ADDIS ABABA UNIVERSITY

School of Graduate Studies

Assessment of TB Screening and Referral Linkage among HIV-Patients Attending ART Clinic of Butajira Hospital, SNNPR, Ethiopia.

By

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ACRONYMS

AAU	Addis Ababa University
AIDS	Acquired ImmunoDeficiency Syndrome
ART	Anti-Retroviral Therapy
ARV	Anti-Retroviral
FBO	Faith Based Organization
CDC	Centers for Disease Control and Prevention
CPT	Cotrimoxazole Preventive Therapy
DOTS	Directly Observed Treatment Short-course
EPTB	Extra Pulmonary Tuberculosis
FNA	Fine Needle Aspiration
GLRA	German Leprosy and TB Relief Association
HCT	HIV Counseling and Testing
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
INH	Isoniazid
IPT	Isoniazid Preventive Therapy
IRB	Institutional Review Board

LTBI	Latent TB Infection
MDR-TB	Multidrug-Resistant TB
NGO	Non Governmental Organization
OI	Opportunistic Infection
PEPFAR	President's Emergency Plan for AIDS Relief
PICT	Provider-Initiated Counseling and Testing
PLWHA	People Living With HIV/AIDS
PTB	Pulmonary Tuberculosis
SNNPR	Southern Nations, Nationalities and Peoples Region
TB	Tuberculosis
TB/HIV	TB and HIV Co-infection
THAC	TB/HIV Advisory Committee
THTC	TB/HIV Technical Committee
USAID	United States Agency for International Development
USG	United States Government
VCT	Voluntary Counseling and Testing
WG	Working Group
WHO	World Health Organization
XDR- TB	Extensively Drug Resistance TB

Abstract

Background: Tuberculosis (TB) screening is recommended for people living with human immunodeficiency virus (PLWHA) to facilitate early diagnosis and safe initiation of antiretroviral therapy (ART) and Isoniazid preventive therapy (IPT). The interaction between TB and HIV infection is complex. HIV infection weakens the immune system and increases the susceptibility to TB. HIV increases the likelihood of reactivation, re-infection and progression of latent TB infection to active disease.

Objectives: The aim of this study was to assess TB screening and referral linkage among HIV-patients attending ART clinic of Butajira hospital.

Methods: PLWHA who were enrolled in the time period from 1998 – 2001 E.C studied. Both quantitative and qualitative data collection methods were used to conduct the study. A total of 384 patient's charts that fulfill the inclusion criteria were selected by systematic random sampling technique for cross sectional study. For qualitative study, by purposive sampling, 10 healthcare providers and program coordinators were interviewed to complement to the quantitative study. Univariate, bivariate and multivariate analysis were used to determine the factors associated with TB diagnosis. The qualitative data were analyzed thematically.

Result: Among the screened PLWHA, 97 (25.3%) were on INH and 224 (58.3%) of patients were on co-trimoxazole prophylactic therapy (CPT). Out of evaluated PLWHA 300 (78.1%) were screened for TB at least one time and 84 (21.9 %), were never screened for TB. Active TB was diagnosed in 69 (23%) patients; of which 20 (29%), 33 (47.8%), and 16 (23.2%) of cases were smear positive pulmonary TB, pulmonary negative and extra-pulmonary TB, respectively. There were significant association between TB case finding versus cough, dyspnea, chronic fatigue, night sweat and fever; however the association of weight loss and hemoptysis were not significant. Concerning referral linkages, 277 (72.1%) patients were linked to ART clinic from In-patient, Medical outpatient, TB clinic, PMTCT, General VCT, Other outpatient and PICT with intra-referral slips. 107 (27.9%) patients were referred from other health facilities to ART clinic.

Conclusions and recommendations: chronic fatigue, cough, night sweat, and fever were the most frequently appeared symptom complexes of TB among the screened patient's charts.

There was no TB screening for VCT clients who were tested HIV positive at VCT clinic. IPT & CPT were not provided for all eligible PLWHA. The referral linkages of HIV patients to ART clinic with intra-facility and inter-facility were through referral slips; however most of patient's referral slips were not documented. Routine TB screening for all VCT clients who are tested HIV positive is recommended to be screened at VCT clinic. IPT & CPT will be provided for all eligible PLWHA according to FMOH TB/HIV Implementation guidelines. TB/HIV technical committee (THTC) at Hospital, Zonal and Regional level should be re-organized and strengthen according to national TB/HIV guidelines. Periodic evaluation of TB and HIV programmes should be strengthen at all level. Regular supportive supervision, bi-annually and annually at program management level is recommended.

I. INTRODUCTION

1.1 Background

Tuberculosis (TB) is a disease caused by the bacterium called Mycobacterium tuberculosis. The disease primarily affects the lungs, but can attack any organ in the body. TB is spread through the air from one person to another and the bacteria are put into the air when a person with TB coughs or sneezes [1]. People nearby may breath in the bacteria and become infected. However, not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection and active TB disease. Both of these conditions are treatable [2].

In developing countries, many Human Immune-Deficiency Virus (HIV) infected persons frequently receive the diagnosis of HIV infection or Acquired Immune-Deficiency Syndrome (AIDS) after first having TB diagnosed at a health facility [1, 2].

One of the most important interventions in TB/HIV collaborative initiative is HIV testing of TB patients, provision of Cotrimoxazole Preventive Therapy (CPT) for HIV infected TB patients, referral to HIV related care as well as screen HIV positive persons to provide Directly Observed Treatment Short course (DOTS) for active TB cases and provide Isoniazid Preventive Therapy (IPT) for those in which active TB is ruled out [3].

Sub-Saharan Africa remains the most TB affected region in the world. A little more than one-tenth of the world's population lives in sub-Saharan Africa, which is home to almost 68% of all people living with HIV [4].

The HIV/AIDS epidemic in Ethiopia continues to pose a threat to the lives of its people. The national HIV prevalence was estimated to be 2.2% with urban and rural prevalence of 7.7% and 0.9%, respectively. In 2009, there was an estimated 131,145 new HIV infections, and 44,751 adults and 7,214 children will lose their lives to AIDS [4].

The impact of HIV epidemic varies substantially among populations and geographic locations in Ethiopia with a national prevalence ranging from 0.9 to 2.1% among adults ages 15 - 49. More than 650,000 children have been orphaned or made vulnerable by the epidemic. The principal

modes of HIV transmission are heterosexual sex and mother-to child transmission. The HIV/AIDS epidemic has led to a seven year decrease in life expectancy among Ethiopians and has also led to substantial decrease in the workforce [5].

In SNNPR the estimated number of PLWHA were about 141,545 and they had got health Services from 99 health facilities (16 hospitals and 83 health centers). The estimated adult HIV prevalence in the region was about 1.5 % (urban 7.2 % and rural 0.8%) [4].

According to 2002 EFY bi-annual Regional Health Bureau report, the numbers of PLWHA who were eligible for ART were about 37,859 but ever started ART were 18,859 and currently on ART 14,106. PLWHA with undiagnosed, untreated and potentially contagious TB are often seen in HIV care settings. TB is the most common opportunistic infection and a leading cause of death in PLWHA [5].

Under the natural course of progression of TB disease without treatment, 5 years after the onset of the disease, 50% of pulmonary TB patients will die as a result of the disease, 25% will be healthy, spontaneously cured by strong immune defense, and 25% will remain ill with chronic infectious TB [3].

1.2 Statement of the problem

HIV increases susceptibility to infection with TB, the risk of progression to TB disease, and the incidence and prevalence of TB. The annual risk of developing TB in PLWHA, who is co-infected with TB, ranges from 5 to 15% as compared to a 5 to 10% life time risk for HIV negative individuals [5].

It also increases the likelihood of re-infections and relapse of TB. The impact of TB on HIV: TB increases HIV replication, which leads to increased viral load. The management of TB and HIV co-infected individual is challenging because of: pill burden, increased side effect and drug to drug interaction [3].

The interaction between TB and HIV infection is complex. In the individual patient, HIV infection weakens the immune system and increases the susceptibility to TB. HIV increases the

likelihood of reactivation, re-infection and progression of latent TB infection to active disease. It also alters the clinical presentation of TB, complicates the follow up and compromises the response to anti-TB treatment [5].

Risks and transmission dynamics for TB in persons with HIV infection are complex. Persons with HIV infection are more susceptible to both new TB infection with disease progression and to reactivation of latent infection. Significantly lower TB treatment success and higher mortality have been reported worldwide in persons with HIV infection compared with persons without HIV infection [5].

In Ethiopia, most health facilities have separate TB, VCT, and ART clinics. Patients most commonly flow from the VCT clinic to the ART clinic and from the ART clinic to the TB clinic. Referral between the VCT and TB clinics is rare, as TB suspects are usually checked at the ART clinic. TB patients are given provider-initiated testing (or diagnostic counseling and testing [DCT]), with the HIV test conducted by laboratory personal at the facility laboratory or the VCT clinic [3o].

Although FMOH and different partners supported TB/HIV collaboration the case detection rate of TB is low. According to FMOH 2009 annual report the prevalence rate of TB/HIV was 20%. TB indicators remained stable between 2008 and 2009, with TB case detection rate being at 34% (below the national target of 67.8%). TB treatment success rate was at 84% and a TB cure rate at 67% over the last fiscal year [31].

1.3 Rationale of the study

An essential strategy for decreasing the burden of tuberculosis and preventing its spread in people with HIV is integration of TB and HIV activities, care and treatment. This includes TB screening and active case finding in the clinical settings where people with HIV infection receive care. All patients with HIV infection should undergo routine screening for TB to determine whether they have tuberculosis [6].

Intensified case finding or screening for TB among PLWHA remains low. Only about 314, 200 PLWHA were reported to be screened for TB in 2006, which represents a tiny fraction of the global target of screening 11 million people living with HIV by 2015 [7].

The coverage of those activities that need to be carried out by the HIV side such as screening of HIV positives for TB and provision of IPT are very low. For example in 2005 only 0.4% of people living with HIV were screened for TB and only about 25,000 were started on IPT [7]. This calls for an urgent attention as TB is now the commonest presenting illness of PLWHA who are on ART [8].

In 2007, 2.2 % of PLWHA (equal to 630,000 people), twice as many as in 2006, were screened for TB and only 0.1 % of the estimated 33.2 million people living with HIV (29,000) were put on Isoniazid preventive therapy (IPT). TB infection control measures are still not implemented in many HIV service settings [8].

In 2008, the number of PLWHA who were screened for TB more than doubled from 600,000 in 2007 to 1.4 million in 2008 though this is still a fraction of the 33 million people estimated to be living with HIV. Only 48,000 people living with HIV were put on IPT and TB infection control measures are still not implemented in many HIV service settings [9].

Considerable progress has been made in recent years, but interventions to reduce the TB burden among PLWHA are still lacking. Scaling up collaborative TB/HIV activities particularly intensified case finding, infection control and Isoniazid Preventive Therapy (IPT) known as the 3 I's falls short of the targets set by the Global Plan to Stop TB [10].

World TB Day 2009 (25th March) was marked by the release of dramatic new data from the WHO indicating that rates of TB-HIV co-infection are twice as high as originally estimated. In Sub-Saharan Africa, HIV has caused TB incidence to triple since the 1990s and in some countries 80% of TB patients are co-infected with HIV [14].

A lack of integrated TB and HIV services is one of the biggest problems in controlling these two epidemics. Only 1% of people living with HIV in 2008 had been screened for TB [9, 10].Despite the significant progress made in targeting people living with TB, the implementation of interventions to reduce the impact of TB among people living with HIV is far below the targets set in 2006 in the Global Plan to Stop TB 2006–2015 [6,7].

Information about the status of TB screening in HIV patient and TB case detection in our country was limited. This is due to absence of evaluation of health service activities at health facility levels lack of research based evidences. Therefore, this paper might initiative for assessing how TB screening and referral linkage among HIV-patient attending ART clinic of Butajira hospital. The findings generated from this study will have some contributions for evidence based interventions regarding prevention and control of TB/HIV co-infection.

