health Bureau.
- Strong and continued advocacy to involve all providers and to ensure buy-in of all relevant TB and HIV stakeholders for PPM TB/HIV activities.
- Ensure the provision of continuous technical support for TB/HIV care staffs.
- Identify regional (City Administration) and sub-city level focal persons from TB and HIV programmes and set up regional multi-stakeholder (e.g., public sector, private for profit and non-for-profit, professional associations) advisory group or link with existing TB/HIV coordinating bodies at regional, sub-city and facility levels.
- Define drug regimens in accordance to the national TB/HIV control policy and ensure an effective drug supply management system in the regional context.
- Determine process and outcome indicators to be monitored in accordance to the monitoring and evaluation guidance.

#### **6.6.2.2 *Recommendation to Health facilities/healthcare providers***

- Diagnostic tests should be widely accessible, available and affordable to all TB-HIV patients.
- Ensure continuity of services to end-users in cases when healthcare providers drop out.
- Healthcare providers should maintain the medical ethics of privacy and confidentiality, and be free of favouritism.

#### **6.6.2.3 *Recommendations to academic and research institutes***

- It is recommended that regular operational and academic researches on the implementation status of collaborative TB/HIV care activities be done as an

input for promoting better implementation strategies of collaborative TB/HIV activities.

- Research areas should focus on the key components to decrease the burden of TB/HIV among the community following the implementation of collaborative TB/HIV care services.
- Impact and outcome assessment research should be conducted on the lives of people infected with TB and/or HIV after enrolled for collaborative TB/HIV care services.
- Qualitative research should be promoted to explore detailed understanding of quality of life of people infected with either TB or HIV.
- Nationwide large-scale research on collaborative TB/HIV care services implementation should be conducted to understand the level of programme achievement in relation to other countries experiences.
- Analyse the City Administration epidemiological situation of TB and HIV and the HIV-related TB problem.
- Review any existing health seeking and knowledge, attitudes and practices surveys on TB, HIV and HIV-related TB among the community and people infected with TB and HIV.

#### **6.6.2.4 *Recommendation to the community and TB/HIV patient support groups***

- The community has to participate in the planning, implementation, monitoring and evaluation of collaborative TB/HIV care activities at all levels (City administration, health facility and community levels).
- Stigma and discrimination against people with TB and/or HIV is common among the society. Therefore, the community should develop sense of normality to diseases of TB and HIV like the other chronic diseases.

#### **6.6.3 Recommendations for further research**

Based on the study findings, the researcher recommends the following areas for further research:

- Qualitative research should be conducted among TB/HIV care service providers for detail information about the factors that enhance implementation of collaborative TB/HIV care services. This should be carried out in all the regions of the country and among both TB and HIV care services providers.
- Research on quality of life of patients of TB and/or HIV should be conducted for in-depth understanding of the impact of collaborative TB/HIV care services in the Addis Ababa City Administration.
- Nationwide similar research is highly recommended to understand the national TB/HIV collaborative activity implementation, as this research may not be generalised to the national level.
- Retrospective case-control study is recommended to understand cause of death of people infected with TB and/or HIV, who could not be included in this kind of study.
- The impact of collaborative TB/HIV care activities on healthcare workers career objectives can be conducted focusing on those who left government health facilities following the additional trainings attended on any of the TB/HIV collaborative activities.
- Specific research has to be done on TB and HIV infection control in health facilities and congregate areas in the City Administration.
- Research has to be carried out to find out the optimal TB screening algorithm to be used in the existing settings, with different TB and HIV disease burden, to safely initiate preventive TB therapy.
- Research which involves detailed document review supplemented with interview of healthcare providers and patients has to be conducted to find out the outcome of collaborative TB/HIV care services in the City Administration.
- Research on TB/HIV collaborative care services among children and disabilities are recommended to understand the implementation status among these sub-groups of the population.
- Exploratory research can be conducted on the barriers to care for PLHIV, adults, children and families, to access TB/HIV care, and ART for those co-infected with TB, from patient and health-care workers' perspective and how to address them.
- Community based research is highly recommended to find out the best models of community participation (i.e., effective, feasible, acceptable and sustainable) for

enhanced TB case-finding and early HIV detection, to reduce delay in initiation of TB and HIV care, and their impact on reducing TB and HIV transmission.

## **6.7 CONTRIBUTION OF THE STUDY**

Hypothetically, this study falls into the present focus of the TB/HIV working group of the World Health Organisation on priority research questions for TB/HIV in HIV prevalent and resource limited settings (WHO, 2010e). The document points out that tuberculosis is a leading killer among people living with human immunodeficiency virus. At least one in four deaths among people living with HIV can be attributed to TB, and many of these deaths occur in resource-limited settings.

Collaborative TB/HIV activities are essential to prevent, diagnose and treat TB among people with HIV and HIV among TB patients, and to ensure that HIV-positive TB patients are identified and treated appropriately. In recent years, the implementation of collaborative TB/HIV activities has been rising globally. This has created a need for additional research into how to deliver quality and integrated services for TB and HIV prevention, treatment and care, and thus prevent unnecessary deaths (WHO 2010e:3).

The findings of this study have provided more understanding and awareness about the implementation status of collaborative TB/HIV care service in the Addis Ababa City Administration. The study has also produced some evidence on how activities to decrease the burden of TB/HIV were being implemented in public health facilities in the City Administration, and the challenges that need to be addressed in order to have an efficient TB/HIV care. It is therefore acceptable that this study has contributed to the existing body of knowledge on collaborative TB/HIV care services by generating greater understanding on implementation status for promoting the implementation of collaborative TB/HIV care services in Addis Ababa City Administration; a road in achieving the health related millennium development goals by 2015.

Lastly, as a result of the findings of this study, the researcher has developed and proposed a pocket guide of collaborative TB/HIV care services for health workers that can be used in delivering collaborative TB/HIV care services in the health facilities. If this pocketbook for collaborative TB/HIV care services in Addis Ababa is utilised, it is hoped that it will greatly assist in the improvement of collaborative TB/HIV care services not only in Addis Ababa but also in all the other regions of the country.

## **6.8 IMPLICATIONS OF THE STUDY**

The results of this research have implications for all internal and external stakeholders involved in the planning, implementation, monitoring, and evaluation of collaborative TB/HIV care services at Addis Ababa City Administration Health Bureau, sub-city health departments and health facility levels.

The City Administrative health Bureau, health facilities, health workers, partner NGOs working on collaborative TB/HIV care services, people infected and affected with TB and/or HIV and the community at large need to consider the issues and recommendations outlined by the researcher. If these can be done by all responsible stakeholders, it is hoped that the main issues that are brought up to the attention of this study will be realised. Consequently, the recommendations outlined are a basis for promoting the implementation of collaborative TB/HIV care services for the needy which will in turn improve the outcomes and impacts of TB and HIV control activities related, which is in line with the fourth health sector development plan (HSDP IV) of Ethiopia (FDRE-MOH, 2010).

## **6.9 CONCLUDING REMARKS**

The aim of this study was to assess the implementation of collaborative TB and HIV care services in support of local health services with a view of developing a pocket guide on implementation of collaborative TB/HIV care services for healthcare providers. In general, the study achieved its objectives. It has been discovered that the implementation status of collaborative TB/HIV care services was generally of in good status, despite many weaknesses, for improvements.

Healthcare providers were knowledgeable, skilled and most of them have a positive attitude and behaviour towards their patients. However, it has been indicated that there were individual variations in the performances, which might be associated with absence of an easily portable pocket guide (quick reference) as a protocol for effective implementation of collaborative TB/HIV care services at health facility level.

Although there is a national guideline for implementation of collaborative TB/HIV care services developed by the Ministry of Health of Ethiopia, the study was not sufficiently exhaustive to cover all specific issues outlined in the process of implementation. In many instances no target setting was done at all levels.

There was no planning for operational research, monitoring or evaluation of collaborative TB/HIV care services at all levels with targeted indicators. On the other hand, a study which covered all activities stated on the guideline has not been carried out in either the City Administration or nationally, to understand the status of collaborative TB/HIV care services. In addition, healthcare workers had never been assessed for performances, facility infrastructures were not upgraded in most instances, systems for sustained supply of some medical supplies were not well developed, and healthcare providers did not possess a pocket guide as a protocol to assess patients at every visit for services to reduce the burden of TB/HIV.

Despite the constraints of: 1) absence of a well established TB/HIV care physical infrastructure in most of the public health facilities; 2) workload against the limited healthcare providers; 3) shortages of laboratory and medical supplies (infection prevention materials, laboratory reagents, diagnostic machines, some prophylactic drugs); 4) limited involvement of the community; 5) limited monitoring and evaluation outputs; and 6) very low supportive supervision, the implementation status of collaborative TB/HIV care services was found to be in a better condition.

The researcher is of the opinion that the development of a pocket guide for collaborative TB/HIV care services that has resulted from the findings of this study be published for use by all healthcare providers especially those engaged on collaborative TB/HIV care services. It will have the advantages of motivating and improving the performance of healthcare providers and will have some contribution in the overall improvement of collaborative TB/HIV care services.

*Prominent figure message to Promote Collaborative TB/HIV Care Services:*

**"We cannot win the battle against AIDS if we do not also fight TB. TB is too often a death sentence for people with AIDS."**

*Remarks by Nelson Mandela: "Confronting the Joint HIV/TB Epidemics", XV International AIDS Conference, Bangkok, 2004, Thailand."*

In achievement of the overall purpose of this study, *COLLABORATIVE TB/HIV CARE SERVICES: a POCKET GUIDE FOR HEALTH WORKERS IN ETHIOPIA* was developed. The pocket guide is developed based on the updated WHO policy on collaborative TB/HIV activities and guidelines for national programmes and other stakeholders. This simplified guide will be used by healthcare workers in Ethiopia to improve the provision of quality TB/HIV care services.

The next chapter (Chapter 7) will present *COLLABORATIVE TB/HIV CARE SERVICES: a POCKET GUIDE FOR HEALTH WORKERS IN ETHIOPIA*.

## **CHAPTER SEVEN**

### **COLLABORATIVE TB/HIV CARE SERVICES: A POCKET GUIDE FOR HEALTH WORKERS IN ETHIOPIA**

#### **7.1 INTRODUCTION**

The purpose of this study was to promote the implementation of collaborative TB/HIV care services in Ethiopia. In this chapter the Pocket Guide developed for collaborative TB/HIV care services for health workers in Ethiopia is outlined. The pocket guide is compiled based on the updated WHO policy on collaborative TB/HIV activities, and is in line with the national guidelines. In addition, findings from reviewed literature and the research, and insights of the researcher were considered.

In order to attain the purpose of this study the following objective should also be addressed:

- To recommend to policymakers and practitioners the technical basis to guide the development of national implementation strategies for joint tuberculosis and HIV programme activities in delivering the available interventions.

#### **7.2 PROCESS OF COMPILING THE POCKET GUIDE**

The proposed pocket guide was formulated in relation to the available guidelines for national TB/HIV control programmes and WHO policy on Collaborative TB/HIV activities (WHO, 2012). The first step in the development of the pocket guide was consideration of the theoretical framework as described in Chapter One of this study. It was applied to provide the structure for each of the first sections. The second step was consideration of the existing body of knowledge, in particular the literature review from Chapter Two of this study. The three key components of collaborative TB/HIV care services were applied to each of the 12 themes to guide the description of procedures and activities based on their relevance to each of the TB and/or HIV patient.

These three categories were:

1. Establish and strengthen the mechanisms for delivering integrated TB and HIV services,

2. Reduce the burden of TB in people living with HIV and initiate early antiretroviral therapy, and
3. Reduce the burden of HIV in patients with presumptive and diagnosed TB.

Each of these three broad components was further divided in to sub-themes, which make up a total of 12 collaborative TB/HIV care activities.

### **7.3 APPLICATION OF THE THEORETICAL FRAMEWORK TO THE DEVELOPMENT OF THE GUIDELINES**

Moleki (2008:162) outlines the building blocks of a guideline as: purpose (terminus), the agent, a recipient, framework (context), dynamics and the procedures. Each of these building blocks for the pocket guide has been described below.

#### **7.3.1 Purpose or terminus**

The purpose of the proposed pocket guide is to improve the performances of TB/HIV care service providers in delivering effective collaborative TB/HIV care services with all the available packages of patient care. In addition the pocket guide is designed to help health workers to make decisions consistent with professional ethics and patient preferences.

#### **7.3.2 Agent**

According to Moleki (2008:163), the agent is someone who has the knowledge or skill to perform an activity or provide a solution to a problem. Moleki (2008:163) and Stanhope and Lancaster (2006:215) view an agent as a person with varying kinds of influence or who acts as a precipitating cause of events. In this study an agent is a healthcare provider or professional who is qualified to deliver quality collaborative TB/HIV care in Ethiopia. The healthcare providers include doctors, health officers, nurses, pharmacists, laboratory professionals, and other paramedical staff.

### **7.3.3 Recipient**

The 'recipient' is the beneficiary of the activities designed by the agent. In this study the beneficiaries of collaborative TB/HIV care service are TB and/or HIV patients who are attending TB and/or HIV care clinics at public health facilities in Ethiopia.

### **7.3.4 Framework (context)**

Moleki (2008:164) describes 'framework' as the context or environment in which activities take place. In this study the end-users are explored at public health facilities in which collaborative TB/HIV care services are provided.

### **7.3.5 Dynamics**

The 'dynamics' provide the energy source or the motivating factors for quality of collaborative TB/HIV care (Moleki 2008:165). The dynamics in this study include the strategies, policies, guidelines, human resource, training, commodities, pharmacy practices, laboratory infrastructure and practices and documentation. Better performance of the dynamics results in better patient satisfaction and better health service outcomes.

### **7.3.6 Procedures**

Moleki (2008:165) describes the 'procedures' as the techniques or protocols that guide the activities. In this study, the procedures are the 12 collaborative TB/HIV care activities presented in each of the categories of the three main categories of collaborative TB/HIV care services that are patient-focused.

## **7.4 APPLICATION OF THE EXISTING GLOBAL TB/HIV CARE POLICY AND GUIDELINES TO THE COMPILATION OF THE POCKET GUIDE**

The HIV pandemic presents a significant challenge to the global TB control. It has been well documented that TB is a leading preventable cause of death among people living with HIV. To curb the dual burden of TB and HIV in populations at risk of or affected by both diseases, the WHO developed and published an *Interim policy on collaborative TB/HIV activities* in 2004. The policy, which provided guidance for member states and

other partners on how to address the HIV-related TB burden, has been one of the most widely accepted policies issued by either department. Many countries have implemented the policy in a relatively short time. In addition, a number of guidelines were produced by the WHO and other stakeholders following the interim policy.

The following table shows the type of policy documents and implementation guidelines developed by global agencies for initiating, strengthening, and promoting collaborative TB/HIV care services. All of the documents were prepared with evidences from operational researches of TB/HIV care from all regions of the world. This pocket guide was extracted from these existing policies and guidelines (Table 7.1).

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
<p>Guidelines on Cotrimoxazole prophylaxis for HIV-related infections among children, adolescents and adults:</p> <p>Recommendations for a public health approach.</p>	<p>The guidelines are designed to make global technical and operational recommendations for the use of Cotrimoxazole prophylaxis in HIV exposed children, children living with HIV and adolescents and adults living with HIV in the context of scaling up HIV care in resource limited settings</p>	<p>For use by national HIV programme managers, managers of nongovernmental organisations delivering HIV care services and other policymakers who are involved in planning HIV care strategies in resource-limited countries. It should also be useful to clinicians in resource-limited settings.</p>	<p>Integrating the recommendation for Cotrimoxazole prophylaxis into existing HIV-related treatment guidelines;</p> <p>Implementing Cotrimoxazole prophylaxis as an integral part of the chronic care package for all individuals living with HIV and as a key element of pre-antiretroviral therapy care and being part of the monitoring and evaluation process in preparation for initiating antiretroviral therapy;</p> <p>Developing and implementing explicit policies in countries on the use of Cotrimoxazole prophylaxis for children, adolescents and adults;</p> <p>Giving priority to guidelines for Cotrimoxazole prophylaxis for all HIV-exposed infants and people with TB who are living with HIV;</p> <p>Assessing legal and policy options to secure Cotrimoxazole for prophylaxis at reduced cost or free of charge;</p> <p>Ensuring the availability of appropriate and affordable doses and formulations for children;</p> <p>Ensuring effective and integrated management of procurement and supplies at all levels (national, district, community and household);</p> <p>Ensuring that programmes to scale up Cotrimoxazole prophylaxis are decentralised, available at the community level and are used to improve the quality of HIV chronic care and are linked to preparedness for and initiation of antiretroviral therapy; and</p> <p>Establishing surveillance systems to monitor the efficacy of Cotrimoxazole prophylaxis, bacterial resistance to Cotrimoxazole and malaria resistance to sulfadoxine/pyrimethamine</p>
<p>Promoting the implementation of collaborative TB/HIV activities through public-private mix and</p>	<p>Best evidence-based strategies to enhance non-public sector involvement in scaling up</p>	<p>Non-public health sector</p>	<p>Existence of national TB and HIV control programmes and implementation of basic DOTS strategy and basic services for HIV prevention and treatment;</p> <p>An environment conducive to national policy, and capacity to support PPM TB/HIV activities;</p> <p>Coordination between the national HIV and TB control programmes at all levels (state,</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
partnerships	collaborative TB/HIV activities.		<p>regional, provincial, district) and among all private and public stakeholders involved in the initiatives;</p> <p>Strategic and regular advocacy to involve all providers and ensure buy-in of all relevant TB and HIV stakeholders in PPM TB/HIV activities;</p> <p>Medicines and consumables supplied free of charge to providers extended free of charge to patients;</p> <p>Diagnostic tests widely accessible and affordable;</p> <p>Capacity-building (including training and supervision) in accordance with national policies and standards;</p> <p>Strengthen existing collaborative mechanisms and/or emerging opportunities between private and public sector and national TB and AIDS control programmes optimised to ensure sustainability and avoid duplication of structures;</p> <p>Provision of technical assistance (internal and/or external) ensured;</p> <p>Ensured continuity of services to end users in cases of provider decisions to opt out of PPM scheme;</p>
Guidelines for HIV surveillance among tuberculosis patients	The main objective of these guidelines is to provide a framework for the methods to be used for measuring HIV prevalence among tuberculosis patients and to	National or provincial TB/HIV control programmes. In addition, health facilities can utilise the guideline based on the local situation.	<p>All countries with a generalised HIV epidemic (HIV prevalence consistently &gt;1% in pregnant women) should aim to ensure that HIV counselling and testing are actively promoted and offered to all TB patients. Whenever possible, this should be done in conjunction with the provision of ART;</p> <p>The data obtained in this way can form the basis of a reliable surveillance system where high coverage (&gt;80%) of testing among TB patients is achieved. One of the best systems for capturing this information is through a computerised TB notification system, which also captures information on HIV status;</p> <p>Periodic (special) surveys or sentinel surveys are also recommended, to calibrate the results of routine testing;</p> <p>In countries with a concentrated epidemic (HIV prevalence consistently &gt;5% in at least</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
	encourage implementation of. HIV surveillance.		<p>one defined sub-population, e.g. intravenous drug users (IDUs); sex workers (SWs), men who have sex with men (MSM), and &lt;1% in pregnant women in urban areas), data from routine HIV counselling and testing of all TB patients should still form the basis for the surveillance. If this system is not yet in place, periodic (special) surveys or sentinel surveys are suitable alternatives;</p> <p>In countries with a low-level HIV epidemic (HIV prevalence has not consistently exceeded 5% in any defined sub-population) and where HIV testing is not routinely offered to TB patients, periodic (special) surveys (at intervals of 2–3 years) or sentinel surveys should be conducted among TB patients.</p>
Policy guidelines for collaborative TB and HIV services for injecting and other drug users: an integrated approach	The aim of these guidelines is to provide a strategic approach to reduce morbidity and mortality related to TB and HIV among at-risk drug users and their communities in a way that promotes holistic and person-centred services.	These guidelines are intended for professionals dealing with the drug users who have the most problematic patterns of use and who are at the greatest risk of contracting HIV and TB, especially those who inject drugs.	<p>All congregate settings in the health, drug service and criminal justice sectors should have a TB infection control plan supported by all stakeholders that includes administrative, environmental and personal protection measures to reduce the transmission of TB;</p> <p>All services dealing with drug users should have a case-finding protocol for TB and HIV so that personnel are aware of the symptoms of TB and HIV and can ensure that drug users have access to appropriate TB and HIV testing and counselling, preferably at the service where they initially present;</p> <p>TB and HIV services and services for drug users should ensure access to appropriate treatment for drug users by using global, regional and national clinical guidelines and should work in collaboration to ensure treatment supervision and to simplify the delivery of treatment;</p> <p>All health services should ensure access to Isoniazid preventive therapy for drug users living with HIV once active TB is reasonably excluded;</p> <p>All personnel working with TB suspects and patients, people living with HIV and drug users should be able to assess risk factors for HIV infection and transmission and should provide comprehensive HIV prevention information and services to their clients to minimise these risks. Personnel should also be aware of how to protect themselves from occupational exposure to HIV and TB.</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
Guidelines for implementing collaborative TB and HIV programme activities	The main aim of the guidelines is to enable the central units of national TB and HIV programmes to support districts to plan, coordinate and implement collaborative TB/HIV activities.	The guidelines are intended for countries either with an overlapping TB-HIV epidemic or where there is an increasing HIV rate which may fuel the TB epidemic.	<p>Models of collaboration between TB and HIV control programmes;</p> <p>Defining executive responsibility and boundaries of TB and HIV programme collaboration;</p> <p>Developing a national collaborative TB/HIV strategic plan that uses the synergies and strengths of the two programmes;</p> <p>Developing tools to support district implementation;</p> <p>Planning the process of phased implementation of collaborative TB/HIV activities;</p> <p>Monitoring and evaluation of TB/HIV collaborative activities;</p> <p>Assessing the cost of collaborative TB/HIV activities;</p> <p>Research on collaborative TB/HIV care service implementation;</p> <p>International support is required for national collaborative TB and HIV responses.</p>
Treatment of tuberculosis Guidelines	The principal purpose of these guidelines is to help national TB control programmes in setting TB treatment policy to optimise patient cure: Curing patients will prevent death, relapse, acquired drug resistance, and the spread of TB in the commu-	The primary target audience for the guidelines is the managers and staff of NTPs, together with other TB service providers working in public and private healthcare facilities at the central and peripheral levels.	<p>New patients with pulmonary TB should receive a regimen containing 6 months of rifampicine: 2HRZE/4HR (The 2HRZE/6HE treatment regimen should be phased out);</p> <p>Wherever feasible, the optimal dosing frequency for new patients with pulmonary TB is daily throughout the course of therapy;</p> <p>New patients with TB should not receive twice weekly dosing for the full course of treatment unless this is done in the context of formal research;</p> <p>In populations with known or suspected high levels of Isoniazid resistance, new TB patients may receive HRE as therapy in the continuation phase as an acceptable alternative to HR;</p> <p>TB patients with known positive HIV status and all TB patients living in HIV prevalent settings should receive daily TB treatment at least during the intensive phase;</p> <p>For the continuation phase, the optimal dosing frequency is also daily for these patients;</p> <p>If a daily continuation phase is not possible for these patients, three times weekly dosing</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
	<p>nity.</p> <p>The other purpose is to guide clinicians working in both public and private sectors.</p>		<p>during the continuation phase is an acceptable alternative;</p> <p>It is recommended that TB patients who are living with HIV should receive at least the same duration of TB treatment as HIV-negative TB patients;</p> <p>For smear-positive pulmonary TB patients treated with first-line drugs, sputum smear microscopy may be performed at completion of the intensive phase of treatment;</p> <p>In new patients, if the specimen obtained at the end of the intensive phase (month 2) is smear-positive, sputum smear microscopy should be obtained at the end of the third month;</p> <p>In new patients, if the specimen obtained at the end of month 3 is smear-positive, sputum culture and drug susceptibility testing (DST) should be performed;</p> <p>In previously treated patients, if the specimen obtained at the end of the intensive phase (month 3) is smear-positive, sputum culture and drug susceptibility testing (DST) should be performed;</p> <p>In patients treated with the regimen containing rifampicine throughout treatment, if a positive sputum smear is found at completion of the intensive phase, the extension of the intensive phase is not recommended;</p> <p>Specimens for culture and drug susceptibility testing (DST) should be obtained from all previously treated TB patients at or before the start of treatment. DST should be performed for at least Isoniazid and rifampicine;</p> <p>In settings where rapid molecular-based DST is available, the results should guide the choice of regimen;</p> <p>TB patients whose treatment has failed or other patient groups with high likelihood of multidrug-resistant TB (MDR-TB) should be started on an empirical MDR regimen;</p> <p>TB patients returning after defaulting or relapsing from their first treatment course may receive the retreatment regimen containing first-line drugs 2HRZES/1HRZE/5HRE if country specific data show low or medium levels of MDR in these patients or if such data</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
			<p>are unavailable;</p> <p>In settings where DST results are not yet routinely available to guide the management of individual patients, the empirical regimens will continue throughout the course of treatment;</p> <p>National TB control programmes should obtain and use their country-specific drug resistance data on failure, relapse and default patient groups to determine the levels of MDR.</p>
<p>Improving the diagnosis and treatment of smear-negative pulmonary and extra-pulmonary tuberculosis among adults and adolescents</p> <p>Recommendations for HIV prevalent and resource-constrained settings</p>	<p>It is intended to assist for the development of national policies to improve the diagnosis and management of smear-negative and extra-pulmonary tuberculosis.</p>	<p>This document is intended for those dealing with TB and HIV at all levels in HIV prevalent and resource-constrained settings.</p> <p>The recommendations and algorithms are designed for use by national tuberculosis and HIV control programmes and service providers.</p>	<p><i>Smear-positive pulmonary tuberculosis</i></p> <p>One sputum smear examination positive for acid-fast bacilli (AFB) and Laboratory confirmation of HIV infection or Strong clinical evidence of HIV infection.</p> <p><i>Smear-negative pulmonary tuberculosis</i></p> <p>At least two sputum specimens negative for AFB and radiographical abnormalities consistent with active tuberculosis and laboratory confirmation of HIV infection or Strong clinical evidence of HIV infection and decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy, OR</p> <p>A patient with AFB smear-negative sputum which is culture-positive for Mycobacterium Tuberculosis, Extra-pulmonary tuberculosis;</p> <p>One specimen from an extra-pulmonary site culture-positive for Mycobacterium tuberculosis or smear-positive for AFB, OR</p> <p>Histological or strong clinical evidence consistent with active extra-pulmonary tuberculosis and laboratory confirmation of HIV infection or strong clinical evidence of HIV infection and a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy.</p>
<p>A guide to monitoring and evaluation for collaborative</p>	<p>This guide to monitoring and evaluation has been developed</p>	<p>This guide is intended for policy makers within ministries of health and other</p>	<p>The existence of a TB/HIV coordinating body or mechanism effective at all administrative levels of the health service, with representation from the major stakeholders in collaborative TB/HIV activities, which meets at least quarterly;</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
TB/HIV activities	<p>to assist in the management of TB and HIV programmes that are implementing or planning to implement collaborative TB/HIV activities.</p> <p>It is intended to facilitate the collection of standardised data and help in the interpretation and dissemination of these data for programme improvement.</p> <p>It also aims to ensure consistency across all agencies and stakeholders involved in HIV, TB and collaborative TB/HIV activities, avoiding wasteful</p>	<p>institutions that have an impact on health; HIV and TB programme managers at all levels; national, regional and district TB/HIV coordinators or members of coordinating bodies; staff of development and technical agencies, nongovernmental organisations, civil society and community based organisations involved in supporting collaborative TB/HIV activities.</p>	<p>Number of all newly registered TB patients who are HIV-positive, expressed as a proportion of all newly registered TB patients;</p> <p>Existence of joint planning at national level for collaborative TB/HIV activities between the National TB Programme (NTP) and National HIV Control Programme (NACP);</p> <p>Number of TB and HIV service delivery points where IEC materials giving information on both HIV and TB, their interaction and prevention are available, expressed as a proportion of all TB and HIV service delivery points;</p> <p>Presence of an integrated national Monitoring and Evaluation system for collaborative TB/HIV activities that informs annual NTP and NACP planning cycles and their mid-term (3–5-year) plans;</p> <p>Number of PLHIV, attending HIV testing and counselling or HIV treatment and care services, who were screened for TB symptoms, expressed as a proportion of all PLHIV attending for HIV testing and counselling or HIV treatment and care services;</p> <p>Number of cases of newly diagnosed TB identified in PLHIV attending for HIV testing and counselling or HIV treatment and care services (who were screened for TB symptoms), expressed as a proportion of all PLHIV attending HIV testing and counselling services and HIV treatment and care services (who were screened for TB symptoms);</p> <p>Number of newly diagnosed HIV-positive clients who are given treatment for latent TB infection (TB preventive therapy), expressed as a proportion of the total number of newly diagnosed HIV-positive people;</p> <p>Number of healthcare facilities and/or congregate settings with a written infection control policy, expressed as a proportion of the total number of healthcare facilities and/or congregate settings evaluated;</p> <p>Number of registered TB patients who are tested for HIV (after giving consent) expressed as a proportion of the total number of registered TB cases;</p> <p>Number of registered TB patients who are tested for HIV (after giving consent) and who test HIV-positive, expressed as a proportion of the total number of all registered TB</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
	<p>duplication of effort in data collection by developing a core set of internationally accepted and standardised indicators for monitoring and evaluating programme performance.</p> <p>In addition, it is hoped that the data collected will provide further evidence of the benefits of collaborative TB/HIV activities.</p> <p>Data collection and reporting should be integrated into existing monitoring and evaluation systems wherever possible.</p>		<p>patients who are tested for HIV;</p> <p>Number of registered TB patients who are tested for HIV (after giving consent) and who receive their results through post test counselling, expressed as a proportion of all registered TB patients who are tested for HIV;</p> <p>Number of TB facilities where free condom distribution is practised and condoms are available, expressed as a proportion of all TB facilities;</p> <p>Number of HIV-positive TB patients who receive (at least one dose of) CPT during their TB treatment, expressed as a proportion of the total number of HIV-positive TB patients;</p> <p>Number of HIV-positive TB patients referred to HIV care and support services (as defined in local or national HIV policy) during TB treatment, expressed as a proportion of the total number of HIV-positive TB patients;</p> <p>Number of HIV-positive registered TB patients who are started on ART or continue previously initiated ART, during or at the end of TB treatment, expressed as a proportion of all HIV-positive registered TB patients;</p> <p>National TB control policy, endorsed by government, addresses the link between TB and HIV, and the potential impact that HIV may have on TB control throughout the country;</p> <p>National HIV control policy, endorsed by government, addresses the link between TB and HIV and the importance of TB as a major treatable and preventable cause of morbidity and mortality among PLHIV;</p> <p>Number of potential partners in collaborative TB/HIV activities who are actively involved in the planning, implementation and monitoring of collaborative TB/HIV activities, expressed as a proportion of all potential partners;</p> <p>Total funds that were available for collaborative TB/HIV activities in the most recently completed fiscal year, expressed as a percentage of the total funds budgeted for collaborative TB/HIV activities in the annual plan(s) of the same year.</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
Guidelines for intensified tuberculosis case-finding and Isoniazid preventive therapy for people living with HIV in resource-constrained settings	<p>The objective of this guideline is to provide guidance for national TB and HIV programmes by updating existing WHO recommendations with new evidence, taking into consideration the changing context of HIV and TB prevention, treatment and care. The new guidelines focus on facilitating the implementation of IPT and ICF.</p> <p>The guidelines are also intended to highlight and strengthen the leadership role of national HIV programmes and</p>	<p>The guideline is intended for healthcare workers providing care for PLHIV, policy-makers and health programme managers working in the field of HIV and TB.</p> <p>The guidelines are also intended for governments, nongovernmental organisations, donors and patient support groups that address HIV and TB.</p>	<p>Adults and adolescents living with HIV should be screened for TB with a clinical algorithm and those who do not report any one of the symptoms of current cough, fever, weight loss or night sweats are unlikely to have active TB and should be offered IPT;</p> <p>Adults and adolescents living with HIV and screened for TB with a clinical algorithm and who report any one of the symptoms of current cough, fever, weight loss or night sweats may have active TB and should be evaluated for TB and other diseases;</p> <p>Adults and adolescents living with HIV who have an unknown or positive tuberculin skin test (TST) status and who are unlikely to have active TB should receive at least six months of IPT as part of a comprehensive package of HIV care. IPT should be given to such individuals irrespective of the degree of immuno-suppression, and also to those on ART, those who have previously been treated for TB and pregnant women;</p> <p>Adults and adolescents living with HIV who have an unknown or positive TST status and are unlikely to have active TB should receive at least 36 months of IPT. IPT should be given to such individuals irrespective of the degree of immuno-suppression, and also to those on ART, those who have previously been treated for TB and pregnant women;</p> <p>Adults and adolescents living with HIV who have an unknown or positive TST status and are unlikely to have active TB should receive at least 36 months of IPT. IPT should be given to such individuals irrespective of the degree of immuno suppression, and also to those on ART, those who have previously been treated for TB and pregnant women;</p> <p>TST is not a requirement for initiating IPT in people living with HIV;</p> <p>People living with HIV who have a positive TST benefit more from IPT; TST can be used where feasible to identify such individuals;</p> <p>Providing IPT to people living with HIV does not increase the risk of developing INH resistant TB. Therefore, concerns regarding the development of INH resistance should not be a barrier to providing IPT;</p> <p>Children living with HIV who do not have poor weight gain, fever or current cough are unlikely to have active TB;</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
	HIV stakeholders to scale up the implementation of TB screening and provision of IPT among people living with HIV.		<p>Children living with HIV who have any one of the following symptoms – poor weight gain, fever, current cough or contact history with a TB case – may have TB and should be evaluated for TB and other conditions. If the evaluation shows no TB, they should be offered IPT regardless of their age;</p> <p>Children living with HIV who are more than 12 months of age and who are unlikely to have active TB on symptom-based screening, and have no contact with a TB case should receive six months of IPT (10 mg/kg/ day) as part of a comprehensive package of HIV prevention and care services;</p> <p>In children living with HIV who are less than 12 months of age, only those who have contact with a TB case and who are evaluated for TB (using investigations) should receive six months of IPT if the evaluation shows no TB disease;</p> <p>All children living with HIV who have successfully completed treatment for TB disease should receive INH for an additional six months.</p>
WHO policy on TB infection control in healthcare facilities, congregate settings and households.	The aim of the policy is to provide member states with guidance on how to reduce the risk of TB transmission in healthcare facilities, congregate settings and households, and how to prioritise TB infection control measures.	The document is targeted for national and sub-national policy makers, including health-system managers of programmes covering TB, HIV, infection prevention and control, hospital services, control and quality assurance programmes, and occupational health.	<p>Identify and strengthen a coordinating body for infection control, and develop a comprehensive budgeted plan that includes human resource requirements for implementation of TB infection control at all levels;</p> <p>Ensure that health facility design, construction, renovation and use are appropriate;</p> <p>Conduct surveillance of TB disease among health workers, and conduct assessment at all levels of the health system and in congregate settings;</p> <p>Address TB infection control advocacy, communication and social mobilisation (ACSM), including engagement of civil society;</p> <p>Monitor and evaluate the set of TB infection control measures;</p> <p>Enable and conduct research;</p> <p>Promptly identify people with TB symptoms (triage), separate infectious patients, control the spread of pathogens (cough etiquette and respiratory hygiene) and minimise time spent in healthcare facilities;</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
			<p>Provide a package of prevention and care interventions for health workers including HIV prevention, antiretroviral therapy and Isoniazid preventive therapy for HIV-positive health workers;</p> <p>Use ventilation systems;</p> <p>Use of upper room or shielded ultraviolet germicidal irradiation fixtures;</p> <p>Use of particulate respirators.</p>
<p>WHO policy on collaborative TB/HIV activities: Guidelines for national programmes and other stakeholders.</p>	<p>The purpose of the policy is to provide national programmes and stakeholders with guidelines on how to implement and scale up collaborative TB/HIV activities.</p> <p>It is complementary to and in synergy with the established core activities of TB and HIV prevention, diagnosis, treatment and care programmes.</p>	<p>These policy guideline is intended for decision makers in the field of health and for managers of TB control programmes and HIV programmes working at all levels in the health sector, including the private-for-profit sector, as well as donors, development agencies, nongovernmental organisations and other civil society organisations supporting such programmes, and people living with, at risk of or affected by HIV and TB.</p>	<p>Set up and strengthen a coordinating body for collaborative TB/HIV activities functional at all levels;</p> <p>Determine HIV prevalence among TB patients and TB prevalence among people living with HIV;</p> <p>Carry out joint TB/HIV planning to integrate the delivery of TB and HIV services;</p> <p>Monitor and evaluate collaborative TB/HIV activities;</p> <p>Intensify TB case finding and ensure high quality anti-tuberculosis treatment;</p> <p>Initiate TB prevention with Isoniazid preventive therapy and early antiretroviral therapy;</p> <p>Ensure control of TB Infection in healthcare facilities and congregate settings;</p> <p>Provide HIV testing and counselling to patients with presumptive and diagnosed TB;</p> <p>Provide Cotrimoxazole preventive therapy for TB patients living with HIV;</p> <p>Ensure HIV prevention interventions, treatment and care for TB patients living with HIV;</p> <p>Provide antiretroviral therapy for TB patients living with HIV.</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
<p>Priority Interventions:</p> <p>HIV prevention, treatment and care in the health sector</p>	<p>The objective is to describe the priority health sector interventions that are needed to achieve universal access to HIV prevention, treatment and care.</p>	<p>This document is intended for a broad readership of public health decision makers, national HIV programme managers, health providers and workers (governmental, nongovernmental and private), international, national and local donors, and civil society, including people living with and affected by HIV.</p>	<p><i>Enabling people to know their HIV status</i></p> <p>Client-initiated HIV testing and counselling;            Provider-initiated HIV testing and counselling;            Blood donor HIV testing and counselling;            Laboratory services for HIV diagnosis.</p> <p><i>Maximising the health sector's response to HIV prevention</i></p> <p>Preventing sexual transmission of HIV;            Interventions for injecting drug users;            Treatment and prevention of HIV in pregnant women, infants and young children;            Prevention of HIV transmission in health settings.</p> <p><i>Scaling up HIV treatment and care</i></p> <p>Interventions to prevent illness;            Treatment and care interventions;            Laboratory services for HIV monitoring.</p>
<p>Antiretroviral therapy for HIV infection in adults and adolescents.</p>	<p>To provide evidence-based recommendations outlining a public health approach to the delivery of ART for adults</p>	<p>The target audiences are national treatment advisory boards, partners implementing HIV care and treatment, and organisations</p>	<p>All adolescents and adults including pregnant women with HIV infection and CD4 counts of <math>\leq 350</math> cells/mm<sup>3</sup> should start ART, regardless of the presence or absence of clinical symptoms. Those with severe or advanced clinical disease (WHO clinical stage 3 or 4) should start ART irrespective of their CD4 cell count;</p> <p>First-line therapy should consist of an NNRTI + two NRTIs, one of which should be zidovudine (AZT) or tenofovir (TDF). Countries should take steps to progressively reduce</p>