II. LITERATURE REVIEW

2.1 Global Burden of HIV/AIDS and TB

Worldwide about 11.1 million adults are co-infected with TB and HIV. 70% of co-infected people are living in sub-Saharan Africa, 20% in the south East Asia and 4% in Latin America and the Caribbean [6].

The immune deficiency associated with AIDS greatly increases the likelihood of developing TB disease after a latent TB infection. TB is, in fact, a leading cause of death for PLWHA responsible for an estimated 13 percent of AIDS mortality worldwide and a much higher proportion of AIDS deaths in some regions, particularly in Africa [7].

TB and HIV are among the leading infectious disease killers in the developing world. These diseases are life threatening when contracted on their own, but the threat is becoming more severe as an increasing number of people infected with HIV are also contracting TB [8]. These diseases are combining to create what many fear is a global health catastrophe [8]. TB killed one out of four HIV-positive people in 2007, according to the WHO [9].

Collaborative TB/HIV interventions are essential to ensure that HIV-positive TB clients are identified and treated appropriately, and to ensure TB among PLWHA is prevented, diagnosed and treated [10].

WHO issued policy guidance to improve the diagnosis and treatment of smear-negative pulmonary and extra-pulmonary TB (2007). Smear-negative pulmonary and extra-pulmonary TB cases have been rising in countries with HIV epidemics. Delayed diagnosis is a key factor contributing to the unnecessary deaths of people living with HIV [10, 11].

The Three "I's" for TB/HIV (IPT, Intensified case finding for TB, and Infection control) will reduce the burden of TB among people living with HIV and therefore must be urgently implemented by all HIV services [11].

The TB/HIV Working Group (WG) of the Stop TB Partnership works to reduce the global burden of HIV-related TB through effective collaboration between TB and HIV programmes and

communities, and establishing policies, targets, and monitoring and evaluation systems for evidence-based collaborative TB/HIV activities [12].

People living with HIV are facing emerging threats of drug-resistant TB. Multidrug-resistant TB or MDR-TB is resistance to first-line anti-TB drugs; extensively drug-resistant TB or XDR-TB is resistance to second-line anti-TB drugs [11, 12].

The WG has a priority list of countries with the brunt of the problem in order to intensify its priority efforts of accelerating the implementation of collaborative TB/HIV activities. The TB/HIV priority list currently contains 63 countries including all countries with an adult HIV prevalence ≥1%, and five additional countries (Brazil, China, India, Indonesia and Viet Nam), which together make up 98% of the global burden of HIV associated TB [12].

WHO released staggering new data about the threat of tuberculosis and the toll it takes on people with HIV/AIDS today, in recognition of World TB day. In 2007, there were at least 1.37 million cases of HIV-positive TB—or nearly 15 percent of the total incident cases. That's double the previous WHO estimates [12].

Screening for TB among HIV-positive people attending people attending HIV care services grew from 194, 718 people in 2005 to 314, 394 people in 2006. Among those screens 84,713 were found to have TB; this number is equivalent to 12% of the 709, 000 HIV-positive cases estimated to exist globally. This high proportion suggests that if screening for TB was increased beyond its currently low levels TB case-finding would improve [10].

Provision of IPT remains at very low levels compared with high number of eligible PLWHA. The low number of PLWHA being treated with IPT is inconsistent with policy establishment; while 84 countries reported the existence of IPT policy only 25 reported any provision of IPT. Numbers on IPT are also dominated by Botswana, which accounted for 70% the total number of people reported to be on IPT globally [10].

It is also imperative to note that the current progress of the implementation of collaborative TB/HIV activities is far short of with what has been laid out in the Global Plan to Stop TB (2006-2015). The Global Plan proposed that 1.6 million TB patients would be tested for HIV in

2006 and 220,000 should be started on ART. However, in 2005 the coverage was only 14% and 11% of what has been planned for 2006 respectively. Likewise, the number of PLHIV screened for TB in 2005 was only 1.7% of the 11 million targeted for 2006 and the number started on IPT in 2005 was 2.2% of the 1.2 million targeted for 2006 [11].

WHO Recommended TB/HIV Collaborative Activities [5]

A. Establish Mechanisms for Collaboration

1. Set up a coordinating body for TB/HIV activities at all levels
2. Conduct Surveillance of HIV prevalence among Tuberculosis patients
3. Carry out joint TB/HIV planning
4. Conduct monitoring and evaluation

B. Decrease the burden of Tuberculosis in people living with HIV

1. Establish intensified Tuberculosis case finding
2. Introduce Isoniazid preventive therapy (IPT)
3. Ensure Tuberculosis infection control in health care and congregate settings

C. Decrease the burden of HIV among TB patients

1. Provide HIV testing and counselling
2. Introduce HIV prevention methods
3. Introduce co-trimoxazole preventive therapy
4. Ensure HIV/AIDS care and support
5. Introduce antiretroviral therapy **[5]**

2.2 TB and HIV Situation in Africa

Africa is the global epicenter of TBHIV co-infection, home to roughly 80 percent of TB cases among PLWHA [1]. Since 1990, the number of new annual TB cases in Africa has more than tripled and the number of deaths per year has almost tripled [2].

It is also the only continent where TB rates are increasing — at a dramatic 5 percent per year — driven by HIV/AIDS, poverty and weak health systems. Africa's TB burden has become so great that in August 2005, African Ministers of Health and WHO declared TB a continent-wide health emergency [1].

While PEPFAR's efforts to address TB-HIV have been valuable in a number of countries, the actual level of investment in its 15 focus countries (12 of which are located in sub-Saharan Africa) has been limited to date, though considerable increase is planned for fiscal year (FY) 2007[7].

TB is especially problematic in sub-Saharan Africa. Africa has the highest number of both TB cases (more than 400 per 100,000 population per year) and HIV infections (24.5 million people Living with HIV in Africa by the end of 2005), with two thirds of TB patients co-infected with HIV [8].

There were an estimated 1.37 million HIV positive TB patients globally in 2007. Around 80% of patients live in sub-Saharan Africa. 456,000 people died of HIV-associated TB in 2007 [9].

At least one-third of the 33.2 million people living with HIV worldwide are infected with TB, are 20-30 times more likely to develop TB than those without HIV and one in four people with HIV die due to TB [10].

HIV increases the risk of reactivation of latent TB infection (LTBI) and progression to active TB disease more than any other known risk factor. In some countries, the percentage of patients with active TB who are co infected with HIV is now greater than 60% [9, 10]. Even with appropriate management of TB, patients with HIV co-infection have increased mortality as a consequence of HIV-related complications [10].

While TB is prevalent in nearly all low- and middle-income countries, sub-Saharan Africa suffers the highest incidence and mortality rates [11]. In the recent decades, the number of TB

cases has increased by several folds especially in sub-Saharan African countries. HIV infection is considered to be the main risk factor for the increase in the number of TB patients and the proportion of smear-negative and Extra Pulmonary Tuberculosis (EPTB) cases [11].

There has been exceptional progress in addressing TB/HIV in countries such as Kenya, Rwanda, Malawi, Mozambique and Tanzania. In Kenya, the percentage of TB patients tested for HIV more than tripled between 2004 and 2007. In Malawi the percentage of people tested rose from 25% to 83%, in Rwanda, 9 out of 10 people were tested in 2007. In one year both Mozambique and Tanzania increased testing from 24% to 70% and 3% to 50% respectively [12].

According to the WHO recommendations, 1) HIV testing and counseling should be offered to all TB patients in settings where the HIV prevalence among TB patients exceeds 5%; 2) TB control programs should establish a referral linkage with HIV/AIDS programs to provide a continuum of care and support for persons living with HIV/AIDS who are receiving or who have completed their TB treatment; and 3) TB and HIV/AIDS programs should establish a system to provide CPT to eligible persons living with HIV/AIDS who have active TB [16].

Patients presenting with dry cough of three weeks or more were diagnosed based on strong clinical evidence and x-ray findings consistent with active TB [17]. In children, TB was diagnosed if there were symptoms and signs suggestive of TB, contact history with a known TB patient and x-ray findings consistent with active TB [15].

Following successful treatment for TB and subsequent adherence to an ART regimen, the lives of PLWHA can be sustained for prolonged periods of time, thus reducing mortality. In areas where access to ART is limited, TB treatment can buy precious time to access ART, as well as prevention and care services [16].

According to the Stop TB Partnership's Global Plan to Stop TB 2006-2015, the high rates of TB treatment interruption and transfers to other treatment centers are key reasons for the development of TB drug resistance in Africa [17].

A suggested method of conducting the screening would be to ask HIV-positive clients whether they are currently on TB treatment. If not, they would then be asked about the key symptoms of TB disease; (e.g. cough, fever, night sweats, recent weight loss, and lymphadenopathy) [18].

There are two reasons for carrying out TB screening among PLWHA. Firstly, incidence of TB is greatly increased in PLWHA and identification of those with symptoms of TB is the first step in active case-finding [19].

Early identification of TB suspects with signs and symptoms of TB, followed by prompt referral for diagnosis and treatment, increases the chances of survival, improves quality of life and reduces transmission of TB in the community. Secondly, TB symptom screening can also form the basis for identifying HIV-positive clients who show no evidence of active TB and would benefit from treatment with Isoniazid for latent TB infection [20].

According to the best available data from the WHO as few as 1% of people living with HIV/AIDS around the world are even screened for tuberculosis [21]. TB screening is recommended for people with HIV infection to facilitate early diagnosis and safe initiation of ART and IPT [22].

TB screening is the first step towards diagnosis and treatment. TB case loads and transmission could be reduced even further by enhanced uptake of HIV testing and counseling, routinely screening those people testing for HIV for TB and offering IPT to those without signs and symptoms of TB [23].

Eighteen African countries are now home to 75 percent of Africa's TB cases, where the average TB notification rate (i.e., the number of new TB cases notified per 100,000 people) doubled between 1990 and 2003 [9]. Highlighted as best practices in PEPFAR's Second Annual Report to Congress, pilot projects in Nairobi, and Kenya, provides an example of the effectiveness of TB-HIV coordination. These projects provided HIV testing and counseling to TB patients, resulting in increased identification of people with HIV and referral for ART [9].

TB and HIV diseases have been closely entwined since the early years of the HIV/AIDS pandemic [7]. The 2 conditions overlap in their epidemiologic characteristics and clinical

manifestations and are both clothed in stigma. They individually carry the risk of creating social, economic, and political instability, which is markedly worsened when they affect a region in concert. The overwhelming burden of disease due to both TB and HIV is borne by resource-limited countries and the hardest hit among these are in sub-Saharan Africa [8].

TB and HIV/AIDS programs have only recently begun moving towards providing coordinated TB-HIV services, so evidence for their cost effectiveness is limited. It is, however, being generated in various settings [8]. Pilot projects in Malawi, South Africa and Zambia, for example, have shown that screening PLWHA for TB can be done for little added time and cost, resulting in increased TB case finding [8].

TB is one of the leading killers of people living with HIV in Africa. Yet, globally only 2 out of every 100 HIV patients are even tested for TB [9].

According to WHO, 11 of the 12 African focus countries reported data on the number of TB patients tested for HIV [2]. Between 2004 and 2005, the number of TB patients tested from these countries totaled 111,285 [2]. This represents just under 7 percent of the total number of TB cases that should be tested for HIV from these countries combined [2].

TB screening and provision of preventive therapy or treatment to all PLWHA is urged, but not required for all focus countries, which suggests that opportunities are being missed to reduce mortality of PLWHA due to TB [1].

2.3 TB and HIV co-infection in Ethiopia

Following WHO's 2004 interim policy recommendations, the TB/HIV collaborative services in the nine pilot sites included IPT for HIV-positive patients; CPT for HIV and TB co-infected patients; and provider-initiated HIV counseling and testing in TB patients. These services are mostly free to all patients; however, the program funding is highly dependent on external donors and sustainability is not assured [30].