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Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
	<p>and adolescents, with a focus on settings with limited health systems capacity and resources.</p> <p>To identify the most potent, effective and feasible first-line, second-line and subsequent treatment regimens as components of expanded national responses for HIV care.</p> <p>To develop recommendations applicable to the majority of populations regarding the optimal timing of ART initiation preferred first-line and second-line ARV regimens</p>	<p>providing technical and financial support to HIV care and treatment programmes in resource limited settings</p>	<p>the use of stavudine (d4T) in first-line regimens because of its well-recognised toxicities;</p> <p>Second-line ART should consist of a ritonavir-boosted protease inhibitor (PI) plus two NRTIs, one of which should be AZT or TDF, based on what was used in first-line therapy. Ritonavir-boosted atazanavir (ATV/r) or lopinavir/ritonavir (LPV/r) are the preferred PIs;</p> <p>All patients should have access to CD4 cell-count testing to optimise pre-ART care and ART management. HIVRNA (viral-load) testing is recommended to confirm suspected treatment failure. Drug toxicity monitoring should be symptom-directed;</p> <p>Irrespective of CD4 cell counts, patients co-infected with HIV and TB should be started on ART as soon as possible after starting TB treatment;</p> <p>Irrespective of CD4 cell counts or WHO clinical stage, patients who require treatment for HBV infection should start ART. First-line and second-line regimens for these individuals should contain TDF and either emtricitabine (FTC) or lamivudine (3TC).</p>

**Table 7.1** Table showing wide variety of documents prepared by different agencies as a guide for implementation of collaborative TB/HIV care services

Document	Presumed objectives of the document	Intended target of the document	Recommended procedures/activities for implementation of the guideline
	and improved criteria for ART switching, and to introduce the concept of third-line ART regimens.		
Strategic framework to decrease the burden of TB/HIV.	This framework paper provides the technical basis to inform and guide the development of national implementation strategies for joint tuberculosis and HIV programme activities in delivering the available interventions.	This framework is intended to be used by those dealing with tuberculosis and HIV at all levels in HIV prevalent and resource-constrained settings.	<p>The new strategy for tuberculosis control in high HIV prevalence populations comprises interventions against tuberculosis (ICF and IPT) and interventions against HIV (and therefore indirectly against tuberculosis), e.g., condoms, STI treatment, safe injecting drug use (IDU) and highly active antiretroviral treatment (HAART);</p> <p>Several requirements are necessary for countries to strengthen general health service providers in implementing the interventions to control tuberculosis as part of the overall health service response to HIV; these include: increased funding (by national governments and the donor community); changes in international and national policy away from specific HIV activities towards responding to the care needs of high HIV prevalence populations through strengthened general health services; improved general health service capacity to deliver interventions (human resources, infrastructure and commodities); operational research to find out how best HIV and tuberculosis programmes can work together to help general health services deliver an effective response; effective coordination of activities on the part of the many role players often involved;</p> <p>Identify priority research needs in developing new and improved interventions, monitoring their impact, and implementing national strategies to decrease the burden of TB/HIV.</p>

## **7.5 FORMULATION OF A POCKET GUIDE ON COLLABORATIVE TB/HIV CARE SERVICES FOR HEALTH WORKERS IN ETHIOPIA**

This section describes the contents of the pocket guide for healthcare workers engaged in TB/HIV care, based on synthesis of available global collaborative TB/HIV care policies and guidelines. In addition, the local situation was considered from findings of this research. Compilation of the pocket guide is also guided by the theoretical frameworks and literature review used in this study. Formulated thematic areas were followed to prepare the pocket guide in a simplified form so that any level of the healthcare providers will be able to use it.

The pocket guide is presented in three main themes that emerged from global policy for collaborative TB/HIV care services.

### **7.5.1 THEME 1: Establish mechanisms for integrated TB and HIV services (Joint HIV and TB Programmes activities)**

Four sub-themes have been compiled under this main theme, each of which has sets of specific activities outlined below.

#### **7.5.1.1 *Set up or strengthen a TB/HIV coordinating body functional at all levels***

The HIV control programme and TB control programme should create and strengthen a joint national TB/HIV coordinating body, functional at regional, district, local and facility levels, with equal or reasonable representation of the two programmes, including of people at risk of or affected by both diseases, and other line ministries (e.g., those working on harm reduction and prison or mining health services).

The TB/HIV coordination bodies should be responsible for the governance, planning, coordination, and implementation of collaborative TB/HIV activities as well as mobilisation of financial resources.

HIV programmes and TB control programmes, including their partners in other line ministries (for example, in ministries responsible for prison or uniformed health services), the private-for-profit sector and civil society organisations should work together to provide access to integrated services, preferably at the same time and location, for the prevention, diagnosis, treatment and care of TB/HIV.

National coordinating bodies are needed at all levels of the health system to ensure strong and effective collaboration between HIV programmes and TB control programmes and to offer a platform for coordination and synergy among stakeholders. Representation of people at risk of or affected by both diseases is essential to ensure effective implementation of integrated services and programme success. National HIV/AIDS directorate, which coordinate the multi-sectoral response to HIV, should also be included in national TB/HIV control coordination efforts.

A national coordinating body for collaborative TB/HIV activities should have clear and consensus-based terms of reference. The important areas of responsibility are:

- Governance and coordination at national and sub-national levels,
- Resource mobilisation,
- Provision of general policy and programme direction for the management of collaborative TB/HIV activities,
- Capacity building, including training of service providers,
- Ensuring coherence of communications about TB and HIV,
- Ensuring the involvement of civil society, nongovernmental and community organisations, and individuals.

In Ethiopia, where coordinating bodies already exist (such as country coordinating mechanisms for the Global Fund to Fight AIDS, Tuberculosis and Malaria), strengthening their role through revised terms of reference and expansion based on performance and achievements may be needed to deliver integrated TB and HIV services, preferably at the same time and location.

Evidence from operational research and descriptive studies has shown that effective coordinating bodies that operate at all levels and that include the participation of all stakeholders from HIV programmes and TB control programmes, civil society organisations, patients and communities are feasible and ensure broad commitment and ownership. A national coordinating body should also address governance issues, including the division of labour and resources for implementing joint plans.