TB/HIV services and ART services are gradually being decentralized from hospitals down to lower-level health care facilities, and patients are going from being managed by internists to general practitioners to health officers and then to nurses. TB/HIV coordinators from all regions, most zones, and some woredas have been trained. Replacement training to handle employee turnover has been an ongoing challenge during the expansion of services [31].

TB is among the major causes of morbidity and mortality in Ethiopia and manifests as the leading opportunistic illness for AIDS patients. According to an FMOH report (2005), Ethiopia ranks seventh on the list of the world's 22 high-burden countries for TB, with an incidence of TB of all forms at 356 per 100,00, smear-positive at 135 per 100,00, prevalence of all forms of TB at 533 per 100,00, and prevalence of HIV among TB patients at 21 percent [32].

HIV Counseling and Testing (HCT) uptake increased and in 2008/9 year alone 5.8 million clients were tested for HIV. Rapid HIV counseling and testing service was expanded significantly [34].

The number of facilities providing HCT was 1,005 in 2007/08 and increased to 1,823 by 2008/09. Provider-initiated counseling and testing (PICT) has been well integrated with routine health services. Health facilities providing ART reached 517 in December 2009. The number of AIDS patients ever started on ART has grown to 241,759 in December 2009, among which 176,632 were currently on treatment. This year alone 91,100 new AIDS patients started ART [34].

TB/ HIV collaborative work was initiated in Ethiopia in 2004 as a pilot project in six hospitals and three health centers. Based on the lessons learned from these pilot sites, the collaborative work has been expanded to more than 330 health facilities (hospitals and health centers) [31].
Like the rest of HIV related activities, this also is supported by different partners. Major expansion of the collaborative work occurred since 2006 [32].
The percentage of TB patients who receive HIV counseling and testing has increased from 10% to more than 80% in most health facilities. TB/HIV patients are referred to an ART unit where they get the appropriate OI treatment, prophylaxis and ART if eligible. Patients seen at ART clinics are also screened for TB and referred to TB clinics if diagnosed with TB [33].
However, the referral system is not yet well established between the TB care and HIV care givers, and the M&E system is not strong, so it really is not known what percentages of TB/HIV patients who require service actually receive them. The gap between what is supposed to happen in service delivery and what is actually happening (as is the case with PMTCT) may be huge [32].

In addition, a total of 24,112 HIV-positive people were referred from HCT, chronic HIV and ART clinics for TB screening out of which 4,154 (17.2%) were found to have active TB and 2,403 (10%) with latent TB, and hence put on IPT. The proportion of HIV-positive patients who were screened for TB increased from 25% in 2007 to 55% in 2009 [33].

Ethiopia is a high HIV prevalence country and the ongoing HIV-epidemic is an important contributing factor in the growing TB case load in Ethiopia. The national HIV prevalence rate is 4.4 percent. The TB-HIV co-infection rate in the nation remains high, with over 19 percent of all TB cases detected in HIV positive individuals. Providing TB services in conjunction with the other critical health interventions, including HIV has allowed the Ethiopian Ministry of Health to take the innovative approach of providing collaborative TB-HIV services [32, 33].

At every rural Ethiopian health post or urban health centre, every patient suspected of having TB is also offered a free HIV/AIDS test and every HIV/AIDS patient is screened for TB. If they are found to be infected with either the active or dormant type of TB, they are provided with the appropriate drug regiment as either a curative or preventative measure at the same time as they receive their ART. This collaborative approach with the capacity to deliver at the community level is likely to see strong results in terms of reducing co-infection and deaths associated with TB in people with HIV/AIDS [40].

The catastrophic association between HIV and TB has now been well identified, although the underlying causal mechanisms and immunological aspects are not yet fully understood. It appears that latent TB-infection in HIV-positive persons reactivates at a rate of 10% per year, as opposed to 5-10% over a lifetime for HIV negative persons [41].

HIV-positive persons are prone to re-infection with new strains of TB from the community and drug resistance may occur more frequently .TB is often the first opportunistic infection in HIV-infected persons, and active TB has been shown to induce viral replication, thus accelerating the progression from latent HIV-infection to clinical stages of AIDS. The clinical presentation of TB may be altered in HIV-positive patients, especially in advanced stages of HIV-infection when immunity is considerably compromised. Smear-negative and extra-pulmonary forms of TB are then more common and X-ray abnormalities are atypical [42].

The synergy between TB and HIV justifies the collaboration between control programs for the two diseases. Cognizant of the need for such a relationship, the Federal Ministry of Health has initiated TB/HIV collaboration in 2004 in nine pilot sites in four regions, which are increasing in a phased manner. TB/HIV Advisory Committee (THAC) had also been established in 2002 [3].

The experience gained from the pilot sites was a valuable tool in the development of the national TB/HIV implementation guideline (2005), the requirement of appropriate training materials, the reporting formats and referral systems [3]. The national TB manual has been revised to include TB/HIV; the national TB/HIV implementation guideline has been revised this year and it is currently under printing. TB/HIV Technical Working Group has also been established by THAC in April 2007[3].

The WHO recommends that individuals with HIV be screened for TB when they are first diagnosed with HIV and periodically thereafter. Diagnosing TB in people with HIV can be difficult because they are more likely than persons who do not have HIV to have extra-pulmonary TB and to lack "classic" TB symptoms, such as chronic cough [13].

One common approach, never studied for effectiveness, was to conduct further tests only if the person reports coughing for 2-3 weeks. CDC with financial support from the USAID and PEPFAR, conducted a study to determine how best to screen for TB among people with HIV, even in the poorest, most resource-limited areas of the world [14].

TB and HIV have formed a deadly synergy that threatens the fragile gains made in the fight against both epidemics. Each disease speeds up the development of the other. HIV activates latent TB, and left untreated, someone with active TB has the potential to infect 10 to 15 people per year. According to the WHO and the Center for Global Health Policy [15]:

In Ethiopia routine data from 44 sites in the year 2005/6 showed 41% of TB patients are HIV positive [10]. The total number of PLWHA in the same period is estimated to be 1,037,267 adults and 68,136 children [3].

The number of new adult HIV infection for 2008 is estimated to be 125,147 for adults and 14 093 new pediatric infection because of vertical transmission [3]. The number of deaths due to

AIDS for the same period is estimated to be 58,290 for adults and 9,284 among children. The number of PLWHA who need to be started on ART in 2008 is estimated at 289,734 for adults and 17,274 for children under the age of 14 years [6]

Report on the consultancy visit to review and assess the implementation of TB/HIV collaborative activities in 16 sites within three regions in Ethiopia: 25th August 2008: to 5th September 2008: shows that; 84.98% of HIV positive cases were screened for TB. 219 (9.32 %) patients were found to be having TB (all forms) out of 2,348 HIV positive cases [24]. 98 patients were placed on IPT. The number is low due to apprehension among the staff to decide to place the patients on IPT. The staffs are not confident enough too clinically to rule out TB. 872 patients were put on CPT. All 16 health facilities placed almost all patients on CPT. out of 2,763 HIV positive patients 949 [34%] were found eligible for ART [24].

2.4 TB and HIV Co- infection SNNPR

According to annual 2001 E.C SNNPR Health Bureau report, 32,097 PLWHA were registered and 15,962 PLWHA were ever started ART. 11906 were on ART. TB case detection rate was 39%.In Butajira hospital there are 1118 clients were enrolled as pre-ART and 538 clients were ever started ART and there are 342 patients are on ART [38].

The number of clients started before end of month 30 /8/2002 E.C were 644 , 418 were on pre-ART and 410 patients were on ART. TB case detection rate of TB (all forms) is increasing over time; 38%, 44%, and 44% in 1999(2007), 2000(2008), and 2001(2009) reports respectively [38].

In SNNPR, the incidence rate of all forms of TB and Smear positive TB is 45% and 41%, respectively [39]. Since the last ten years the health facilities rendering DOT increases from zero to 100% while Tb case detection rate remains constant.

III. OBJECTIVES

3.1 General Objective

The general objective of this study was to assess TB screening and referral linkage in PLWHA attending chronic HIV care clinic of Butajira hospital.

3.2 Specific Objective

- To describe the proportion of PLWHA attending ART clinic screened for TB and referred to TB clinic.
- To determine the magnitude of PLWHA attending ART clinic diagnosed for TB.
- To calculate the proportion of PLWHA attending ART clinic were that given IPT and CPT during the follow up.
- To assess the referral linkages between ART clinic and other departments or facilities.

IV. METHODOLOGY

4.1 Study design

This was a cross-sectional study whereby both qualitative and quantitative methods of data collection were used. It was done from 9, October 2009 to 28, June 2010.

4.2 Study area

This study was conducted in Butajira hospital. The hospital is located in Guraghe zone, SNNPR of Ethiopia. The region has 13 administrative zones and an estimated population of about 14 million, of which 93% live in rural areas. Due to limited resources, out of 16 hospitals in the region based on Convenience sampling method only one hospital Butajira was selected for the study.

Butajira hospital is located in Butajira Town which is 133 km south of Addis on Alemghena Hosanna road. Butajira hospital had served as a referral sources for eastern Guraghe, some part east Shoa zone of Oromiya and Siltie zones. The hospital gives DOTS for TB. Diagnosis of pulmonary TB is made using a combination of clinical examination, Acid-Fast Bacilli (AFB) staining and/or chest x-ray. Doctors and health officers are responsible for diagnosing smear negative and extra pulmonary cases, while smear positive cases are also treated by trained nurses. The hospital follows the National Tuberculosis and Leprosy Control manual of Ethiopia [18].

The ART clinic, coordinated by a doctor, provides treatment for opportunistic diseases. There is one counselor, two ART nurses, three adherence supporters and one data clerk working with the HIV unit. The ART nurses were trained with basic ART training for 15 days. According to first quarter of 2001 E.C SNNPR Health Bureau report, in the hospital there were 1118 clients enrolled to pre-ART and 538 clients were ever started ART. There were 342 patients who are on ART. The number of PLWHA started before end of month 30 /8/2002 E.C were 644 , 418 were on pre-ART and 410 patients were on ART [38]. TB case detection rate of all forms TB is increasing over time; 38%, 44%, and 44% in 1999(2007), 2000(2008), and 2001(2009) reports respectively. According to 2001 E.C report there are 1292 PLWHAs who are on treatment of

anti-tuberculosis in the Hospital. A total of 688 TB patients were treated at TB clinic. Of which 62 were pulmonary positive 405 were pulmonary negative and 221 were extra- pulmonary TB [38].

4.3 Study population

The study population includes charts of PLWHA attending ART of Butajira hospital; as well as staff working in ART units and TB/HIV program coordinators Zonal Regional and Federal levels.

4.4 sample size calculation

The sample size was determined by assuming p=50%, since our TB screening rate is not known; a rate of 50% preferred to obtain the largest possible sample size using the single proportion formula; giving any particular out come to be with 5% marginal error and 95% confidence interval of (alpha = 0.05). Based on this assumption, the actual sample size for the study is computed using one-sample population proportion formula as indicated below.