### **7.5.1.2 Conduct HIV and TB surveillance among TB and HIV patients, respectively**

Surveillance of HIV should be conducted among TB patients and surveillance of active TB disease among people living with HIV in all countries, irrespective of national adult HIV and TB prevalence rates, in order to inform programme planning and implementation.

- Countries with unknown HIV prevalence rates among TB patients should conduct a sero-prevalence (periodic or sentinel) survey to assess the situation.
- In countries with a generalised epidemic state (>1% in pregnant women), HIV testing and counselling of all patients with presumptive or diagnosed TB should form the basis of surveillance. Where this is not yet in place, periodic surveys or sentinel surveys are suitable alternatives.
- In countries with a concentrated epidemic state where groups at high risk of HIV infection are localised in certain administrative areas (>5% in at least one defined sub-population and <1% in pregnant women in urban areas), HIV testing and counselling of all patients with presumptive or diagnosed TB in those administrative areas should form the basis of surveillance. Where this is not yet in place, periodic (special) or sentinel surveys every two to three years are suitable alternatives.
- In countries with a low-level epidemic state ( $\leq 5\%$  in any defined sub-population), periodic (special) or sentinel surveys are recommended every two to three years.
- HIV testing should be an integral part of TB prevalence surveys and anti-tuberculosis drug resistance surveillance.

Surveillance is essential to inform programme planning and implementation. There are three key methods for surveillance of HIV among TB patients:

- periodic surveys (cross-sectional HIV sero-prevalence surveys among a small representative group of TB patients within a country);
- sentinel surveys (using TB patients as a sentinel group within the general HIV sentinel surveillance system); and

- data from the routine HIV testing and counselling of patients with presumptive or diagnosed TB.

The surveillance method chosen will depend on the underlying HIV epidemic state, the overall TB situation, and the availability of resources and experience. Incorporating HIV testing with TB prevalence surveys and anti-tuberculosis drug resistance surveillance offers an opportunity to expand HIV testing and improve knowledge among national TB control programmes on the relationship between HIV and drug-resistant TB at the population level. It also provides critically important individual benefits to people living with HIV, including better access to testing, early case detection and rapid initiation of treatment.

With the increasing availability of HIV treatment, unlinked anonymous testing for HIV is not recommended because results cannot be traced back to individuals who need HIV care and treatment.

Surveys should follow nationally recommended guidelines. TB patients or people newly diagnosed with HIV identified during the surveillance should immediately be provided with TB and HIV treatment and services based on national guidelines. The surveillance of active TB disease among people living with HIV, whenever feasible, will be useful to inform programmes. Rates of TB among people newly enrolled in HIV care and/or among those initiating ART could be monitored based on analysis of routine programme data.

Evidence from descriptive studies has shown HIV surveillance among TB patients to be a critical activity in understanding the trends of the epidemic and in the development of sound strategies to address the dual TB/HIV epidemic.

#### ***7.5.1.3 Carry out joint TB/HIV planning to integrate the delivery of TB and HIV services***

Joint planning should clearly define the roles and responsibilities of HIV and TB control programmes in implementing, scaling-up and monitoring and evaluating collaborative TB/HIV activities at all levels of the health system. HIV programmes and TB control programmes should describe models to deliver client and family centred integrated TB and HIV services at facility and community levels compatible with national and local contexts.

HIV programmes and TB control programmes should ensure resource mobilisation and adequate deployment of qualified human resources to implement and scale up collaborative TB/HIV activities in accordance with country-specific situations.

HIV programmes and TB control programmes should formulate a joint training plan to provide pre-service and in-service training, and continuing competency-based education on collaborative TB/HIV activities for all categories of healthcare workers. Job descriptions of health workers should be developed and/or adapted to include collaborative TB/HIV activities.

HIV programmes and TB control programmes should ensure that there is sufficient capacity to deliver healthcare (e.g., adequate laboratories, supplies of medicines, referral capacity, private sector involvement, focus on key populations such as women, children, people who use drugs and prisoners), and effectively implement and scale up collaborative TB/HIV activities.

HIV programmes and TB control programmes should develop specific strategies to enhance the involvement of nongovernmental and other civil society organisations and individuals affected by or at risk of both diseases in developing and implementing policy and programmes, and the monitoring and evaluation of collaborative TB/HIV activities at all levels.

Well-designed TB/HIV advocacy activities that are jointly planned to ensure coherence between their messages and targeted at key stakeholders and decision-makers, should be carried out at global, national, regional and local levels.

The joint communication strategies should ensure the mainstreaming of HIV components in TB communication and of TB components in HIV communication.

All stakeholders of collaborative TB/HIV activities, including HIV programmes and TB control programmes, should support and encourage operational research on country - specific issues to develop the evidence base for efficient and effective implementation of collaborative TB/HIV activities.

Medium- and long-term joint strategic planning to successfully and systematically scale up collaborative TB/HIV activities nationwide and deliver integrated TB and HIV

services, preferably at the same time and location with due consideration to prevention of TB transmission should be developed.

HIV programmes and TB control programmes should either devise a joint TB/HIV plan, or introduce TB/HIV components in their national plans for prevention, diagnosis, treatment and care. The roles and responsibilities of each programme in implementing specific TB/HIV activities at all levels must be clearly defined.

Joint planning should be harmonised with the country's national health strategic plans and health system strengthening agenda. Key areas to be covered include quality assured health services; a well-performing health workforce; well-functioning information systems; equitable access to essential medicinal products, vaccines and technologies; good health financing; and leadership and governance.

Crucial elements for joint TB/HIV planning include the activities detailed in sections 7.5.1 – 7.5.3 of this chapter, as well as resource mobilisation, capacity-building and training, TB/HIV advocacy, programme communication, the involvement of civil society organisations including nongovernmental organisations, people living with HIV, people who have been diagnosed with TB (including people who have completed anti-tuberculosis treatment) and communities, engagement of private for profit and operational research. HIV programmes and TB control programmes should also plan and coordinate reviews of joint programmes as well as routine monitoring and evaluation of integrated services.

#### *7.5.1.3.1 Models of integrated TB and HIV service delivery system*

The selection of models for delivering quality-assured integrated TB and HIV services should consider local and national health system issues. The models described below are therefore not exhaustive or prescriptive. National HIV programmes and TB control programmes need to define the best model for delivering integrated services that enables the provision of quality-assured comprehensive services as soon as and as close as possible to where people living with HIV and TB and their families reside.

Such efforts should include integrating services for the prevention, diagnosis, treatment and care of TB and HIV into maternal and child health services, including the prevention of vertical (mother to child) transmission of HIV, and treatment centres for drug dependency where applicable.

- *Entry via TB service and referral for HIV testing and care*

In this model TB service providers refer patients to services providing HIV testing, with or without subsequent HIV care. It requires minimal additional logistic and financial input and can be achieved through joint training of healthcare workers from both programmes, modification of existing record keeping systems and referral forms, and regular meetings of staff from both services to strengthen referral linkages. Strengths of this model include the simplicity of introducing the required measures and the low cost. The key weakness is loss of patients if referral fails (e.g., due to lack or cost of transportation). This model may not be the best option in high HIV prevalent settings where both services should be provided as close and as integrated as possible.

- *Entry via TB service and referral for HIV care after HIV testing*

In this model, TB clinic staffs offer HIV testing on site and refer people found to be HIV-positive for HIV care. It may require additional HIV testing counselling space and also additional staff members, depending on the burden in the clinic. Whatever the HIV test results, people should be provided with HIV prevention information. If referral for HIV care fails, consequences may include additional HIV transmission to partners and children and delays in initiating life-saving HIV care and treatment.

- *Entry via HIV service and referral for screening, diagnosis and treatment of TB*

In this model, HIV care service providers refer people living with HIV for TB screening, diagnosis and treatment. Few reports described how patients were selected for referral. Appropriate referral criteria and system are essential for effective functioning of this model. Failure of the referral process can lead to ongoing TB transmission and progression of TB disease.

- *Entry via HIV service and referral for TB diagnosis and treatment after TB screening*

In this model, people living with HIV are screened for TB and referred for TB diagnosis and treatment based on the outcome of the screening. The infrastructure needed for this model varied considerably, depending on whether additional interventions such as Isoniazid preventive therapy (IPT) are offered by the HIV clinic or sputum sample collection on site that requires heightened infection control measures. The WHO recommended symptom based screening algorithm should be used and people living with HIV who are unlikely to have active TB should be provided with IPT.

- *TB and HIV services provided at a single facility (at the same time and location):*

This model includes a spectrum of activities to provide patient-centred care by the same trained healthcare provider at the same visit, a “one-stop service.” It includes: a TB clinic providing HIV treatment; an HIV clinic providing TB treatment; a primary health centre providing integrated diagnosis and treatment for TB and HIV either in one or separate rooms; and a hospital providing integrated diagnosis and treatment for TB and HIV either in one or separate rooms. This model could be particularly efficient in settings with high HIV prevalence where most TB patients have HIV and in settings where availability of human resources is an issue, avoiding the need for referral and offering better coordinated care for patients.

A concern with this model is the risk of nosocomial spread of TB. It should be noted however that the risk of TB transmission is not unique to this model, as it exists in general waiting areas of all health facilities in high burden settings (wherever coughing patients with undiagnosed pulmonary TB are regularly presenting). Thus, implementation of proper infection control measures is crucial throughout health facilities in high burden settings in order to minimise the risk of nosocomial spread of TB to immune-suppressed people living with HIV.

However, integrated care supports early detection and treatment of undiagnosed infectious tuberculosis, and may result in a reduction of TB risk compared with separate services. Increase in notification of smear-negative pulmonary and extra-pulmonary TB and of treatment success rates in integrated TB/HIV was also observed in Lesotho and South Africa. This model also supports timely initiation of ART in TB patients living with HIV without the necessity to refer them as shown in South Africa.

#### *7.5.1.3.2 Resource mobilisation and capacity-building*

Collaborative TB/HIV activities, which build on well-resourced strategies, may not require much additional financial input. If either or both programmes are under-resourced in funds or human capacity, additional resources should first be mobilised to strengthen them.

Joint proposals to solicit resources for implementing collaborative activities should be prepared, within the framework of the joint coordinating body, building on the comparative strengths of both programmes and the specific needs of the country.

Alternatively, both HIV and TB funding proposals (for example to the Global Fund to fight AIDS, TB and Malaria, to the United States President's Emergency Plan for AIDS Relief, or any other funding streams) should include resources to address collaborative TB/HIV activities in each proposal, with clear division of labour to avoid duplication of efforts. Joint capacity-building for collaborative activities should include training of TB, HIV and primary healthcare workers in TB/HIV issues. Also important is ensuring continued competency based education of healthcare workers through clinical mentoring, regular supportive supervision and the availability of standard operating procedures and job aids, reference materials and up-to-date national guidelines. Capacity should also be enhanced in the healthcare system, for example in the laboratory, supply management, health information, referral and integrated service delivery systems, to enable them to cope better with the increasing demands of collaborative TB/HIV activities.

#### *7.5.1.3.3 Involving nongovernmental and other civil society organisations and communities*

Expanding collaborative TB/HIV activities beyond the health sector through meaningful involvement with communities, nongovernmental and civil society organisations and individuals in the planning, implementation and monitoring of TB/HIV activities at all levels is crucially important.

People at risk of or affected by TB and HIV as well as community-based organisations working on advocacy, treatment literacy and community mobilisation are key actors in generating the required demand for integrated services at all levels of care. Their recognition and support, including financial support, is therefore critical.

Advocacy targeted at influencing policy and sustaining political commitment, programme implementation and resource mobilisation is very important to accelerate the implementation of collaborative TB/HIV activities.

Services for TB prevention, diagnosis, treatment and care can be integrated with those for HIV, and vice versa, through community-based organisations such as TB care or HIV home-based care. Trained home-based care and community healthcare workers as well as nongovernmental organisations have been successful in providing TB and HIV services in various countries. Community-based TB and HIV care services are cost-effective. While implementing collaborative TB/HIV activities, it is imperative that civil

society organisations, including nongovernmental and community-based organisations, advocate, promote and follow national TB and HIV guidelines, including monitoring and evaluation of TB/HIV activities using nationally recommended indicators.

#### *7.5.1.3.4 Engaging the private-for-profit sector*

The engagement of the private-for-profit sector in implementing collaborative TB/HIV activities requires coordination and collaboration among HIV programmes and TB control programmes as well as private service providers and their professional associations. This collaboration can be either at national, state, regional, provincial or district level, depending on the local context. Private-for-profit sector representation should be included in TB/HIV coordinating bodies at all levels and should be encouraged to initiate and implement collaborative activities in accordance with national norms and guidelines.

#### *7.5.1.3.5 Addressing the needs of key populations: women, children and people who use drugs*

Active TB has been diagnosed at rates up to 10 times higher in pregnant women living with HIV than in women without HIV infection; maternal TB is associated with a 2.5 fold increased risk of vertical transmission of HIV infection to the unborn child. Similarly, HIV infection is a risk factor for active TB disease in infants or children.

More severe forms of TB disease and higher mortality rates are reported in children living with HIV. Bacille Calmette–Guérin (BCG) is a live vaccine and should not be given to infants and children with known HIV infection. However, HIV infection cannot reliably be determined at birth, and the majority of infants born to HIV-infected mothers will be HIV uninfected.

BCG should therefore be administered to infants born to HIV-infected mothers in HIV prevalent settings unless the infant is confirmed as HIV-infected. National HIV programmes and TB control programmes should ensure that TB prevention, screening, diagnosis and treatment as well as HIV prevention, diagnosis, treatment and care services are integrated with those for maternal and child health (MCH) and prevention of HIV vertical transmission. People living with HIV in congregate settings, such as prisons and centres for refugees or internally displaced persons, and people who use drugs have a higher risk of and incidence of TB and HIV infection.

People who inject drugs and use alcohol hazardously have a higher risk of co-infection with HIV, TB and hepatitis. The joint plans, especially in settings where injecting drug use is fuelling the HIV epidemic, should therefore ensure that services for prevention, diagnosis, treatment and care of TB are combined with harm reduction measures, including the provision of testing for hepatitis B and C infection, and referral for treatment of people found to have infectious hepatitis. Prisons should ensure that integrated services are available to deliver effective prevention, including TB infection control measures, diagnosis and treatment of HIV, TB and hepatitis as well as harm-reduction services.

#### *7.5.1.3.6 Advocacy and communication*

Advocacy targeted at influencing policy, programme implementation, and resource and community mobilization is important to accelerate the implementation of collaborative TB/HIV activities at all levels. Two-way communication between the programmes and the general public and with affected populations can inform and create awareness about both diseases and is crucial for ensuring that patients actively seek out and demand services.

Effective communication measures focused on communities rather than individuals that combine a series of elements from the use of data, science, research, policy and advocacy can inform the public, shape perceptions and attitudes, mitigate stigma, enhance the protection of human rights, create demand for services, form stronger links with health services and systems, improve provider client relationships, and monitor and evaluate TB/HIV activities. Joint TB/HIV communication strategies should ensure the mainstreaming of HIV components in TB communication and of TB components in HIV communication.

#### *7.5.1.3.7 Operational research to scale up collaborative TB/HIV activities*

Cultural and system-wide differences between HIV and TB care providers and operational difficulties for providing effective and appropriate interventions have contributed to a lack of progress in expanding collaborative TB/HIV activities.