Where:

n = Sample size

z = critical value 1.96

p = 0.5 to get the maximum value of n

d = precision (marginal error) = 0.05

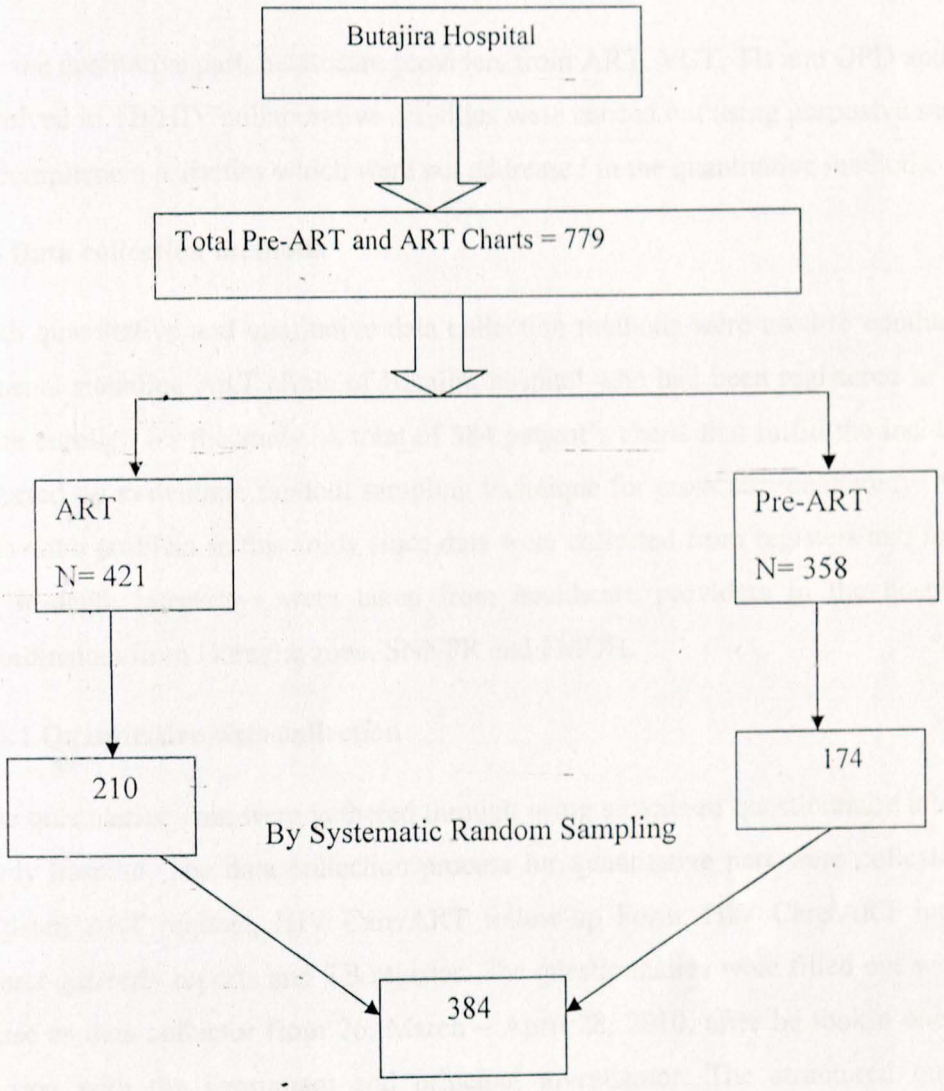
Thus the sample size is,

$$n = \frac{(1.96)^2 \times 0.5(1-0.5)}{0.05^2} = 384$$

Non-response rate was not a problem in this study since data were collected from registers and formats. Therefore sample size for cross-sectional was 384.

4.5 Sampling procedures

Figure 1: Diagram to illustrate sampling technique in Butajira hospital, 2010.



A total of 384 PLWHA's records were involved in the study. At the time of study 418 PLWHAs were enrolled as pre-ART of which 28 were transferred out, died and lost to follow up, 32 were transferred in. Therefore 60 PLWHA were excluded from pre-ART. The sampling frame for the pre-ART was 358 units. By systematic random sampling method every 2nd chart was selected until sample of 174 PLWHA from pre-ART file cabinet. There was 489 PLWHA who were on ART treatment of which 35 transferred out, died, and lost to follow up and 33 PLWHA

transferred in from other health facilities. Accordingly 68 PLWHA were excluded from the study. In the ART cabinet, 421 PLWHA who fulfill the inclusion criteria were taken as sampling frame and by systematic random sampling technique 210 PLWHA were selected.

For the qualitative part, healthcare providers from ART, VCT, TB and OPD and health managers involved in TB/HIV collaborative activities were carried out using purposive sampling technique to complement activities which were not addressed in the quantitative methods.

4.6 Data collection methods

Both quantitative and qualitative data collection methods were used to conduct the study. HIV patients attending ART clinic of Butajira hospital who had been registered in 1998 – 2001 E.C were enrolled for the study. A total of 384 patient's charts that fulfill the inclusion criteria were selected by systematic random sampling technique for cross sectional study. Non-response rate was not a problem in this study since data were collected from registers and formats. A total of 10 in-depth interviews were taken from healthcare providers in the hospital and program coordinators from Guraghe zone, SNNPR and FMOH.

4.6.1 Quantitative data collection

The quantitative data were gathered through using structured questionnaire after pretested in the study hospital. The data collection process for quantitative part were collected from Pre-ART register, ART register, HIV Care/ART follow-up Form, HIV Care/ART intake form, clients charts quarterly reports and TB register. The questionnaires were filled out with the help of one nurse as data collector from 26, March – April 28, 2010, after he took a one day introductory session with the instrument and principal investigator. The structured questionnaires were adapted from Pre-ART register, ART register, HIV Care/ART follow-up Form, HIV Care/ART intake form, client's charts and TB register. The data were triangulated with different records. Since the data were collected from patient's records no need of translations of the questionnaires to Amharic.

4.6.2 Qualitative data collection

In-depth interview from Butajira Hospital 7 healthcare providers from OPD, ART, TB and VCT clinics and 3 program coordinators from Guraghe Zone, SNNPRS, and FMOH were selected for in-depth interviews. At program management level three public health specialists from FMOH, SNNPR health bureau and Guraghe zone health department were interviewed levels using a semi-structured interview guide. The principal investigator had introduced himself to the interviewee and got favorable time for interviews. After verbal consent obtained each individual interviewee; the subjects were asked for their participation, the principal investigator took field notes in conducting the conversational individual in-depth interviews. Each interview lasted between 35-40 minutes in a setting where there was no any interference. The questions for in-depth interviews were adapted from TB/HIV guideline of ministry of health. Since data were collected from health workers no need of translation of English questionnaire to Amharic.

Inclusion criteria for data collection

- PLWHA who registered on pre-ART registration book for follow up at least for 6 months were eligible for the study.

Exclusion criteria

- Patients who transferred in or out to other health facilities were excluded from the study to keep focus on practice of screening in the study hospital.
- TB patients referred from TB clinic for HIV care and follow up.
- Died and lost to follow up.

4.7 Variables

4.7.1 Dependent variables

- Screening for TB
- TB case finding

4.7.2 Independent variables

- Socio-demographic characters – age, sex, marital status, religion, educational status, and occupation.

- Symptoms complex of TB: Cough, fever, chronic fatigue, night sweat, weight loss, dyspnea and hemoptysis.
- Baselines CD4 cell counts, sputum smear examination, chest X-ray, and fine needle aspiration cytology.

4.8 Operational Definitions

- **TB screen-** is screening people living with HIV for TB status on the day of enrolment and subsequent visit of follow up.
- **TB suspect-** refers to a person who presents with symptoms or signs suggestive of TB disease, in particular a cough of long duration.
- **TB referral** – after PLWHA Screened for TB symptoms health care provider link to TB clinic for intervention.
- **Evaluation** – PLWHA evaluated for TB symptom complexes in ART clinic send for AFB, radiographic and FNA cytological examinations.

4.9 Data Analysis procedures & data quality management

Completed questionnaires/data were coded by numbers. Cross-checking and data cleaning was done manually and by using SPSS version 16. Data were entered into the computer by statistical programme Epi-6 (Centers for Disease Control and Prevention, Atlanta, GA, USA). The data was then transferred to SPSS version 16 for analysis. Data collected from records were categorized and summarized into matrices, figures and tables based on the kind of the tools used. Descriptive frequency, univariate, bivariate, multivariate, odds ratio, confidence interval and p-value were used for statistical test. The level of significance was set at $p \leq 0.05$, and 95% confidence interval was used throughout. The qualitative data obtained from in-depth interviews were analyzed thematically.

4.10 Ethical consideration

Ethical approval and clearance was obtained from the Joint Academic Commission of Addis Ababa University (Medical and Informatics faculties). Official letter of co-operation written were sent to SNNP Regional Health Bureau, & again the Health Bureau wrote official letter to Guraghe zone health department and Butajira hospital. The principal investigator had explained the aims and objectives of the study to the staffs who were working in ART, VCT, and TB clinics of the hospital and program coordinators of FMOH, SNNPR health bureau and Guraghe

TB clinics of the hospital and program coordinators of FMOH, SNNPR health bureau and Guraghe zone health department. They were informed that any information collected during the course of the study kept confidential. Verbal consent was obtained from each individual for in-depth interviews. Finally, the data collection was finished an anonymously throughout the study.

V. RESULTS

5.1 Quantitative findings

5.1.1 Socio-demographic characteristics

Of 384 patients, 241 (62.8%) were females. 154 (40.1%), and 186 (48.4%), were in the age group 15-24, and 25-34 respectively. The median age of screened patients was 33 years (range, 7 to 64). Concerning marital status 202 (52.6%), 47 (12.2%), 26 (6.8%), 84 (21.9%) and 25 (6.5%) were married, single, divorced, widowed and separated, respectively. Educational status of patients 169 (44%), 130 (33.9%), 73 (19%) were illiterate, read and write, primary and secondary, respectively. The evaluated PLWHA by religion 196 (51%) were Orthodox Christian, 130 (33.9%) were Islam and 58 (15.1%) were Protestant (Table 1).

Table: 1 Socio-demographic characteristics of study subjects for record review, Butajira Hospital, 2010.

Variables	Sex		
	Male n (%)	Female n (%)	Total n (%)
Age in years			
< 15 years	1 (0.25)	3 (0.75)	4 (1.0)
15 -24	51 (13.3)	30 (7.8)	40 (10.4)
25 – 34	10 (2.6)	135 (35.1)	186 (48.5)
35 -64	81 (21.0)	71 (10.1)	154 (40.1)
Marital status			
Married	84 (21.8)	118 (30.8)	202 (52.6)
Single	25 (6.5)	22 (5.7)	47 (12.20)
Divorced	8 (2.0)	18 (4.8)	26 (6.8)
Widowed	17 (4.4)	67 (17.5)	84 (21.9)
Separated	9 (2.3)	16 (4.2)	25 (6.5)
Educational Level			
Illiterate	32 (8.3)	137 (35.7)	169 (44.0)
Read and write	3 (0.75)	1 (0.25)	1 (1.0)
Primary	65 (16.9)	65 (16.9)	130 (33.9)
Secondary	39 (10.2)	34 (8.8)	73 (19.0)
Diploma and above	4 (1.5)	4 (1.05)	8 (2.1)
Religion			
Orthodox	70 (18.20)	126 (32.8)	196 (51.0)
Islam	48 (12.5)	82 (21.4)	130 (33.9)
Protestant	25 (6.5)	33 (8.6)	58 (15.1)

5.1.2 Disease specific characteristics

A total of 384 patients' records were selected for review. 174 patients on pre-ART and 210 patients on ART were screened for TB symptom complex. 300 (78.1%) were screened at least one time, but 84 (21.9 %) patients were never screened for TB. 97 (25.3%) and 224 (58.3%) of patients were on INH and co-trimoxazole prophylactic therapy, respectively.

Table: 2 Characteristics of HIV patients by the interventions in ART clinic of Butajira hospital, 2010.

Variables	Pre – ART n (%)	ART n (%)	Total
Patients on INH	15 (3.9)	82 (21.4)	97 (25.3)
Patient on CPT	28 (7.3)	196 (51.0)	224(58.3)
Patients who treated for TB	21 (7.0)	48 (16.0)	69 (23.0)
Chest radiograph exam			
Normal	54 (13.8)	129 (33.2)	183 (47.0)
Abnormal	7 (1.8)	15 (3.9)	22 (5.7)
Missed	113 (29.4)	66 (17.2)	179 (46.6)
Lymph node Exam			
Normal	55 (14.3)	139 (36.2)	194 (50.5)
Abnormal	7 (1.8)	12 (3.1)	19 (4.9)
Missed	112 (29.9)	59 (15.3)	171 (44.5)

All patients with TB were referred for treatment to TB clinic of the hospital and/or nearby health facilities. The median CD4+ cell count was 181 per cubic millimeter (range, 3 to 888).In chest radiographic examination, 183 (47%) were normal, 22 (5.7%) were abnormal and 179 (46.6%) were missed. In lymph node examination, 194 (50.5%), 19 (4.9%) and 171 (44.5) were normal, abnormal, and missed, respectively.

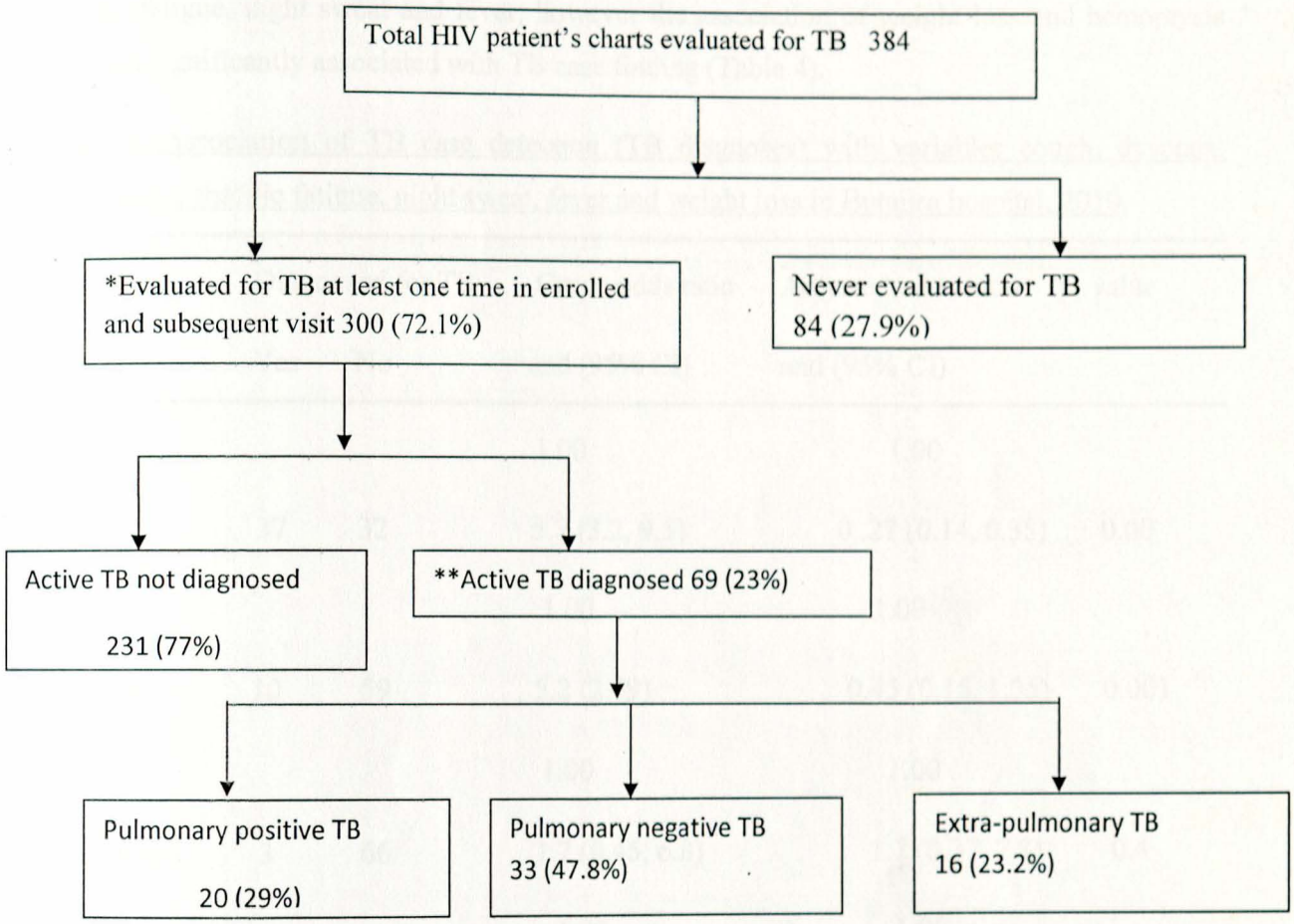
Table: 3 Characteristics of patients the frequency of TB status screening, Diagnoses and WHO staging of active TB in Butajira hospital,2010.

Variables	Pre – ART n (%)	ART n (%)	Total n (%)
TB screened at least ones	99 (23.8)	201(48.3)	300 (72.1)
TB never screened	75 (19.6)	9 (2.3)	84 (21.9)
Active TB diagnosed	21 (7.0)	48 (16.0)	69 (23.0)
Smear positive TB	12 (17.0)	8 (11.4)	20 (28.4)
Smear negative TB	8 (13.4)	20 (34.3)	28 (47.7)
Extra – pulmonary TB	2 (7.9)	4 (16.0)	6 (23.9)
WHO staging			
Stage I	100 (26.0)	27 (7.0)	127 (33.0)
Stage II	38 (9.9)	40 (10.4)	78 (20.3)
Stage III	27 (7.0)	108 (28.2)	135 (35.2)
Stage IV	9 (2.4)	35 (9.1)	44 (11.5)
CD_4 cells counts (x 10^6 cells/L)			
≤ 200	69 (18.0)	147 (38.3)	216 (56.3)
201 – 350	33 (8.6)	49 (12.8)	82 (21.4)
> 350	72 (18.80)	14 (3.6)	86 (22.4)

TB case finding

The past opportunistic illness history assessment: 2 (0.5), 28 (7.3%), and 27 (7.0 %) screened for PCP, recurrent pneumonia and wasting syndrome respectively. In ART clinical intake form TB symptoms evaluated: 92 (24%) cough, 134 (34.9%) chronic fatigue, 69 (18%) night sweat, 46 (12%) fever > 1 month and 80 (20.8%) weight loss. Of those who had diagnosed active TB symptoms evaluated for TB: 38 (43.2%) chronic cough, 39 (44.3%) chronic fatigue, 27 (30.6%) night sweat, 13 (14.7%) fever > 1 month, and 18 (20.4%) weight loss.

Figure 2: Flow Diagram of TB screening in ART clinic of Butajira Hospital, 2010



*TB status of the patient was evaluated at day of enrollment and subsequent visit to ART clinic (monthly or every 3 months or every 6 months).

**19 active TB patients were not diagnosed at ART clinic; they were referred from TB clinic to ART clinic for HIV care. These 19 TB patients were not included.

Active TB was diagnosed in 69 patients. Of which 20 (29%) of cases were pulmonary positive, 33 (47.8%) cases pulmonary negative and 16 (23.2%) of extra-pulmonary TB. The classification of patients by WHO staging 127 (33.1%), 78 (20.3%), 135 (35.2%) and 44 (11.5%) were classified as WHO stage I, II, III, IV respectively.

The association between: TB case finding as dependent variable versus the independent variables cough, dyspnea, hemoptysis, chronic fatigue, night sweat, and fever and weight loss was

assessed. There were significant association between case TB finding versus cough, dyspnea, chronic fatigue, night sweat and fever; however the association of weight loss and hemoptysis were not significantly associated with TB case finding (Table 4).

Table 4: Association of TB case detection (TB diagnoses) with variables cough, dyspnea, hemoptysis, chronic fatigue, night sweat, fever and weight loss in Butajira hospital, 2010.

Variables	Diagnosed for TB		Crude odds ratio	Adjusted odds ratio	p- value
	Yes	No	and (95% CI)	and (95% CI)	
			1.00	1.00	
Cough	37	32	5.7 (3.2, 9.5)	0 .27 (0.14, 0.35)	0.00
			1.00	1.00	
Dyspnea	10	59	5.2 (2.09)	0.45 (0.15, 1.35)	0.001
			1.00	1.00	
Hemoptysis	3	66	1.7 (0.45, 6.8)	1.7 (0.37, 7.8)	0.4
			1.00	1.00	
Chronic fatigue	35	34	2.25 (1.3, 3.8)	0.67	0.002
			1.00	1.00	
Night sweat	26	43	3.8 (2.1, 6.9)	0.5 (0.25, 1.05)	0.000
			1.00		
Fever	16	53	2.9 (1.5, 5.6)	0.8 (0.34, 3.3)	0.002
			1.00	1.00	
Weight loss	18	51	1.4 (0.8, 2.6)	1.5 (0.7, 3.3)	.24

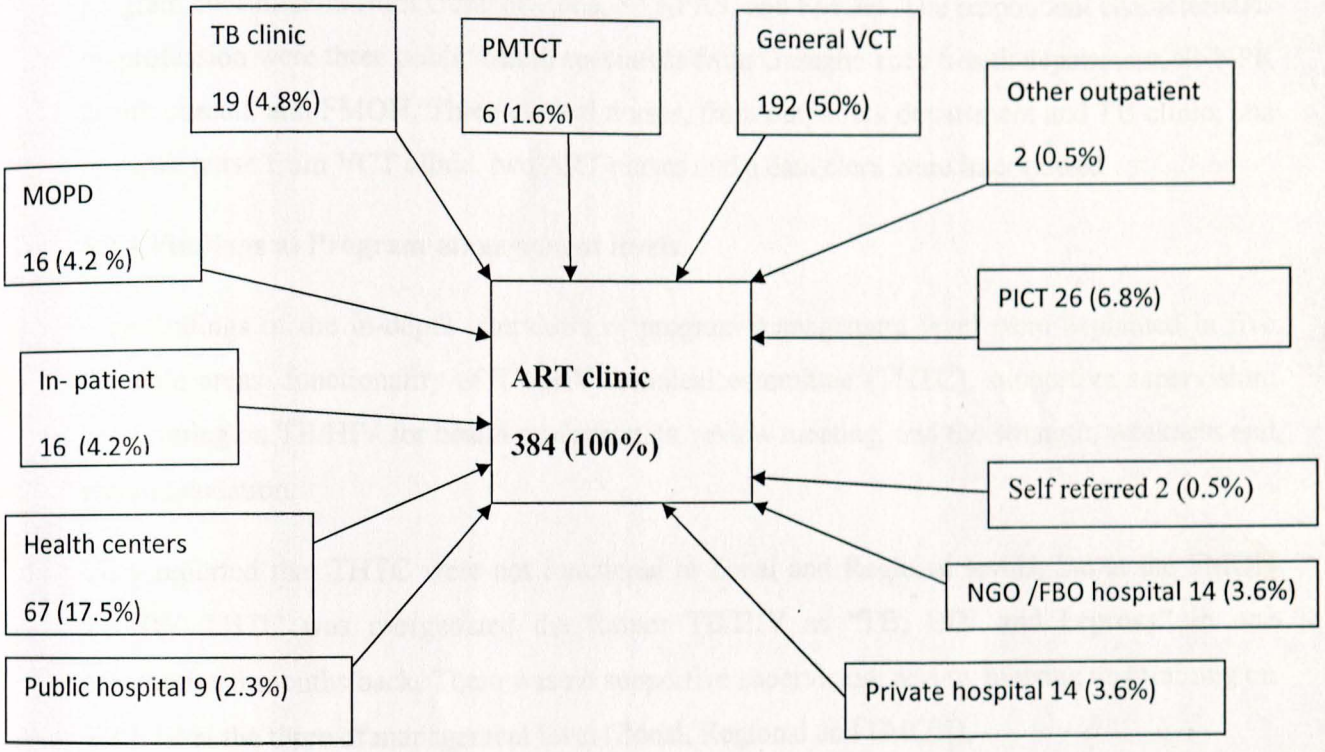
The Referral- linkages of HIV patient

Concerning the referral system 277 (72.1%) patients were referred within different department of the hospital and 107 (27.9%) patients were referred from other health facilities to ART clinic of Butajira hospital. Within the Hospital 16 (4.2%), 16 (4.2%), 19 (4.8%), 6 (1.6%), 192 (50.0%), 2 (0.5%) , and 26 (6.8%) were referred from In-patient, Medical outpatient, TB clinic, PMTCT, General VCT, Other outpatient and PICT respectively, to continuum of care and support .Of which 67 (17.5%), 9 (2.4%), 14 (3.6%), 14 (3.6%) and 3 (0.8%) of patients were referred from nearby health centers, public hospital, private hospital, NGO/FBO hospital and self referred respectively. Only 44 (11.5%) patients' referral slips were documented with patient's charts. The referral information of 340 patients was obtained from clinical intake forms.