Operational research is needed to define how best to provide high quality integrated TB and HIV interventions at facility and community levels in order to inform global and national policy and strategy development. Priority research questions for TB/HIV in HIV

prevalent and resource limited settings, including for operational research, have been identified and need to be urgently answered

#### **7.5.1.4 Conduct monitoring and evaluation**

HIV programme and TB control programmes should establish harmonised indicators and standard reporting and recording templates to collect data for monitoring and evaluation of collaborative TB/HIV activities.

Organisations implementing collaborative TB/HIV activities should embrace harmonised indicators and establish a reporting mechanism to ensure that their data is captured by the national monitoring and evaluation system of the country.

The WHO guide to monitoring and evaluation of collaborative TB/HIV activities and the three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT and TB/HIV should be used as a basis to standardise country-specific monitoring and evaluation activities.

Monitoring and evaluation provides the means to assess the quality, effectiveness, coverage and delivery of collaborative TB/HIV activities. It promotes a learning culture within and across the programmes and ensures continuous improvement of individual and joint programme performance.

Monitoring and evaluation involves collaboration between the programmes and the general health system, the development of referral linkages between different services and organisations, and joint supervision. These activities should be integrated with existing monitoring and evaluation systems.

Establishing and identifying harmonised indicators that should be captured by each programme are essential to avoid duplication of effort, and national reporting and recording formats should be standardised. Using the three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT, and TB/HIV will facilitate the crosschecking and reconciliation of data between HIV programmes and TB control programmes at local and country levels and will strengthen country ownership of data.

Evidence from operational research has shown the importance of standardised monitoring and evaluation of collaborative TB/HIV activities to determine the impact of the activities and to ensure implementation and effective programme management.

## **7.5.2 THEME 2: Reduce the burden of TB among people living with HIV and initiate early antiretroviral therapy: the Three I's for TB/HIV (HIV Programme activities)**

In this theme, the HIV care providers need to integrate activities to decrease the burden of TB among PLHIV during HIV patients' follow-up care. The three primary activities outlined in the pocket guide are described in the following sections.

### ***7.5.2.1 Intensify TB case-finding and ensure high-quality anti-tuberculosis treatment***

Adults and adolescents living with HIV should be screened for TB with a clinical algorithm; those who report any one of the symptoms of current cough, fever, weight loss or night sweats may have active TB and should be evaluated for TB and other diseases.

Children living with HIV who have any of the following symptoms: poor weight gain, fever or current cough or contact history with a TB case, may have TB and should be evaluated for TB and other conditions. If the evaluation shows no TB, children should be offered IPT regardless of their age.

TB patients with known positive HIV status and TB patients living in HIV prevalent settings should receive at least six months of rifampicine based treatment regimen. The optimal dosing frequency is daily during the intensive and continuation phases.

All people living with HIV should be regularly screened for TB using a clinical symptom based algorithm consisting of current cough, fever, weight loss or night sweats at the time of initial presentation for HIV care and at every visit to a health facility or contact with a healthcare worker afterwards. Adults and adolescents living with HIV who report any one of the symptoms of current cough, fever, weight loss or night sweats may have active TB and should be evaluated for TB and other diseases.

Screening for TB is important regardless of whether people have received or are receiving IPT or ART. Similarly, children living with HIV who have any one of the

following symptoms: poor weight gain, fever or current cough or contact history with a TB case, may have TB and should be evaluated for TB and other conditions.

In people with a positive screen, the diagnostic workup for TB should be carried out in accordance with national guidelines and principles of sound clinical practice to identify either active TB or an alternative diagnosis.

Smear negative pulmonary and extra-pulmonary TB is common among people living with HIV and associated with poor treatment outcomes and excessive early mortality. If smear negative pulmonary TB or extra-pulmonary TB is suspected, diagnostic processes should be expedited using all available and appropriate investigations, including mycobacterial culture.

New TB patients living with HIV should receive a TB regimen containing six months of rifampicine (two months of Isoniazid, rifampicine, pyrazinamide and ethambutol followed by four months of rifampicine and Isoniazid, 2HRZE/4RH) on a daily schedule; and should be started on ART regardless of CD4 count as soon as possible within the first eight weeks of anti-tuberculosis treatment.

#### ***7.5.2.2 Initiate TB prevention with Isoniazid preventive therapy and early antiretroviral therapy***

Adults and adolescents living with HIV should be screened with a clinical algorithm; those who do not report any one of the symptoms of current cough, fever, weight loss or night sweats are unlikely to have active TB and should be offered IPT.

Adults and adolescents who are living with HIV have unknown or positive tuberculin skin test (TST) status and are unlikely to have active TB should receive at least six months of IPT as part of a comprehensive package of HIV care. IPT should be given to such individuals irrespective of the degree of immune-suppression, and also to those on ART, those who have previously been treated for TB, and pregnant women.

TST is not a requirement for initiating IPT in people living with HIV. People living with HIV who have a positive TST benefit more from IPT; TST can be used where feasible to identify such individuals. In addition, providing IPT to people living with HIV does not increase the risk of developing Isoniazid-resistant TB. Therefore, concerns regarding the development of INH resistance should not be a barrier to providing IPT.

Children living with HIV who do not have poor weight gain, fever or current cough are unlikely to have active TB.

Children living with HIV who are more than 12 months of age and who are unlikely to have active TB on symptom-based screening and have no contact with a TB case should receive six months of IPT (10mg/kg/day) as part of a comprehensive package of HIV prevention and care services.

In children living with HIV who are less than 12 months of age, only those who have contact with a TB case and who are evaluated for TB (using investigations) should receive six months IPT if the evaluation shows no TB disease.

All children living with HIV after successful completion of treatment for TB disease should receive Isoniazid for an additional six months.

All people living with HIV with CD4 counts of  $\leq 350$  cells/mm<sup>3</sup> irrespective of the WHO clinical stage should start ART.

### ***7.5.2.3 Infection control for TB in healthcare and congregate settings ensured***

HIV programmes and TB control programmes should provide managerial direction at national and sub-national levels for the implementation of TB infection control in healthcare facilities and congregate settings.

Each healthcare and congregate setting should have a TB infection control plan of the facility, preferably included in a general infection control plan, supported by all stakeholders, which includes administrative, environmental and personal protection measures to reduce transmission of TB in healthcare and congregate settings, and surveillance of TB disease among workers.

Healthcare workers, community health workers and care providers living with HIV should be provided with ART and IPT if eligible. Furthermore, they should be offered an opportunity for transfer to work in clinical sites that have the least risk of TB transmission.

At facility level, measures to reduce TB transmission include administrative, environmental and personal protection controls, which are aimed at generally reducing exposure to *M. tuberculosis* of healthcare workers, prison staff, police and any other persons living or working in the congregate settings.

Administrative controls consist of triage to identify people with TB symptoms, separation of infectious cases, control of the spread of pathogens (cough etiquette and respiratory

hygiene), rapid diagnosis and prompt initiation of TB treatment, and reduced hospitalisation.

Environmental controls include maximising ventilation systems (natural or mechanical) and using upper room ultraviolet germicidal irradiation (if applicable).

Personal protective interventions include use of respirators and prevention, treatment and care packages for healthcare workers including HIV prevention interventions, and ART and IPT for workers who are living with HIV.

Healthcare workers should have access to acceptable, confidential and quality assured HIV testing. Healthcare workers living with HIV should be provided with ART, but even with adequate response to treatment they will remain at higher risk of TB. Transfer of their clinical responsibilities into sites that have the least risk of TB transmission and regular TB screening should be considered to mitigate this risk. Similarly, healthcare workers with active TB should be relocated from HIV care facilities.

Patients and their communities should be trained on TB transmission, infection control and cough etiquette to reduce the risk of TB transmission in healthcare facilities and congregate settings.

### **7.5.3 THEME 3: Decrease the burden of HIV in patients with presumptive and diagnosed TB (TB Programme activities)**

In this theme, the TB care providers need to integrate activities to decrease the burden of HIV among TB during TB patients' follow-up cares. The five primary activities outlined in the pocket guide are described in the following sections.

#### ***7.5.3.1 Provide HIV testing and counselling to patients with presumptive and diagnosed tuberculosis***

Routine HIV testing should be offered to all patients with presumptive and diagnosed for TB. Partners of known HIV-positive TB patients should be offered voluntary HIV testing and counselling with mutual disclosure.

TB control programmes should mainstream provision of HIV testing and counselling in their operations and routine services.

The vast majority of people living with HIV do not know their HIV status and seek healthcare from general service providers. HIV testing and counselling for people with

diagnosed or presumptive TB offers an entry point for a continuum of prevention, care, support and treatment for HIV and for TB. Evidence from observational studies shows that testing patients with presumptive and diagnosed TB and their contacts for HIV yields a high number of new diagnoses of HIV infection, as prevalence of HIV is higher than among the general adult population.

The yield of HIV-positive testing in TB patients varies significantly (from 6.3% to 77%). Studies in sub-Saharan Africa have shown that HIV testing of presumptive TB cases who turn out not to have active TB disease also yields high HIV-positive results. One study in Thailand showed 74% acceptance rate of HIV testing among contacts of TB patients and a higher (13.8%) HIV prevalence rate among contacts of HIV-positive TB cases as compared with contacts of HIV negative TB cases (2.5%).

Voluntary HIV testing and counselling for sexual or needle-sharing partners, with shared disclosure and mutual support, may also improve the uptake of and adherence to ART, benefiting both the index individual and their partners regardless of HIV status.

Routine HIV testing and counselling to all patients with presumptive and diagnosed TB as benefits of testing accrue to the patient, their partner, the family and the community at large. The testing should be readily available and voluntary, informed consent should be obtained and confidentiality should be protected.

Moreover, TB patients with a new potential HIV exposure or who are at higher risk of HIV exposure and with an HIV-negative test result should be re-tested after four weeks from the time of initial testing.

Age-appropriate algorithms should be in place for undertaking HIV testing in young children, and HIV testing should be family and child focused. All people diagnosed with HIV infection should be offered HIV prevention, diagnosis, treatment and care services, including ART. These services should be offered by TB control programmes or through effective referral to HIV services.

### **7.5.3.2 Introduce HIV preventive methods for patients with presumptive and diagnosed tuberculosis**

TB control programmes should implement comprehensive HIV prevention strategies for their patients and their partners, targeting sexual, parenteral or vertical transmission or should establish a referral linkage with HIV programmes to do so.

HIV programmes and TB control programmes should implement procedures for voluntary, acceptable and confidential HIV counselling and testing for healthcare providers and for reduction of occupational and nosocomial exposure to HIV infection in their services.

All personnel working with presumptive and confirmed TB cases, people living with HIV and people who use drugs should be able to assess risk factors for HIV infection and transmission and should provide comprehensive information and services to their clients to minimise their risks.

HIV programmes and TB control programmes should collaborate with harm reduction services to ensure universal access to comprehensive TB and HIV prevention, diagnosis, treatment and care as well as drug treatment services, including opioid substitution therapy, for people who use drugs in a holistic person-centred approach to maximise access and adherence within one setting as much as possible.

TB control programmes should ensure that vertical transmission of HIV is prevented by referring all HIV-positive pregnant women attending TB services to providers of services for prevention of vertical transmission of HIV for antiretroviral therapy or prophylaxis as needed.

Prevention of HIV includes interventions to:

- prevent sexual transmission such as male and female condoms, male circumcision, HIV testing and counselling including couples counselling and testing, early ART as per WHO guidelines;
- prevent transmission through sharing contaminated injecting equipment among injecting drug users; combined with
- behavioural interventions and brief interventions to prevent hazardous alcohol use and use of other psycho-stimulants.

HIV prevention services also include prevention of vertical transmission of HIV, which comprises two key approaches:

- HIV-infected women, including during pregnancy, with CD4 counts  $\leq 350$  cells/mm<sup>3</sup> irrespective of WHO clinical staging or in clinical stage 3 or 4 irrespective of the CD4 cell count, should start lifelong ART for their own health, which is also safe and effective in reducing vertical transmission.
- For HIV-infected pregnant women who do not need ART for their own health, prophylaxis with triple ARV medicines or with zidovudine plus lamivudine to prevent HIV transmission is needed and should be continued until one week after all infant exposure to breast milk has ended.

In Ethiopia, with its high HIV prevalence and low male circumcision rates in some parts of the country, medical male circumcision in HIV negative men is also recommended, combined with HIV testing and counselling and promotion of consistent condom use.

In healthcare settings, transmission of HIV can be prevented through primary prevention measures such as standard precautions, injection safety, blood safety and safe waste disposal, as well as secondary prevention measures such as occupational post-exposure prophylaxis. In addition, improved treatment of sexually transmitted infections has been shown to reduce HIV incidence in an environment characterised by an emerging HIV epidemic.

#### **7.5.3.3 *Provide Cotrimoxazole preventive therapy for tuberculosis patients living with HIV***

Routine Cotrimoxazole preventive therapy should be administered in all HIV-infected patients with active TB disease regardless of CD4 counts.

Cotrimoxazole preventive therapy is a broad spectrum antimicrobial agent that prevents a range of secondary bacterial and parasitic infections in eligible adults and children living with HIV. TB patients living with HIV should receive CPT and it should be implemented as an integral component of the HIV chronic care package. CPT is a simple, well tolerated and cost effective intervention for people living with HIV and can be administered concomitantly to ART.

Therefore, routine CPT should be administered in all HIV-infected patients with active TB disease regardless of their CD4 cell count. Moreover, HIV programmes and TB

control programmes should establish a system to provide CPT to all eligible people living with HIV who have active TB.

#### **7.5.3.4 *Ensure HIV prevention, treatment and care for all tuberculosis patients living with HIV***

All people living with HIV who are diagnosed with TB should receive integrated services for prevention, diagnosis, treatment and care of TB and HIV.

HIV programmes and TB control programmes should ensure access to a continuum of comprehensive and integrated prevention, care and treatment for people living with HIV who are receiving or who have completed their anti-tuberculosis treatment.

A comprehensive package of prevention, diagnosis, treatment and care interventions (continuum of care) should be provided to all people living with HIV, ideally starting well before the need for ART. Pre-ART care includes regular assessment of the clinical and immunological stages of infection, prevention of illness, care for opportunistic infections, preparation for adherence to ART, nutritional support, provision of safe water, sanitation and hygiene, psychosocial support, and prevention and management of mental health disorders, including alcohol and other substance use.

It is also essential to provide HIV prevention methods for people already living with HIV to prevent inadvertent HIV transmission (“positive prevention” or “prevention for positives”). A continuum of care should also be provided to people living with HIV who are receiving or who have completed their anti-tuberculosis treatment through integrated services or strengthened referral systems.

Particular attention should be paid to seriously ill patients (e.g., patients with multidrug-resistant and extensively drug-resistant TB). Palliative care, both chronic and terminal as needed, should be offered to ensure that patients and their families live out their lives with minimal suffering and loss of dignity, even when all available curative treatments have been exhausted.

#### **7.5.3.5 *Provide Antiretroviral therapy to TB patients living with HIV***

ART should be started in all TB patients living with HIV, irrespective of their CD4 counts.