Table: 5 Distribution of patient to ART clinic by Referral sources in different department of Butajira Hospital and other health facilities, 2010.

Variables	Pre- ART n (%)	ART n (%)	Total n (%)
A. Intra- Facility Referral			
In – patient	4 (1.1)	12 (3.1)	16 (4.2)
Medical outpatient	0 (0.0)	16 (4.2)	16 (4.2)
TB clinic	7 (1.8)	12 (3.0)	19 (4.8)
PMTCT	4 (1.1)	2 (0.5)	6 (1.6)
General VCT	102 (26.6)	90 (23.4)	192 (50.0)
Other outpatient	0 (0.0)	2 (0.5)	2 (0.5)
PICT	7 (1.8)	19 (5.0)	26 (6.8)
B. Inter- Facility Referral			
Health centers	35 (9.2)	32 (8.3)	67 (17.5)
Public hospital	3 (0.8)	6 (1.6)	9 (2.4)
Private hospital	3 (0.8)	11 (2.8)	14 (3.6)
NGO/ FBO hospital	7 (1.8)	7 (1.8)	14 (3.6)
Self referred	2 (0.5)	1 (0.3)	3 (0.8)

Figure 3: Diagram showing the referral- linkages of HIV patients with different departments of Butajira hospital and other health facilities,2010.



5.2 Qualitative findings

From Butajira Hospital 7 healthcare providers from OPD, ART, TB and VCT clinics and 3 program coordinators from Guraghe Zone, SNNPRS, and FMOH. The respondent characteristics by profession were three public health specialists from Guraghe zone health department, SNNPR health bureau, and FMOH. Three clinical nurses, from outpatient department and TB clinic; one midwife nurse from VCT clinic, two ART nurses and a data clerk were interviewed.

5.2.1 Findings at Program management levels

The findings of the in-depth interviews of program management level were explained in five thematic areas: functionality of TB/HIV technical committee (THTC), supportive supervision, and training on TB/HIV for health professionals, review meeting, and the strength, weakness and recommendation.

They reported that THTC were not functional at Zonal and Regional levels; but at the FMOH TB/HIV THTC was reorganized the former TB/HIV as "TB, HIV and Leprosy" in one programme 3 months back. There was no supportive supervision, review meeting and training on TB/HIV at the three of management level (Zonal, Regional and FMOH).

The main strengths, weakness, and recommendation were summarized as follows: The main strengths were they assign TB/HIV focal person, and the availability of TB/HIV implementation guidelines. The weakness mentioned in management levels were; there was no supportive supervision, review meeting and on-job training on TB/HIV in 2002 EFY.

The major recommendations were; there should be on job training for health workers working on ART, VCT, TB, STI and PMTCT clinic. There should be supportive supervision and review meeting Bi-annually and annually. THTC should be strengthened at programme management level.

5.2.2 Findings at Hospital level

The findings of the in- depth interviews of the hospital were described in four thematic areas: the functionality of THTC, the service delivered at ART, TB, and VCT clinics; and the main

strengths, problems/weakens their recommendations to improve the service provision of TB screening and referral linkage .

They reported that, THTC was not functional at hospital level. Routine screening of HIV-positive patients for TB was carried out at the time when the patients registered at ART clinic and at the follow up visit to ART clinic. The signs and symptoms used to screen for TB were cough, chronic fatigue, dyspnea, fever, weight loss, and night sweats. The ART nurses inquire to the patient's symptom complex of TB; if the patients showed the symptom cough more than 2 weeks, they should send to laboratory for AFB. The tools used to screen TB symptoms at OPD similar to ART clinic. There was no TB screening in VCT clinic of the Hospital. At TB clinic a total of 688 (all types) TB patients were registered; of which 62 patients were pulmonary positive, 405 patients were pulmonary negative and 221 were extra-pulmonary. All TB patients were tested for HIV status as soon as they registered at TB clinic. 19 TB patients were co-infected with HIV and linked to ART clinic for continuum of care and support.

If the status of the patients were positive they were linked to ART clinic by intra-referral form. The referral and linkage of HIV-patients among different departments of the hospital to ART clinic through intra-facility referral form. The main strengths were they assign TB/HIV focal person, and the availability of TB/HIV implementation guidelines. The weakness mentioned at Hospital level was; there was no supportive supervision, review meeting and on-job training on TB/HIV in 2002 EFY. There was shortage of pediatric IPT at the time of data collection. There was only one counselor in VCT clinic. There were two ART nurses in ART clinic; however, they were working in the rotational trend.

VI. DISCUSSION

This study used to assess TB screening and referral linkage among HIV patients attending ART clinic with different department of Butajira hospital and other health facilities. Out of 384 evaluated 300 (78.1%) were TB status evaluated at least one time at day of enrollment and/ or subsequent visit; and 84 (21.9 %) patients were never evaluated for TB . TB evaluated in this study (78.1%) was lower than from Report on the consultancy visit to review and assess the implementation of TB/HIV collaborative activities in 16 sites within three regions in Ethiopia which was 84.98% of HIV positive cases were screened for TB [24]; however lower than the study in Uganda (51%) had documented evidence of screening for TB [23]. The difference between these studies can be explained by the fact that probably large sample size and different health facilities had different quality of service provision.

The proportion of patients who were diagnosed for TB in this study was 23% which is higher than the consultancy review report 9.3% diagnosed for all forms TB [24] and the study conducted in Thailand and Vietnam out 563 people living with HIV screened for TB, 89 (16%) had a positive TB diagnosis; however, it was comparable with FMOH 2008 report 24%.

CDC researchers enrolled 2,000 people with HIV in Cambodia, Vietnam, and Thailand [39]. For each individual, scientists performed specialized TB tests—not usually available in countries with limited resources—to confirm the diagnosis of TB with as much certainty as possible. With this information, researchers then tested whether less resource-intensive methods, such as asking questions about specific symptoms, would be effective in diagnosing TB. The results showed that 75% of TB diagnoses were missed if people were asked only about whether they had a cough for at least 2 weeks. If health care workers asked about three specific symptoms (cough, fever, and night sweats), however, the percentage of TB diagnoses missed dropped to less than 10% [39].

WHO and UNAIDS also recommended the use of CPT for patients with symptomatic HIV infection [25]. Considering these recommendations, the national CPT guideline has made a recommendation to prescribe CPT for HIV-infected patients with CD4 cells count of less than 350 cells/ml and HIV infected patient with active TB [26]. In this respect, the finding from this

assessment study showed that out of the sample patients who were eligible for CPT, only about 58.3% were actually on CPT. As part of the standard policy in Ethiopia, CPT is indicated for all HIV-positive patients with active TB and adults and adolescents (above 13 years) with symptomatic HIV-related diseases (WHO clinical staging 2, 3, and 4). The duration of therapy is life-long in the absence of ART; however, if ART is available, CPT can be discontinued after the patient's CD4 count reaches 500 cells /mm for at least three months.

In this study the number of diagnosed TB-HIV patients were 69 (23%); however only 52 PLWHA were on CPT; though, 17 (10.6%) PLWHA were not on CPT. Based on the guideline 298 (77.5%) of PLWHA were eligible for CPT. A total of 296 (77.1%) PLWHA were eligible for IPT; but only 97 (25.3%) on were IPT.

The reduced morbidity and mortality associated with CPT of HIV-positive TB-patients has now been confirmed in studies from West Africa, Malawi, South Africa and Uganda [5]. These benefits have strong implications for TB control in areas of high HIV-prevalence. On the other hand, IPT has a significant protective effect on those HIV positive clients (without active TB) by preventing the development of TB disease [5].

Among the screened 97 (25.3%) of patients were on INH. This was greater than the consultancy review report that means only 98 (4.2%) of patients were placed on IPT. The number in the consultancy review report was low as they mentioned in the report due to hesitation among the staff to decide to place the patients on IPT. The staffs were not confident enough to rule out TB clinically [24]. In resource-limited countries, commonly employed diagnostic methods (e.g., sputum smear microscopy or chest radiography) for TB disease fail to identify many HIV-infected patients with TB-disease [36].

TB/HIV advisory committee (THAC) established at all levels should give technical support to the respective levels of TB and HIV control programme offices. THAC at federal level shall provide technical support to FMOH/FHAPCO in the areas of: overall planning of TB/HIV collaboration, developing training strategies and materials, human resource development and retaining strategies, TB/HIV communication strategies and material development, community mobilization and participation in TB/HIV collaboration, establishment and maintenance of

TB/HIV surveillance system, operational research and monitoring and evaluation. Although THAC perform the above activities it is not functional at hospital, zonal and regional levels

National TB/HIV implementation guidelines stress the importance of having the TB and HIV/AIDS program teams organize regular review meetings at different levels of the health System––twice per year at the national, regional, and zonal levels; however, there was no review meeting held on all management levels in 2002 E.C.

Supportive supervision is an important tool for proper management of resource at all levels health system involved in the implementation of TB/HIV collaboration activities. The national TB/HIV implementation guidelines recommend supportive supervision at national level to support regions and selected sites at least once per year. At regional and zonal should visit each TB/HIV site at least twice a year. Even though the national TB/HIV guidelines recommend supportive supervision; there was no supportive supervision at all management levels in the whole year taking 2002 E.C as reference.

VII. STRENGTHS AND LIMITATION OF THE STUDY

VII. STRENGTHS AND LIMITATION OF THE STUDY

This study has the following strengths:

- In this study a combination of quantitative and qualitative methods were used in complementing one the other.
- This is the first study which assesses the programme activities of TB and HIV since major public health importance in our country.
- For cross-sectional survey data obtained from patient records none response bias was not a problem in this study.
- We used different registers and charts for triangulation of data.

Limitation of the study:

- The study suffered from data incompleteness from the records.
- The data on the medical records of the patient which may or may not the actual situation of the patient.

VIII. CONCLUSIONS AND RECOMMENDATION

8.1 conclusions

The results indicate a need for regular screening of HIV patients for TB and improvement of case detection of TB in ART clinic. Chronic fatigue, cough, night sweat and fever were the most frequently appeared symptom complexes among the evaluated TB patients. IPT & CPT were not provided for all eligible PLWHA according to FMOH and WHO TB/HIV implementation guidelines. There was no TB screening for VCT clients who were tested positive at VCT clinic. The referral and linkages of HIV patients to ART clinic with intra-facility and inter-facility were through referral slips; however, most of referral slips were not documented with patient's charts. Pediatric INH was out of stock during data collection.

8.2 Recommendations

- Routine TB screening for all VCT clients who are tested HIV positive is recommended to screen for TB at VCT clinic.
- IPT & CPT should be provided for all eligible PLWHA according to FMOH and WHO TB/HIV implementation guidelines.
- TB/HIV technical committee (THTC) at Hospital, Zonal and Regional level should be re-organized according to national TB/HV Guidelines.
- Periodic Monitoring and evaluation of TB and HIV programmes should be strengthen at all level from health facilities to FMOH and partners who are involved TB, HIV, and TB/HIV. Regular supportive supervision quarterly, bi-annually and annually at program management level.
- Refreshment training for health professional at patient management level
- Referral slips should be documented appropriately with patient's charts.
- Supply should be available before out of stock.

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10. ANNEXES

Annex I-Information sheet

Addis Ababa University

School of graduate studies

Department of Health Informatics

Hello! My name is _____. I am working for master Degree at Addis Ababa University, School of Public Health, and Department of Health Informatics. The purpose of this study is to evaluate the screening and referral linkage in HIV patients attending for chronic care and support in Butajira hospital, Southern Nations, Nationalities and Peoples Region (SNNPR).

In order to attain this goal, you are kindly requested to provide your genuine reflection and provide patient's documents for data collectors, supervisor and investigator in ART and TB clinics of the hospital. On this questionnaire clients name will not be written; and I am going to collect clients' information regarding screening for TB and related to the referral system from registers and formats. In which all information gathered from ART units and TB clinics will be kept completely confidential and anonymous.

Annex – II: Questionnaire for the Cross-sectional assessment

Introduction: My name ----------working in ART clinic of Butajira Hospital. I am data collector in this study to assess what the Evaluation of TB Screening and Referral Linkage among HIV-Patients Attending ART Clinic of Butajira Hospital. This study will be conducted by AAU, Health Informatics department in collaboration with Butajira Hospital. On this questionnaire clients name will not be written; and I am going to collect clients' information regarding screening for TB and related to the referral linkage from registers and formats. In which all information gathered from ART units and TB clinics will be kept completely confidential and anonymous.

Code Number ----------

Data collector Name----------Supervisor Name----------

Date of data collection ----------

TB Referral-----/-----/------/, ----------

(Referral date and location, "No" if not referred)

Section I Socio-demographic characteristics

101	Age (in complete year)	___ year
102	Educational level	1) Illiterate 2)Read and write 3) Primary 4) Secondary 5)Diploma and above 6) Not started (2-5 years)
103	Sex	1. Male 2. Female
104	Current marital status	1. Married 2. Single 3. Divorced 4. Widowed 5. Separated
105	Religions	1. Orthodox Christian 2. Protestant 3. Catholic 4. Islam 5. Other (specify) .....

Section II pre-ART Register

No	Questions	Coding category
201	Date enrolled (day/month/year, EC) as pre-ART	____/___/_____
202	If transferred to ART Register, date ART	____/___/_____

	started	
203	Did client start INH?	1. Yes 2. No
204	If the client started (day/month/year, EC)	____/____/_____
205	Did client start co-trimoxazole?	1. Yes 2. No
206	If the client started (day/month/year, EC)	____/____/_____
207	Is client on treatment of TB?	1. Yes 2. No
208	If the client started (day/month/year, EC)	____/____/_____

Section III ART Register

No	Questions	Coding category
301	Earliest CD_4	_____ /mm^3 ;Date ____/____/____
302	Original ART regimen	_____
303	Did client change to original regimen?	1. Yes 2. No
304	If yes, first change _____, Date ____/____/____	second change: _____ Date ____/____/____

Section IV HIV care /ART follow-up Form

No	Questions	Coding category
401	Latest CD_4	_____ /mm^3 ;Date ____/____/____
402	Frequency of TB Screen (TB status)	1. Always 2. Never 3. _____ times

	(Remember to complete INH ,Co-trimoxazole and TB Treatment –section II above)	
403	Follow up date (dd/mm/yy)	_____/____/_____
404	WHO staging	1. I 2. II 3. III 4.IV
405	Did client screen for TB every visit?	1. Yes 2. No
406	Did the client on INH prophylaxis? Specify months Rx Confirm with section- II NO 203	1. Yes 2. No
407	If yes, months on treatment	_____ months
408	Reason for regimen change Q303?	1. Toxicity /side effect 2.pregnancy 3.due to new TB 4.New drug available. 5. Drug out of stock 6. Clinical failure 7. Immunological failure 8. Risk of pregnancy 9.virologic failure 10. Other reason _____
409	Number of months on ART follows up? Refer section II Q202	_____ months
410	Occurrence of OI	1. Zoster 2. Bacterial pneumonia 3. PTB 4. ETB 5.Diarrhea 6. PCP 7. CNS Toxoplasmosis 8. Crypt meningitis 9. Other _____

Section V ART Clinical Intake

No	Questions	**Coding category**
501	Client is referred	1. within the hospital 2. Outside the hospital
502	If the Client referred within the hospital From…..	1. In-patient 2. Medical outpatient 3. TB clinic 4. STI 5. PMCT 6. General VCT 7. Pediatric outpatient 8. Other outpatient

503	If the Client referred outside the hospital From…..	1. Health center 2.Public Hospital 3. Private Hospital 4. NGO/FBO Hospital 5. Private Clinic 6. Self-Referred 7. Community Referred 8. Other 9. Unknown
504	Past opportunistic illness history	1. Fever 2. PCP 3. Pneumonia (recurrent) 4. EP-TB 5. Wasting Syndrome
505	Past TB smear result	1. Not done 2. Negative 3. Positive; Date of smear_____
506	Past TB treatment	1. Yes 2. No
507	If the Pt treated in the past	1. Not completed 2. Completed; If completed, date started:_____
508	TB symptom screen	1. Chronic cough 2. Dyspnea 3. Hemoptysis 4. Chronic fatigue 4. Weight loss 5. Night sweat 6. Fever > 1 month
509	In physical exam- lymph nodes	1. Normal 2. Abnormal 3. Missing
510	In physical exam- chest	1. Normal 2. Abnormal 3. Missing
511	In clinical review TB defining symptom	1. Unexplained fever 2. Weight loss > 10% 3. PTB 4. EP-TB 5. PCP
512	Interpret WHO Stage (choose highest stage even one)	1. I 2. II 3. III 4. IV
513	Did the patient need evaluation for cough or TB?	1. Yes 2. No
514	If yes, what type of evaluation was done?	1. Tb sputum smears 2. Chest X-Ray 3. Empiric Antibiotics 4. FNA
515	Family members -spouse of TB	1. Not asked 2. Negative 3. Positive 4. Unknown
516	If positive; was/is on TB	1. Yes 2. No

	treatment?	

Sections VI Treatment Card/Investigations / Clinical Notes

No	Questions	Coding category
601	Chest X-ray Result	1. Normal 2. Abnormal 3. Not found
602	Sputum Smear	1. All Negative 2. Any positive 3. Not found

Annex-III: In-depth interview with health care Providers and coordinators.

(Questions & Instructions for the Interviews with health care provider and coordinators)

I. Patient management level (Hospital)

1. Name of health workers _____profession _____ age __ sex __ Responsibility_____
2. How long have you served with current position _____
3. Do you have other duties in the hospital?
4. Are lab technicians, TB/HIV focal person and ART nurses trained on TB/HIV? Yes/No _____
5. If no why? _____
6. Does your hospital have specific services provision for screening of TB in ART clinic? Yes/ No _____ if no; where do screening takes place? _____
7. Is there a referral link between TB/HIV and ART clinics? Yes /No _____

   If yes how they communicate each other?
8. Number staffs trained on TB/HIV in the hospital _____

9. Do staffs at OPD, VCT, TB clinic and ART know WHO-recommended TB screening questions? Yes/No _____; if yes ask the question 1staff at each department.

10. Number of full time service providers at TB clinic (current) _____

11. Are there link all HIV-infected TB suspects to TB diagnosis and TB treatment using DOTS? Yes/ No _____. If no why?

12. How do TB/HIV and HMIS focal persons communicate each other?

13. Who conduct external quality control HIV testing and frequency _____ ____

14. Is TB screening for HIV patients taking place at VCT? Is this data reported to the Zonal health department and RHB?

15. How is the distribution of HIV and TB collaborative services in your hospital, especially access to: TB screening and IPT provision?

_____

16. Is there VCT HMIS at VCT/PMTCT (client record and referral formats) available? Yes/No _____; if yes check.

17. Is there a separate TB/HIV collaboration referral log book available at VCT/PMTCT clinics? Yes/No _____; if yes check.

18. Are all clients referred for active TB case detection and IPT recorded on the log book? Yes/No _____; if yes check.

19. How do you evaluate systems for patient with HIV and TB and identify possible mechanisms for information sharing between ART and TB programs.

20. Number of registered TB patients who are tested for HIV _____

21. Number of HIV-positive TB patients who receive (at least one dose) of co-trimoxazole preventive therapy (CPT) during their TB treatment, _____
22. Number of HIV-positive registered TB patients who started on ART or continue previously initiated ART, during or at the end of TB treatment _____
23. How do you report the number of PLWHA screened for TB, number of active TB, free from TB, in the TB/HIV quarterly reporting format?
24. What are the strengths of in your hospital?
25. The most common challenges the hospital faced when TB screening in ART clinic?
26. What do you recommend to improve screening of TB in your hospital?

II. Programme management level

1. Name of TB/HIV coordinators _____
2. Is there a TB/HIV technical Committee (THTC): Yes/No
3. When was THAC/THTC established? _____
4. When did THAC/THTC meet last? _____
5. How many meetings did THAC/THTC conduct in the last 6 months?

   _____
6. Does THAC/THTC document the minutes and record? Yes/No

   _____
7. Is there trained person on TB/HIV? Yes/No _____
8. Was there any TB/HIV training given during the last quarter?

   Yes/No_____
9. Did annual TB/HIV programme evaluation held on? Yes /No _____
10. If yes what was the strength and weakness? _____

Annex IV:Unit register for HIV positive clients without active TB taking (IPT), FMOH

number	Name of the Client	Sex: M/F	Referred from VCT/PMTCT/OPD/ WARD/STI CLINC/ OTHER/	CD4 cell count	Total Lymphocyte Count (TLC)	IPT monthly dose						ART	CPT Yes/N
	Father's name	Age in years	Screened yes/no			1	2	3	4	5	6	Yes/No	Date started

Annex V: TB/HIV referral form

Patient name _____Date: _____
Patient TB ID number _____
Disease site: Pulmonary _____ Extrapulmonary _____
Referred from _____ (name of TB treatment clinic/health facility)
Date HIV tested positive _____
Name of referral clinician: _____
Referred to _____(Name of HIV care clinic/health facility, VCT, PMTCT)
Cotrimexazole started: yes no
Date started:_____
Current TB medications: (Check all that apply)
Date TB treatment started:____/____/_____
__ Isonaizid ___ pyrazinamide ___streptomycin __ rifampicin
___ethambutol ___ other: _____

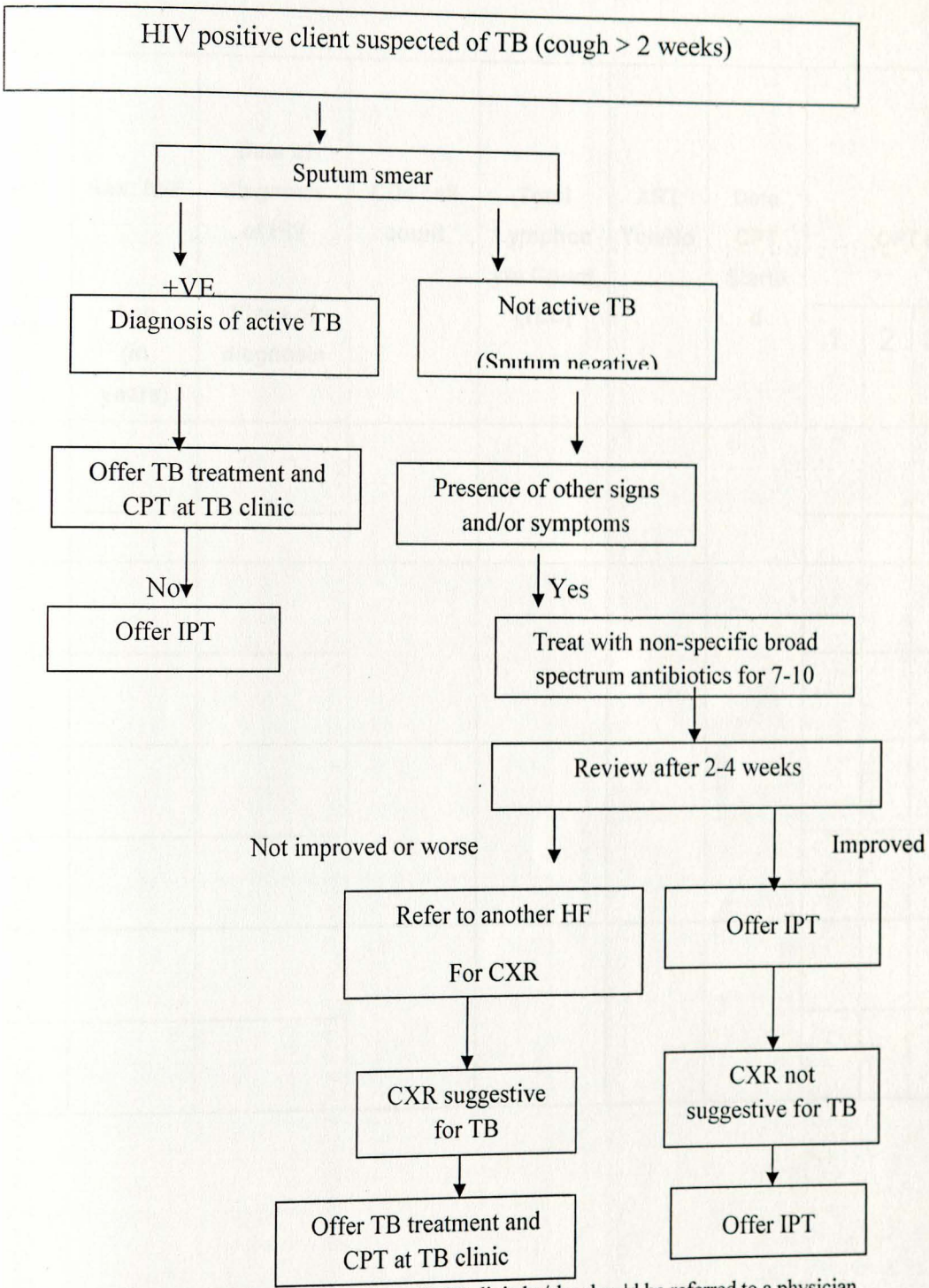
Note from HIV Care Clinic/Facility to TB clinic/facility (Name of clinic :_____)
Name of clinician:_____
Date: _____