Anti-tuberculosis treatment should be initiated first, followed by ART as soon as possible within the first eight weeks of treatment. Those HIV-positive TB patients with profound immune-suppression (e.g. CD4 counts less than 50 cells/mm<sup>3</sup>) should receive ART immediately within the first two weeks of initiating TB treatment.

Efavirenz should be used as the preferred non-nucleoside reverse transcriptase inhibitor in patients starting ART while on anti-tuberculosis treatment.

Antiretroviral therapy greatly improves the survival and the quality of life of TB patients living with HIV, prevents HIV transmission and should be considered part of HIV and TB treatment and prevention.

The availability of ART can also encourage people to be tested for HIV. HIV programmes and TB control programmes should ensure that TB patients diagnosed with HIV infection are offered ART as early as possible, preferably within integrated services or within TB health facilities.

Effective referral to HIV services remains an alternative but relies on sound referral systems and patients' ability to afford other costs such as transport and lost wages.

HIV programmes and TB control programmes should work together to guarantee ART to all TB patients living with HIV in a decentralised manner.

Patients should be closely followed-up to assess the occurrence of side-effects related to co-treatment and of TB associated immune reconstitution inflammatory syndrome (IRIS), which is common in patients with TB started on ART but usually self-limited.

HIV stakeholders and service providers should establish a mechanism to ensure that people living with HIV receive anti-tuberculosis treatment with ART, emphasising integrated and patient-centred care. Early use of ART is also recommended for TB patients living with HIV who also receive medication with second-line anti-tuberculosis regimens for drug-resistant TB.

Evidences showed that, rifampicine reduce drug levels of both non-nucleoside reverse transcriptase inhibitors and protease inhibitors through induction of the cytochrome P450 liver enzyme system. In addition, comparing efavirenz and nevirapine based ART in HIV-infected TB patients receiving rifampicine showed that both standard doses of efavirenz and nevirapine are effective in achieving viral load suppression. However,

reports of efficacy, safety and tolerability of efavirenz and nevirapine administered with rifampicine varied across observational studies.

When rifampicine is given with protease inhibitors, highly variable and mainly sub-therapeutic plasma concentrations of the protease inhibitor are observed, even in the presence of boosted doses of ritonavir. Rifabutin, listed in the WHO Model List of Essential Medicines, is a less potent inducer of the cytochrome P450 system which can be used in patients on ART regimens that include a protease inhibitor.

## **7.6 ANALYSIS AND VALIDATION OF THE POCKET GUIDE**

According to Macmillan Dictionary, a guide is 'a book about a particular subject or type of activity' (Macmillan Dictionary, 2012).

Analysis is the purposeful breakdown of statements into components, according to Rogers (2002,(in Moleki 2008:175). This is done to identify relationships between statements and relative hierarchy of ideas contained in a guideline.

Similarly, evaluation, as described by Moleki (2008:175), is judgment about the value and logical structure of a guideline. It also determines the extent to which the guidelines satisfy certain external criteria and/or standards. In addition, evaluation of a guideline allows the user or evaluator to draw judgment and conclusions about its validity (Moleki, 2008:175).

The above pocket guide for collaborative TB/HIV care service was validated by experts in the field of collaborative TB/HIV care service provision working for both governmental and nongovernmental organisations. The pocket guide was evaluated for clarity, simplicity, generality, rational structure and operational adequacy. Moleki (2008:175) has used the following criteria for evaluation of her guidelines for facilitation of clinical accompaniment of critical care nursing students in open and distance learning programme.

### **7.6.1 Clarity and relational structure**

The guideline was validated for trustworthiness, semantic clarity and structural clarity. Five persons (including a PLHIV) working in the field of TB and HIV were selected to serve as reviewers for the pocket guide. The team of reviewers was composed of

technical expert, expert end users, a coordinator of collaborative TB/HIV care and a programme management expert working in the field of TB/HIV control programmes. Prospective reviewers were discretely contacted over face-to-face, in the workplace and requested to serve as reviewer for the pocketbook for collaborative TB/HIV care for health workers in Ethiopia. On the whole, all five persons agreed to participate in the review and validation process. Electronic copies of the pocket guide and a brief description of processes followed by the researcher to develop the pocket guide were e-mailed to each of the reviewers. Reviewers were requested to review and validate the pocket guide for trustworthiness, semantic clarity and structural clarity. Reviewers were given options to provide written feedback or arrange to discuss their comments with the researcher. Each reviewer was given one month to respond the feedback. Reviewers were reminded prior to and on expiration of the one month timeline to revert with their comments. While four reviewers provided written feedback, one opted to discuss his comments with the researcher. The e-mailed comments were compiled and used to update the pocket guide. As described by Moleki (2008:177), the semantic clarity questioned the theoretical meaning of concepts, while structural clarity reflected on the interrelationship and connections between the conceptual framework and the theoretical framework used to develop the pocket guide.

### **7.6.2 Simplicity and operational adequacy**

The pocket guide was evaluated to establish its suitability and applicability in the provision of collaborative TB/HIV care services in public health facilities in Ethiopia. For primary healthcare worker to be simple and operationally adequate, it has to first appear pocket sized and user friendly summary of all the specific activities for collaborative TB/HIV care services in a simple and clear language.

### **7.6.3 Generality of the pocket guide/guideline**

Moleki (2008:177) identifies generality as the breadth of the scope and purpose of the guidelines. The pocket guide was developed to facilitate staff providing TB/HIV care to use proven, culturally and linguistically appropriate strategies and tools to enable end users understand all prevention, treatment and care options and to make decisions consistent with their values and preferences.

## **7.7 RECOMMENDATIONS FOR IMPLEMENTATION OF THE POCKET GUIDE**

The following themes of recommendations are outlined for the implementation of the pocket guide as an immediate output of this thesis work.

### **7.7.1 Qualifying statements**

When formulating a pocket guide for a disease as complex as HIV and TB, it is impossible to anticipate every scenario. It is expected that, in specific situations, there will be valid exceptions to the approaches offered in this pocket guide and sound reason to deviate from the recommendations provided within.

### **7.7.2 Implementation strategy**

The HIV programme and TB control programme teams of the Federal Ministry of Health (FMoH), Ethiopia, oversees the development, publication, dissemination and implementation of any clinical practice guidelines for TB/HIV care, in collaboration with other stakeholders, including PLHIV, development partners and implementation partners in Ethiopia. Therefore, the researcher will sensitise a development partner to take the lead in advocating for the adaptation of this pocket guide for promotion of collaborative TB/HIV care services in public health facilities in Ethiopia. This pocket guide addresses uniform and systematic management of TB/HIV patients at all levels of the healthcare delivery system.

### **7.7.3 Pocket guide dissemination**

The pocket guide is disseminated to healthcare providers and end-users through presentation at conferences, seminars, workshops, and pre-service trainings. Distribution methods include institutional websites (if any), printed and distributed hard copies for those who have no access to the Internet.

### **7.7.4 Pocket guide implementation**

The researcher will work with a development partner in Ethiopia to promote the adoption of the pocket guide by HIV chronic care division of the FMoH. It is envisaged that the FMoH will mobilise a stakeholders meeting to review, analyse and critique the pocket

guide, with a view to adapting for implementation in public health facilities in Ethiopia. Once adapted, the government of Ethiopia, development partners and implementing partners will integrate the pocket guide into their collaborative TB/HIV care training curriculum for all cadres of healthcare workers.

The pocket guide will also be presented in continuing medical education sessions usually held in every health facility providing TB/HIV collaboration activities and through video and audio conferencing. Given the current drive by donors to address integrated TB/HIV care, indicators will be developed based on the impact of the pocket guide, on performances of TB/HIV care health workers to what extent the pocket guide has been implemented.

Finally, this pocket guide will bring practical solutions to common problems related to access to technical guide, quality service delivery, or guidance for coordination of TB/HIV care services, in an effort to promote collaborative TB/HIV care services in the country.

#### **7.7.4.1 Collaborative TB/HIV pocket guide implementation tools**

Effective implementation of this pocket guide cannot be done in isolation. The following basic tools are necessary to support the implementation of this pocket guide:

- National implementation guideline for TB/HIV collaboration activities
- National ART guidelines
- National TB and Leprosy treatment guidelines
- National prevention of mother to child transmission of HIV (PMTCT) guidelines
- National HIV testing and counselling guidelines
- National Chronic HIV care manual

## **7.8 CONCLUSION**

This chapter has described the pocket guide for TB/HIV collaboration activities for health workers in Ethiopia. The pocket guide was developed to facilitate TB/HIV care providers in delivering improved collaborative TB/HIV care services and to make decisions consistent with their professional knowledge, ethics, and packages of comprehensive HIV care.

The Federal Ministry of Health of Ethiopia, in collaboration with stakeholders, is encouraged to make use of the pocket guide as additional resource material to strengthen the implementation of collaborative TB/HIV care in the country.

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## ANNEXURES

### ANNEXURE A: CERTIFICATE OF CLEARANCE FROM THE UNIVESRSITY OF SOUTH AFRICA HEALTH STUDIES RESEARCH AND ETHICS COMMITTEE



**UNIVERSITY OF SOUTH AFRICA  
Health Studies Research & Ethics Committee  
(HSREC)  
Faculty of Human Sciences  
CLEARANCE CERTIFICATE**

Date of meeting: 2 December 2010

Project No: 4508-560-9

Project Title: Promoting the implementation of collaborative tuberculosis and human immunodeficiency virus activities in Addis Ababa Ethiopia

Researcher: Amenu Wesen Denegetu

Supervisor/Promoter: Dr BL Dolamo

Joint Supervisor/Joint Promoter: N/A

Department: Health Studies

Degree: DLITT ET PHIL (Health Studies)

#### DECISION OF COMMITTEE

Approved

Conditionally Approved

A handwritten signature in black ink, appearing to read 'TR Mavundla', written over a horizontal line.

**Prof TR Mavundla  
RESEARCH COORDINATOR**

A handwritten signature in black ink, appearing to read 'MC Bezuidenhout', written over a horizontal line.

**Prof MC Bezuidenhout  
ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES**

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

## ANNEXURE B: LETTER OF ETHICAL CLEARANCE FROM THE ADDIS ABABA CITY ADMINISTRATION HEALTH BUREAU

### ETHICAL REVIEW COMMITTEE

Tel: + 251 115 513911

P.O. Box 30738

Fax No. +251 115 515689

**Research title:** Promoting the implementation of collaborative TB - HIV activities in Addis Ababa, Ethiopia

**Principal Investigator:** Amenu Wesen \Denegetu

CRITERIA/ITEM	RATING
1. consent form a. Does the consent contain all the necessary information that the subject should be aware of?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable
2. Are the objectives of the study clearly stated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3. Are provisions to overcome risks well described and accepted? a. Justice b. Beneficence c. Respect for a person	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not well described <input type="checkbox"/> Not applicable
4. Are the safety procedures in the use of vaccines, drugs and other biological products acceptable?	<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> No
5. Are the procedures to keep confidentiality well described?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable
6. Are the proposed researchers competent to carry out the study in a scientifically sound way?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
7. Does it have material transfer agreement?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Not applicable
8. Recommendation	<input checked="" type="checkbox"/> Approved
9. Remarks	

**Ethical Clearance Committee Members;**

Name

Signature

Name

Signature

1. Ato Alemu Haile mariam



2. Ato Ezra Muluneh




## ANNEXURE C: LETTER OF PERMISSION FROM ADDIS ABABA HEALTH BUREAU



Reference

AAHB/7817/225

Date

9 May 2011

To:-

Zewdita Hospital

Menilik 2<sup>nd</sup> Hospital

Kazanchis Health center

Yeka Health Center

Lideta Health Center

N/S/L No, 2 Health Center

Addis Ababa

Akaki Health center

Kaliti Health Center

Teklehaimanot Health center

Woreda 7 Health Center

Bole Health center

Gullele Health Center

Subject; Request for permission to access Health Facility to conduct approved research

This letter is to support Amenu Wesen Denegetu to conduct research, which is titled as Promoting the implementation of collaborative TB - HIV activities in Addis Ababa, Ethiopia

The study proposal was duly reviewed and approved by UNISA University, and subsequently reviewed and approved by Addis Ababa Health Bureau Health research review Committee, the Principal investigator is informed with a copy of this letter to report any changes in the study procedures and submit an activity progress report to the Ethical committee as required.

Therefore we request the health facilities to provide support to the principal investigators.



With Regard

**Alemu Halle Marlam**  
Head, Ethical Clearance Committee

Cc:-

To

Amenu Wesen Denegetu

Addis Ababa

Ethical clearance committee

Health Bureau

**ANNEXURE D: COVERING LETTER ACCOMPANYING INTERVIEWER ADMINISTERED QUESTIONNAIRE**

Dear Sir/Madam,

**SUBJECT: PROMOTING THE IMPLEMENTATION OF COLLABORATIVE TB/HIV ACTIVITIES IN ADDIS ABABA, ETHIOPIA**

Hello, my name is *Amenu Wesen* and I have been working with people living with HIV/AIDS. Currently, I am studying for Doctor of Literature and Philosophy on Health studies at University of South Africa, and this research is part of the study. I am interviewing clients attending TB clinics and HIV chronic care clinic at this health facility in order to find out how the services are being delivered to you concerning activities to decrease the burden of tuberculosis and HIV among patients of TB and HIV. The findings of our discussion might get published and contribute to the improvements of the services provided to you.

I would like to have discussion with you about the service provision concerning activities to decrease the burden of TB/HIV among TB and HIV patients while attending at the TB or HIV chronic care clinics. Our discussion will not come to detail for private matters and the information that you provide will be used solely for the purpose of this study.

Your name will not be asked and unique identification is not required. You do not have to discuss issues that you do not want to. If you want to withdraw from the study any time along the discussion process, you will not be obliged to continue or give reasons for doing so.

Refusing to participate or withdrawing from the study along the process will not have any consequences on you and the services provided to you. However, the information that you provide during the discussion will help greatly to understand the status of service provision to HIV and TB patients that might help in improving the service provision.

I would like to appreciate your help in responding to this interview. If you have any questions or anything that is not clear please feel free to ask.

If you are clear with the information provided and agree to participate please sign on the consent form attached.

Kind regards

**Amenu Wesen Denegetu (BSC, MPH), DLitt et Phil (Candidate)**

Tel: +251911647699 or e-mail: [45085609@mylife.unisa.ac.za](mailto:45085609@mylife.unisa.ac.za) or [denegetu@gmail.com](mailto:denegetu@gmail.com).

## **ANNEXURE E: THE CONSENT FORM**

### **STUDY TITLE: PROMOTING THE IMPLEMENTATION OF COLLABORATIVE TB/HIV CARE SERVICES IN ADDIS ABABA, ETHIOPIA.**

#### **RESEARCHER: AMENU WESEN DENEGETU**

Amenu Wesen Denegetu, a public health professional currently pursuing a Doctoral degree from the University of South Africa conducting a study as titled above in the fulfilment of the requirements for the degree of Doctor of Literature and Philosophy degree in Health Studies (DLitt et Phil). This study will be conducted in all ten sub-cities of Addis Ababa City Administration at selected Public Health facilities.

The purpose of this study is to identify gaps in the implementation of collaborative TB/HIV care services in Addis Ababa City Administration. The researcher intends to use the findings from this research to promote better implementation modalities for collaborative TB/HIV care services.

The Addis Ababa City Administration Health Bureau ethical review committee has approved that the study can be conducted in the City Administration. Heads of the study health facilities have been notified to this effect.

I the undersigned individual being oriented about the relevance of this study in improving the service provision of health facilities on collaborative TB/HIV care services was well informed. I have been also informed that, there will be no risk or harm to my participation in this study. My participation in this study is crucial and all my information is to be kept confidential and will be used solely for this study. In addition, I have been well informed that my name will not be asked and unique identification is not required. I have the right not to discuss issues that I do not want to. If I want to withdraw from the study any time along the discussion process, I will not be obliged to continue or give reasons for doing so.

However, my agreement to participate in this study is with the assumption that, the information that I provide during the discussion will help greatly to understand the status of service provision to people living with HIV/AIDS that might help in improving the service provision.

In case you need any clarification, you can ask the research assistants discussing with you. Or you can contact the researcher with the following address. Amenu Wesen: Tel: +251911647699; e-mail: 45085609@mylife.unisa.ac.za.

I have read this form and voluntarily consent to participate in this study.

Participant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

I have explained this to the above participant and have sought his/her understanding for informed consent.

Researcher/ research assistant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**ANNEXURE F: INTERVIEWER-ADMINISTERED QUESTIONNAIRE FOR TB PATIENTS**

**Questionnaire for Tuberculosis Patient Participants**

Name of Health Facility \_\_\_\_\_

Name of interviewer \_\_\_\_\_

Part I: Socio-Demographic Characteristics			Quest. No:
Q.No	Questions	Responses	Code
101	Age (full years)	_____	
102	Sex	1. Male 2. Female	
103	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated	
104	Religion	1. Christian 2. Muslim 99. Other	
105	Ethnicity	1. Amhara 2. Oromo 3. Gurage 4. Tigre 88. Did not mention 99. Other _____	
106	Educational status	1. No formal education 2. Primary (grades 1 - 6) 3. Secondary (grade 7 - 12) 4. Post secondary (12+)	
107	Occupation	1. Housewife 2. Government employee 3. Nongovernmental employee 4. Private employee 5. Self employed/Merchant 6. Unemployed 99. Other)_____	

<b>Part II: Prevalence of HIV among TB Patients in the Health Facilities</b>			
<b>Q.No</b>	<b>Questions</b>	<b>Responses</b>	<b>Code</b>
201	How long have you been diagnosed for TB?	1. Less than 2 months 2. 2-5 months 3. 6-8 months 4. More than 8 months	
202	How long have you been on TB treatment?	1. Less than 2 months 2. 2 -5 months 3. 6-8 months 4. More than 8 months	
203	Have you ever been tested for HIV before you know your TB disease?	1. Yes 2. No 3. I don't remember/know	
204	If yes to Q203, when have you been tested?	1. Before 6 months 2. Before 6-11 months 3. Before 1-2 years 4. Before >2 years	
205	If yes to Q204, how was your result?	1. Negative 2. Positive 3. Do not want to disclose	
206	If positive to Q205, have you started of HIV care and treatment?	1. Yes 2. No	
207	If No for Q203 or negative to Q205, have you been offered for HIV test now during your TB treatment?	1. Yes 2. No	
208	If yes to Q207, have you been tested?	1. Yes 2. No	
209	If yes to Q208, who offered the test?	1. TB clinic health worker 2. At HIV care/VCT clinic 3. At ANC clinic 4. At outpatient department 5. Inpatient department 99. Other _____	
210	If yes to Q207, when have you been tested?	1. During the same time of TB diagnosis 2. Within 2 months of TB treatment	

		3. Within 3-5 months during TB treatment 4. After 5 months during TB treatment 5. I don't remember	
211	If yes to Q208, how was your result?	1. Negative 2. Positive 3. Did not want to disclose	
212	If positive to Q210, have you started of HIV care and treatment?	1. Yes 2. No	
213	If yes to Q211 or Q206, have you already started HAART?	1. Yes 2. No	

**Part III: Activities to decrease the burden of HIV among TB patients**

Q.No	Questions	Responses	Code
301	Is HIV testing offered or encouraged at TB clinic?	1. Yes 2. No 3. I don't know	
302	Do you know about Cotrimoxazole preventive therapy?	1. Yes 2. No	
303	Do people living with HIV/AIDS who have also TB have access to CPT as part of the package of care in this health facility?	1. Yes 2. No 3. I don't know	
304	If the response to Q 303 is no, why not?	1. I don't know 2. No drug/expensive 3. Care takers don't order 99. Other; specify: _____ _____	
305	Have you ever been provided with CPT?	1. Yes 2. No	
306	If you were taking or currently under CPT, from where did/do you collect the drug?	1. HIV clinic 2. TB clinic 3. General pharmacy 4. I did/do not take 99. Other; specify: _____	

<b>Part IV: Qualitative Short answered interview for TB patients</b>			
<b>Q.No</b>	<b>Questions</b>	<b>Responses</b>	<b>Code</b>
401	How does the service provision of health facilities for both TB and HIV patients affect on your health?		
402	How do you think health workers at TB clinic in this health facility assisted you in improving your health regarding your HIV risks and status?		
403	Do you think provision of both HIV and TB care services at the same health facility be feasible or practical? How is that?		
404	What do you feel of the service provision quality in general regarding TB and HIV in this health facility?		
405	How do you evaluate the behaviour of health care providers towards their patients?		
406	How do you evaluate the performance of health care providers in your opinion towards their patients?		
407	What comments do you have to improve the service provision of HIV and TB care in this health facility?		

Thank you!!!

**ANNEXURE G: INTERVIEWER-ADMINISTERED QUESTIONNAIRE FOR HIV PATIENTS**

**Questionnaire for HIV Patient Participants**

Name of Health Facility \_\_\_\_\_

Name of interviewer \_\_\_\_\_

Part I: Socio-Demographic Characteristics		Quest. No:	
Q.No	Questions	Responses	Code
101	Age (full years)	_____	
102	Sex	1. Male 2. Female	
103	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated	
104	Religion	1. Christian 2. Muslim 99. Other	
105	Ethnicity	1. Amhara 2. Oromo 3. Gurage 4. Tigre 88. Didn't mention 99. Other _____	
106	Educational status	1. No formal education 2. Primary (grades 1 - 6) 3. Secondary (grade 7 - 12) 4. Post secondary (12+)	
107	Occupation	1. Housewife 2. Government employee 3. Nongovernmental employee 4. Private employee 5. Self employed/Merchant 6. Unemployed 99. Other) _____	

<b>Part II: Prevalence of Tuberculosis among People Living With HIV in the health facilities</b>			
<b>Q.No</b>	<b>Questions</b>	<b>Responses</b>	<b>Code</b>
201	How long have you been diagnosed for HIV positive?	1. Less than 6 months 2. 6 -11 months 3. One year – Three years 4. More than 3 years	
202	How long have you been on HAART?	1. Less than 6 months 2. 6 months – one year 3. More than one year 4. Not yet started	
203	Have you ever been diagnosed for TB before you know your HIV positive status?	1. Yes 2. No 3. I don't remember/know	
204	If yes to Q203, when have you been diagnosed?	1. Before less than 6 months of knowing HIV positive status 2. Before 6 months -1 year duration of knowing HIV positive status 3. Before 1.1-2 year of knowing HIV positive status 4. Before 2.1-3 years of knowing HIV positive status 5. Before >3 years	
205	If yes to Q204, which site of TB was that?	1. Pulmonary 2. Extra-pulmonary	
206	If yes to Q204, have you completed your treatment for TB?	1. Yes 2. No 3. Still on treatment	
207	Have you been diagnosed for TB after you know your HIV positive status?	1. Yes 2. No	
208	If yes to Q207, which site of TB was that?	1. Pulmonary 2. Extra-pulmonary	

209	If yes to Q207, when have you been diagnosed?	<ol style="list-style-type: none"> <li>1. During the same time up to 1 month of HIV test</li> <li>2. After 2-6 months of HIV test</li> <li>3. After 7-11 months of HIV test</li> <li>4. After 1-2 years of HIV test</li> <li>5. After 2.1-3 years of HIV test</li> <li>6. After &gt;3 years of HIV test</li> </ol>	
210	If you have been diagnosed for TB, did/do you take your treatment?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
211	If the response is NO for Q210, why not?	<ol style="list-style-type: none"> <li>1. I don't want to take</li> <li>2. They didn't give me</li> <li>3. I don't know</li> <li>4. Other _____</li> </ol>	
212	Have you already started ART during your diagnosis for TB?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	

**Part III: Activities to decrease the burden of TB in PLHIV**

Q.No	Questions	Responses	Code
301	Is HIV testing offered or encouraged at TB clinic?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. I don't know</li> </ol>	
302	Do you know about Cotrimoxazole preventive therapy?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
303	Do people living with HIV/AIDS who have also TB have access to CPT as part of the package of care in this health facility?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> <li>3. I don't know</li> </ol>	
304	If the response to Q 303 is no, why not?	<ol style="list-style-type: none"> <li>1. I don't know</li> <li>2. No drug/expensive</li> <li>3. Care takers don't order</li> <li>99. Other; specify: _____</li> </ol>	
305	Have you ever been provided with CPT?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. No</li> </ol>	
306	If you were taking or currently under CPT, from where did/do you collect the drug?	<ol style="list-style-type: none"> <li>1. HIV clinic</li> <li>2. TB clinic</li> <li>3. General pharmacy</li> </ol>	

		4. I did/do not take 99. Other; specify: __	
<b>Part IV: Qualitative interview for HIV positive patients</b>			
<b>Q.No</b>	<b>Questions</b>	<b>Responses</b>	<b>Code</b>
401	How does the service provision of health facilities for both TB and HIV patients affect on your health?		
402	How do you think health workers at HIV clinic in this health facility assisted you in improving your health regarding your TB risks and status?		
403	Do you think provision of both HIV and TB care services at the same health facility be feasible or practical? How is that?		
404	What do you feel of the service provision quality in general regarding TB and HIV in this health facility?		
405	How do you evaluate the behaviour of health care providers towards their patients?		
406	How do you evaluate the performance of health care providers in your opinion towards their patients?		
407	What comments do you have to improve the service provision of HIV and TB care in this health facility?		
408	How many episodes of diarrhoea have you encountered for the last one year?		
409	How many episodes of URTIs have you encountered for the last one year?		
410	How any episodes of LRTIs have you encountered for the last one year?		

Thank you!!!

**ANNEXURE H: INTERVIEW QUESTIONNAIRE FOR TB/HIV CARE FACILITY COORDINATORS AND/OR TB/HIV CARE PROVIDERS**

Name of Health Facility \_\_\_\_\_

Name of interviewer \_\_\_\_\_

Part I: Socio-Demographic Characteristics		Quest. No:	
Q.No	Questions	Responses	Code
101	Age (full years)	_____	
102	Profession	1. MD/HO 2. Nurse BSc 3. Nurse 4. Other; _____	
103	Sex	1. Male 2. Female	
104	Number of years of service in TB/HIV clinics	_____	
Part II: Programme implementation of collaborative TB and HIV services			
Q.No	Questions	Responses	Code
201	Is there a functional coordinating body for TB/HIV activities effective at each of the following levels?	1. National level? Yes No 2. Regional level? Yes No 3. Sub-city level? Yes No 4. Health Facility level? Yes No	
202	If yes to Q201, at any one level for, which of the following representatives in attendance?	1. Representative from TB control programme 2. Representative from HIV programme 3. Representative from partner organizations 4. Other; _____ _____	
203	Have surveillance of HIV prevalence among TB patients	1. National level: Yes No	

	been conduct ever?	2. Regional level: Yes No	
204	Does joint TB/HIV planning been carried out ever?	1. National level: Yes No 2. Regional level: Yes No 3. Sub-city level: Yes No 4. Health facility level: Yes No	
205	Does joint monitoring and evaluation for TB/HIV activities been conducted ever?	1. National level: Yes No 2. Regional level: Yes No 3. Sub-city level: Yes No 4. Health facility level: Yes No	
206	Does routine screening for cough of more than 2 weeks being done for each HIV positive patients at each of their follow-up visits?	1. Yes 2. No 3. I don't know	
207	Does routine diagnosis of tuberculosis being done based on cardinal signs for each of HIV positive patients at their follow-up visits?	1. Yes 2. No	
208	Does prompt treatment being given for all confirmed tuberculosis cases among HIV positive patients within the health facility?	1. Yes 2. No	
209	Do health facilities provide IPT for all HIV positive patients having latent TB?	1. Yes 2. No	
210	Are there a mechanism for ventilation of rooms and enough waiting area for HIV positive patients to prevent transmission of TB in health facilities? (Observe)	1. Yes 2. No	

211	Do health care providers use personal protective masks to prevent transmission of TB for themselves and to patients?	1. Yes 2. No	
212	Is there regular health education given to all HIV positive and/or TB patients about TB transmission?	1. Yes 2. No	
213	Do all TB patients being offered HIV counselling and testing services?	1. Yes 2. No	
214	Do health workers at TB clinic in the health facilities promote safer and more responsible sexual behaviour to reduce transmission of HIV?	1. Yes 2. No	
215	Do health workers at the health facilities practice measures to ensure the safety of the blood supply and medical equipments to reduce transmission of HIV?	1. Yes 2. No	
216	Do health facilities provide ART treatment or prophylaxis for pregnant women living with HIV for TB suspects and patients?	1. Yes 2. No	
217	Do health facilities established a system to provide CPT to eligible people living with HIV for those who have active TB?	1. Yes 2. No	
218	Do TB and HIV programmes ensured a continuum of care and support for people living with HIV, during and after TB treatment?	1. Yes 2. No	
219	Do health facilities created mechanisms to provide ART to eligible TB patients?	1. Yes 2. No	

220	Do health facilities ensure continuity of ART after completion of TB treatment?	1. Yes 2. No	
<b>Part III: Programme implementation impacts on staff performances</b>			
Q.No	Questions	Responses	Code
301	Do you have attended relevant trainings related to your duty? Which ones?	_____	
302	How do you think provision of integrated TB and HIV care services in the same health facility affect your performances?	_____	
303	Do you think the logistic supply for TB and HIV care are enough and supplied regularly? How?	_____	
304	How do you evaluate the facility's physical structure convenience for provision of integrate TB and HIV care in your work area?	_____	
305	How do the health facility's administrative conditions affect your TB and HIV care provision?	_____	
306	What are some of the problems that you have encountered regarding TB and HIV care provision in your health facility?	_____	
307	What recommendations do you have to improve the care provision of TB and HIV patients in your health facility?	_____	
308	Anything you what to add or to say regarding TB/HIV collaborative activity provision in your health facility?	_____	

<b>Part IV: Impacts of programme implementation on infrastructure</b>			
<b>Q.No</b>	<b>Questions</b>	<b>Responses</b>	
401	How does the commencement of TB/HIV collaborative activities affected the infrastructure of the health facility; be it in renovation or rearrangement?		
402	What other cross-cutting services have been started due to the change in infrastructure of the health centre as the result of the TB/HIV collaborative activities commencement?		
403	Which health facility services have been restructured due to the change in infrastructure of the health centre as the result of the TB/HIV collaborative activities commencement?		
404	How does the commencement of the TB/HIV collaborative activities in the health facility affected the provision of other services?		
405	How did the commencement of the TB/HIV collaborative activities in the health centre resulted in the need for additional infrastructure?		
<b>Part V: Impact of TB/HIV collaborative activities on human resource</b>			
<b>Q.No</b>	<b>Questions</b>	<b>Responses</b>	
501	How does the health facility affected in human resource due to the commencement of TB/HIV collaborative activities?		
502	Do all health workers trained on at least one of the activities for TB/HIV collaborative activities? Which trainings?		