Cotrimoxizole started: yes no
Date started:_____
Antiretrovial medications prescribed:
___ zidovudine (AZT or ZDV) ___ didanosine (ddI) ___nelfinavir (NFV) ___ stavudine (d4T) ___ abacavir (ABC)
___ saquinavir/ritonavir (SQV/r) ___ lamivudine (3TC) ___ tenofovir (TDF)
___ nevirapine (NVP) ___ Indinavir/ritonavir (IDV/r) ___ efavirenz (EFV)
___ lopinavir/ritonavir (LPV/r)

Name of referring health worker _____ Signature _____

To confirm successful referral of patient, cut and send this portion.
Patient name _____ I.D number _____

Annex VI: Algorithm for diagnosis of TB in HIV patients when chest X-ray is not available at the health facility.



* Whenever the HIV client is suspected of TB by the counselor at VCT clinic he/she should be referred to a physician, otherwise, if the HIV patient is already under care of HIV Care clinic, he/she should be directly sent to the laboratory for the sputum smear test [18].

Annex VII: TB/HIV Unit Register for HIV positive TB patients on CPT, MOH

nit TB umber	Name of the patient	Sex: M/F	Date of diagnosis of HIV	CD4 cell count	Total Lymphocyte Count (TLC)	ART Yes/No	Date CPT Started	CPT monthly
oreda TB umber	Father's name	Age (in years)	Place of diagnosis					1 2 3 4

Annex XIII: TB/HIV Collaboration
Immediate feed back on supportive supervision

Date of visit _____

Name of Health Facility _____

Region _____ Zone _____ Woreda _____

Visiting Team Members

Name	Signature
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Health workers(s) in charge of the TBL services

1. _____	_____
2. _____	_____
3. _____.	_____

Summary of the findings

Strengths

_____
_____
_____

Weaknesses

_____
_____
_____
_____

Problems

_____
_____
_____

Recommendations

_____
_____
_____
_____

N.B. Please keep this note and present it to all subsequent visiting teams

Annex IX: TB/HIV quarterly report form, FMOH

IDENTIFYING INFORMATION

Region _____ Zone _____ Woreda /Health Facility_____ Date _____Quarter_ _____Year_____

II. Data on VCT clients:

Number of clients HIV counseled & tested: Male ____ Female _____ Total ____

HIV Positive: Male ____ Female ____ Total _____

Age category (in years) of those HIV tested positive 0-14: #. _____ 15-24: # _____25-34: # ____ 35-44: #____ 45+: #. _____

Number of clients referred from VCT unit for TB screening _____ # HIV positive_____ , # HIV negative_____

Number of clients referred from the VCT unit and screened for TB_____

Number of HIV positive clients diagnosed TB _____

Number of HIV positive clients free from TB _____

Number of HIV positive clients with out active TB put on IPT: 0-14: #. _____15-24: # _____ 25-34: #. _____ 35-44: #. _____ 45+: #. _____

III. Data from the TB clinic:

Number of TB patients counseled: Male ____ Female ____ Total ____

Number of TB patients HIV tested: Male ____ Female ____ Total ____

HIV + TB patients: Male _____ Female ____ Total ____ 0-14: #. _____15-24: # _____ 25-34: #. _____ 35-44: #. _____ 45+: #. _____

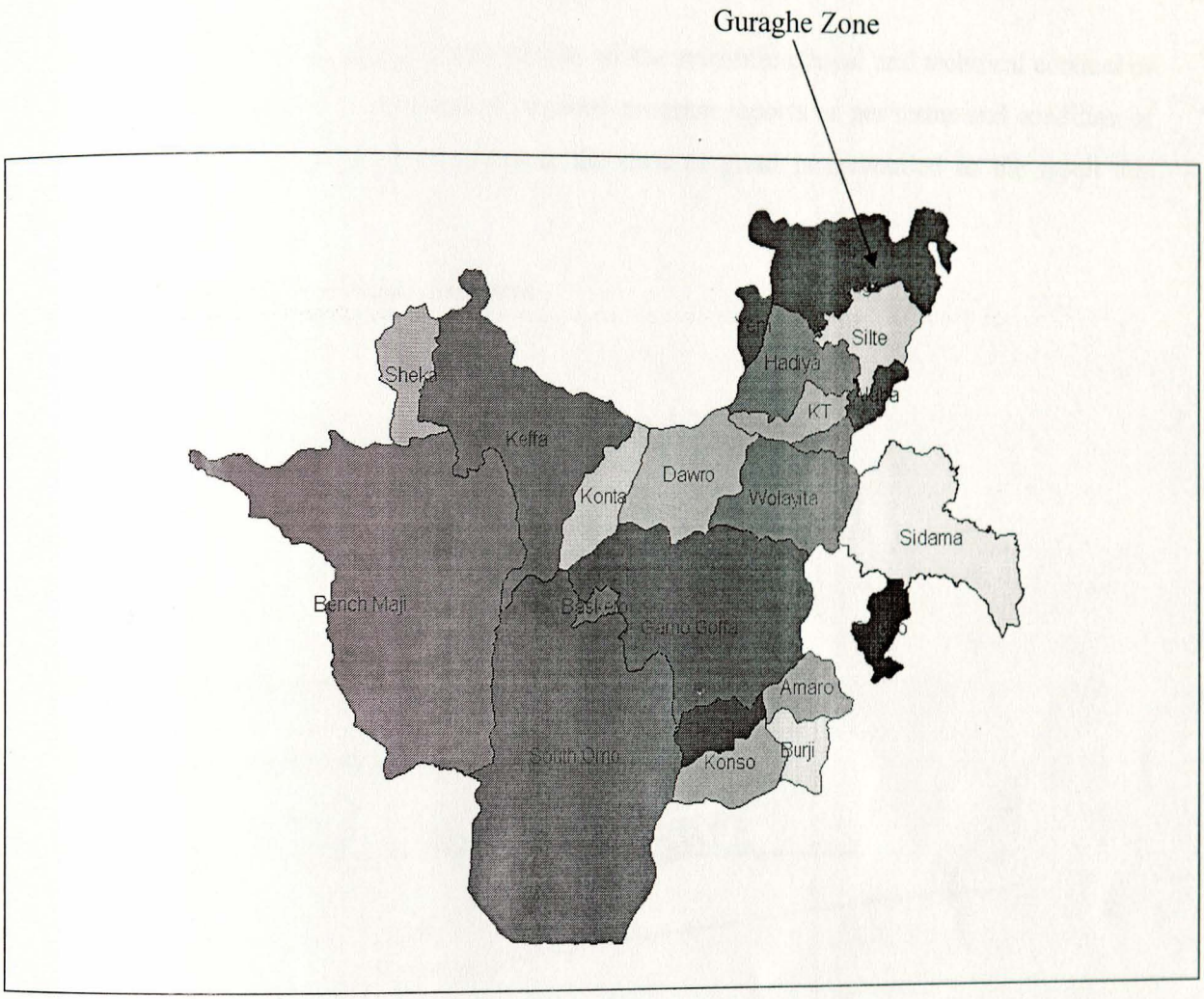
Number of HIV + TB patients on CPT _____

Number of HIV +TB patients on ART _____

Name of Coordinator _____Position _____Quarter _____ ____Year _____ (E.C.)

Signature _____

Annex X: Map of Study area, SNNPR, Guraghe Zone


Guraghe Zone
Silte
Hadiya
Shek
KT
Kelfa
Dawro
Konta
Wolayita
Sidama
Bench Maji
Basketo
Gamo Gofa
Amaro
South Omo
Konso
Burji

Annex XI: Assurance of Principal Investigator

The undersigned agrees to accept responsibility of the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and condition of the Research publication office in effect at the time of grant is forwarded as the result this application.

Name of the investigator: Shemsedin Jemal

Date June 29/2010 Signature

Approval of the primary Advisor

Name of the primary advisor Dr. Wakgari Deressa (PhD)

Date 29 June 2010 Signature

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Addis Ababa University
Faculty of Informatics
Department of Health Informatics

Date: March 5, 2010
Ref. No. FOI/HIS/211/10/2002

To Whom It May Concern

Subject: Letter of Ethical Clearance

This is to kindly inform your office that the Joint Academic Commission of Addis Ababa University (Medical and Informatics Faculties) has approved the thesis research proposal of student Shemsedin Jemal, a prospective graduate of Health Informatics, entitled "Evaluation of TB screening among people living with HIV/AIDS attending ART clinic in Batajira Hospital and referral linkage within the Hospital's ART and TB clinics."

I appreciate your assistance on the research work.

Dereje Tolosa (PhD)
Head, Department of Information Science

✉: 1176 ☎:251- (11)-122 2[illegible]30 Ext 167 FAX: 251-(11)-1239729

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South Nations Nationalities and People's Regional
State Health Bureau

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ለ ጉራጌ ጤና መምሪያ

ወልቂጤ

ለ ቡታጀራ ሆስፒታል

ቡታጀራ

ጉዳዩ ፣ ለጥናት ስለሚደረግ ትብብር

ከአዲስ አበባ ዩኒቨርስቲ የሄልዝ ኢንፎርማቲክስ የ2ዲግሪ ተማሪ የሆኑት አቶ ሸምሱዲን ጀማል በቡታጀራ ሆስፒታል በሀረ ኤች አይ ቪ ህክምና ተከታታዮች ውስጥ የተደበ ልዩታ ተማበርን ለመገምገም ጥናት ለማድረግ ከአዲስ አበባ ዩኒቨርስቲ የድጋፍ ደብዳቤ በማቅረብ ትብብር እንዲደረግላቸው ጠይቀዋል።

ስለሆነም በላሙያው የሚያደርጉት ጥናትና ምርምር ጠቀሜታው የጎላ ስለሆነ ትብብር እንዲደረግላቸው እናሳስባለን ።

ኤች.አይ.ቪ. ቪ/ኤድስን አብረን እንከላከል!!

Melekia Shammore
የጤና ምርምርና ቴክኖሎጂ ሽግግር
ድጋፍ የሥራ ሂደት ባለቤት
Health research and technology
transfer support process owner

ግልባጭ፣
- ለ አቶ ሸምሱዲን ጀማል
- ለ ጤና ቢሮ ኃላፊ ጽ/ቤት
- ለ ጤና ምርምርና ቴክኖሎጂ ሽግግር የሥራ ሂደት
  ሃዋሳ

Southern Nations' Nationalities Peoples' Regional Government Health Bureau

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