503	How does the performance of health workers in the health facility affected due to the commencement of TB/HIV collaborative activities?		
504	In what scheme are health workers assigned in one of the TB/HIV collaborative activity departments in the health facility?		
505	What are the opportunities created on human resource due to the commencement of TB/HIV collaborative activities in the health facility?		
506	What are the challenges faced on human resource due to the commencement of TB/HIV collaborative activities?		
507	Any recommendations regarding human resource towards the TB/HIV collaborative activities in the health facility?		

Thank you!!!

## ANNEXURE I: FOCUS GROUP DISCUSSION GUIDE FOR TB PATIENTS

### FGD Guide for TB patients

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Name of health facility: \_\_\_\_\_

Name of moderator: \_\_\_\_\_

Name of note taker: \_\_\_\_\_

Date of discussion: \_\_\_\_\_

Start time \_\_\_\_\_ Adjourned: \_\_\_\_\_

1. Your ages \_\_\_\_\_
2. Your sex \_\_\_\_\_
3. What do you know about TB and HIV?
4. What is the relationship between TB and HIV?
5. How does the health care delivery system assist people of those diseases?
6. What are the services provided by health care workers in your area to decrease the burden of TB and HIV?
7. How does the service provision of health facilities for both TB and HIV patients affect on your health?
8. How do you think health workers at TB clinic in this health facility assisted you in improving your health regarding your HIV risks and status?
9. Do you think provision of both HIV and TB care services at the same health facility be feasible or practical? How is that?
10. What do you feel of the service provision quality in general regarding TB and HIV in this health facility?
11. How do you evaluate the behaviour of health care providers towards their patients?
12. How do you evaluate the performance of health care providers in your opinion towards their patients?
13. What comments do you have to improve the service provision of HIV and TB care in this health facility?

**Thank you very much for your time and participation!**

## ANNEXURE J: FOCUS GROUP DISCUSSION GUIDE FOR HIV PATIENTS

### FGD Guide for HIV patients

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Name of health facility: \_\_\_\_\_

Name of moderator: \_\_\_\_\_

Name of note taker: \_\_\_\_\_

Date of discussion: \_\_\_\_\_

Start time \_\_\_\_\_ Adjourned: \_\_\_\_\_

1. Your ages \_\_\_\_\_
2. Your sex \_\_\_\_\_
3. What do you know about TB and HIV?
4. What is the relationship between TB and HIV?
5. How does the health care delivery system assist people of those diseases?
6. What are the services provided by health care workers in your area to decrease the burden of TB and HIV?
7. How does the service provision of health facilities for both TB and HIV patients affect on your health?
8. How do you think health workers at HIV clinic in this health facility assisted you in improving your health regarding your TB risks and status?
9. Do you think provision of both HIV and TB care services at the same health facility be feasible or practical? How is that?
10. What do you feel of the service provision quality in general regarding TB and HIV in this health facility?
11. How do you evaluate the behaviour of health care providers towards their patients?
12. How do you evaluate the performance of health care providers in your opinion towards their patients?
13. What comments do you have to improve the service provision of HIV and TB care in this health facility?

**Thank you very much for your time and participation!**

## **ANNEXURE K: INTERVIEW QUESTIONNAIRE FOR REGIONAL COORDINATOR FOR COLLABORATIVE TB/HIV CARE**

### **1. MECHANISMS FOR COLLABORATION**

The *TB/HIV Policy* recommends the establishment of a coordinating body; surveillance of HIV prevalence among TB patients; joint TB/HIV planning; and monitoring and evaluation.

#### **1.1 Set up a coordinating body for TB/HIV activities at all levels**

Is there a joint coordinating body (JCB) for TB/HIV activities in your country?

Yes  No

Does it work at the:

- National level? Yes  No
- Regional level? Yes  No
- District level? Yes  No
- Local or community level? Yes  No

Please check all that apply.

If no to any of the above, what are the reasons why the JCB doesn't exist? What needs to happen for a JCB to be established? Are there similar bodies that can take up the task of TB/HIV joint planning?

After answering these questions, please skip to question 1.2.

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If yes to any of the above, what is the structure of the JCB, how frequently does it meet and how open is it to community input and participation? Briefly outline the JCB's main functions and responsibilities. What are the strengths of the JCB? What are the limitations of the JCB?

---

---

Does the JCB include members from the national HIV/AIDS programme and the national TB programme?

Yes  No

Are there representatives of TB/HIV co-infected communities, or from people living with HIV/AIDS organizations or TB patient support groups on the JCB?

Yes  No

(Sources: NACP, NTP, Ministry of Health, community-based organizations, people living with HIV/AIDS and/or TB)

## 1.2 Conduct surveillance of HIV prevalence among tuberculosis patients

Is information about HIV prevalence among TB patients collected at the:

- national level? Yes  No
- regional level? Yes  No
- local level? Yes  No

Please check all that apply.

If yes to any of the above, what are the mechanisms (sentinel, cross sectional, periodic) to collect this data?

---

Is this information available to the public?

Yes  No

If you were able to find this information, please note where you found it and what the information contains. Based on your knowledge, does the information accurately reflect the situation on the ground? If you were unable to find it, please note who you asked and what they said.

---

(Sources: NACP, NTP, Ministry of Health, health care workers, people living with HIV/AIDS and/or TB)

## 1.3 Carry out joint TB/HIV planning

### 1.3.1 Joint strategic plan

Does the JCB have a strategic plan for TB/HIV at the:

- National level? Yes  No
- Regional level? Yes  No
- Local level? Yes  No

Please check all that apply.

If no, is TB/HIV addressed in other strategic plans? Which ones? After answering these questions, please skip to question 1.2.2.

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If yes, are you and other community activists able to get a copy of the plan(s)?

Yes  No

Do community activists know the objectives and activities in the plan(s)? If not, why not?

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Did community activists participate in the formulation of the plan(s)?

Yes  No

Does the strategic plan(s) reflect the community's priorities?

Yes  No

If not, what is missing?

---



---

Is there a role outlined for community advocates to play in the implementation of the plan(s)?

Yes  No

Comments:

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---

(Sources: NACP, NTP, Ministry of Health, community-based and non-governmental organizations)

### *1.3.2 Funding*

What is the level of government funding available for TB/HIV activities?

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Is information publicly available on how international funds are being used to support TB/HIV activities?

Yes  No

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---

Is the government able to implement the TB/HIV activities outlined in the Policy with the current available funding?

Yes  No

If there is not enough funding for TB/HIV activities, please ask about which activities are not supported and some of the reasons why. If possible, what is an estimate of the funding gap? Is there any international funding for TB/HIV activities?

---



---

(Sources: NACP, NTP, Ministry of Health, donors)

### *1.3.3 Training and capacity building*

Is there a training manual for health care workers, which clearly outlines how to manage co-infected patients?

Yes  No

If no, what kinds of training do health care workers need? Please include specific examples.

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If yes, do the TB/HIV plans include training for community organizations and advocates?

Yes  No

Are PLWHA networks involved in training and capacity building preparations?

Yes  No

Please comment on how these trainings could be effectively organized and who should be involved in developing and implementing them?

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Are TB and HIV testing services available at local clinics?

Yes  No

Is there a system for health care workers and service providers to refer co-infected patients between TB and HIV/AIDS clinics?

Yes  No

Please comment on how this system works, highlighting any difficulties or problems faced by health care workers and any obstacles to access services for TB/HIV co-infected patients:

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(Sources: NACP, NTP, PLWHA networks, health care workers at both HIV/AIDS and TB clinics, people living with HIV/AIDS and/or TB)

*1.3.4 TB/HIV communication: advocacy, programme communication and social mobilization*

Is the government providing information to the public about the elevated risk of TB among people living with HIV/AIDS (i.e. dangers of TB/HIV co-infection; prevention methods; symptoms; availability of services; treatment options)?

Yes  No

Does the government or JCB have a plan to make sure this information reaches affected communities? (i.e. leaflets, radio broadcasts, television ads, print ads)?

Yes  No

Please comment on the effectiveness of these materials and on their availability to affected communities and individuals.

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Do community organizations and people at risk for TB or TB/HIV know about and have access to this information?

Yes  No

Are community organizations and people at risk for TB or TB/HIV involved in education plans or outreach activities to inform others in the community about TB/HIV?

Yes  No

If yes, how are they involved?

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What other kinds of communication and information-sharing activities do you think are needed in your country/region/district/community? What are the gaps and what can be done to make a difference?

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Are community groups carrying out advocacy activities with decision-makers to ask for improved TB/HIV services?

Yes  No

If yes, what kind of activities are they performing? How are they doing this? Have they been successful? If there is no community advocacy, please explain the reasons why.

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What kind of training and support do you think community groups need to help them become more involved in TB/HIV social mobilization and advocacy activities?

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(Sources: NACP, NTP, health care workers, PLWHA networks, community-based and non-governmental organizations)

### *1.3.5 Community involvement in collaborative TB/HIV activities*

Do community-based or non-governmental organizations integrate TB prevention, diagnostic and care services into the HIV/AIDS prevention, care and support services?

Yes  No

If yes, how? If not, why not and are there plans to integrate these services in the future?

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Are TB and HIV/AIDS patient support groups involved in planning, implementation and advocacy around collaborative TB/HIV activities?

Yes  No

If yes, how? Please provide specific examples.

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If not, why not and are there plans to involve HIV/AIDS and/or TB patient support groups in TB/HIV collaborative activities in the future?

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(Sources: NACP, NTP, health care workers, PLWHA networks, community-based and non-governmental organizations)

## **1.4 Conduct monitoring and evaluation**

Are there any official efforts to monitor and evaluate TB/HIV collaborative activities?

Yes  No

If no, are there plans to monitor and evaluate TB/HIV activities in the future?

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If yes, how is it being done? Are they monitored through the TB programme, HIV programme or both?

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Is the monitoring data available to community organizations?

Yes  No

Are the people who use TB and HIV services consulted in evaluations activities?

Yes  No

Are these evaluations being used to improve the quality of TB and HIV services?

Yes  No

Is the government producing a report on the core TB/HIV indicators as recommended by WHO2?

Yes  No

Are community groups involved in monitoring and evaluating TB/HIV activities and services?

Yes  No

If yes, how are they involved? If not, why not?

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(Sources: NACP, NTP, Ministry of Health, health care workers, community-based and non-governmental organizations)

## **2. ACTIVITIES TO DECREASE THE BURDEN OF TB IN PLWHA**

### **2.1 Establish intensified TB case-finding**

Is TB testing offered or encouraged at HIV testing and counselling centres?

Yes  No

Please comment:

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(Sources: NACP, NTP, health care workers, people living with HIV/AIDS and/or TB)

### **2.2 Introduce Isoniazid preventive therapy**

Is Isoniazid preventive therapy (IPT) offered to people living with HIV/AIDS?

Yes  No

Do people living with HIV/AIDS have access to information about IPT?

Yes  No

If yes, what kind of information is available and is it effective?

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Do people living with HIV/AIDS who do not have active TB have access to IPT as part of their package of care?

Yes  No

If not, why not? Please comment on what the obstacles are for making IPT available and how you think these obstacles can be overcome?

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Where is IPT available?

HIV clinic

TB clinic

Public Hospital

Other  Please specify: \_\_\_\_\_

Please check all that apply.

(Sources: NACP, NTP, health care workers, donors, people living with HIV/AIDS and/or TB)

Ensure control of TB infection in health care and congregate settings

Are there any guidelines on how to separate people presenting TB symptoms from people living with HIV/AIDS and others at high risk of TB?

Yes  No

If yes, who developed these guidelines? Are these guidelines being followed in HIV testing, counselling and care centres?

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Do the guidelines address issues of patient confidentiality? Please comment.

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(Sources: NACP, NTP, and health care workers)

### **3. ACTIVITIES TO DECREASE THE BURDEN OF HIV IN TB PATIENTS**

#### **3.1 Provide HIV testing and counselling**

Is HIV testing and counselling offered to all TB patients?

Yes  No

If HIV testing and counselling is available, is it available for free or is there a fee?

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If HIV testing and counselling is not available to all TB patients, please specify when and where some TB patients do have access.

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Does the TB control programme provide HIV testing and counselling in TB centres?

Yes  No

If not, have they established a referral linkage with the HIV/AIDS programme to do so?

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(Sources: NACP, NTP, health care workers, people living with HIV/AIDS and/or TB)

#### **3.2 Introduce HIV prevention methods**

Does the TB control programme have an HIV prevention strategy?

Yes  No

If yes, does the strategy target people most at risk of HIV infection? (Including transmission through sexual activity, mother-to-child, and injection drug use), if not, is there a referral linkage with the HIV/AIDS programme to do so?

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Are clients attending TB clinics screened for sexually transmitted infections?

Yes  No

If yes, are those patients with symptoms of sexually transmitted infections treated or referred to the relevant treatment providers? Is there any data on referrals?

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Are HIV prevention services available through the TB control programme?

Yes  No

Please comment on the extent to which TB centres offer HIV prevention services and information (on mother-to-child transmission; harm reduction; reduction of work place and hospital acquired exposure to HIV infection).

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(Sources: NACP, NTP, health care workers, people living with HIV/AIDS and/or TB)

### 3.3 Introduce Cotrimoxazole preventive therapy

Is Cotrimoxazole preventive therapy available to eligible people living with HIV/AIDS who have active tuberculosis?

Yes  No

If not, why not. Please comment.

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If yes, is there ongoing patient monitoring of drug side effects?

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(Sources: NACP, NTP, health care workers, people living with HIV/AIDS and/or TB)

### 3.4 Ensure HIV/AIDS care and support

Are people living with HIV/AIDS who are diagnosed with TB provided with any of the following HIV/AIDS care and support services?

Nutrition

Palliative Care

Home Based Care

Prevention

PMTCT

Other  Please specify: \_\_\_\_\_

None

Please check all that apply.

Has the TB programme established a referral linkage with the HIV/AIDS programme to provide the continuum of care and support for people living with HIV/AIDS who are receiving or have completed TB treatment?

Yes  No

Please comment.

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(Sources: NACP, NTP, health care workers, people living with HIV/AIDS and/or TB)

**3.5 Introduce antiretroviral therapy (ART)**

Are all HIV positive TB patients assessed for eligibility of ART?

Yes  No

If no, what are the criteria for eligibility and who determines which patient receives ART?

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What drugs are available for someone who is co-infected with TB and HIV? Is proper care taken to monitor drug interactions? How is this issue addressed by the TB control Programme?

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Is ART available for HIV-positive TB patients?

Yes  No

If no, has the HIV/AIDS programme and TB programme created a mechanism to provide ART to eligible HIV-positive tuberculosis patients?

Yes  No

Please comment.

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(Sources: NACP, NTP, Ministry of Health, health care workers, people living with HIV/AIDS and/or TB)

Other comments or observations:

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***Thank you very much for your time and participation!***