Bridging the Gap
Implementing tuberculosis and HIV/AIDS collaborative activities in the Northwest Region of Cameroon

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2011
DEDICATION

This thesis is dedicated to the blessed memories of my father (Njozing George Tikum), and brother (Njozing Edward Anoke). May your gentle souls rest in perfect peace.
“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. It does not have to be this way.”

(Nelson Mandela; 2004)
Abstract

Introduction
The human immunodeficiency virus (HIV) epidemic has led to the upsurge of tuberculosis (TB) infection globally, but most especially in areas with high HIV prevalence. In the past, there was lack of a coordinated global and national response between TB and HIV programmes to curb the devastating impacts of both infections. However, the ProTEST Initiative piloted in sub-Saharan Africa in 1997 demonstrated that TB and HIV programmes could collaborate successfully in delivering joint services. This prompted the development of the WHO interim policy on collaborative TB/HIV activities in 2004, aimed at reducing the burden of TB and HIV in populations affected by both infections. This thesis explores how collaborative activities between TB and HIV programmes have been established in Cameroon and implemented in the Northwest Region. It also highlights the achievements and constraints in delivering joint services to TB patients co-infected with HIV.

Methods
The study was conducted in the Northwest Region, one of the 10 regions of Cameroon with the highest HIV prevalence. The study uses health system research combining qualitative and quantitative methods to explore the research objectives. Qualitative methods were used to capture the perspectives of: i) the service providers; key informants from the central, regional and district levels concerned with the collaboration process and in delivering HIV services to TB patients, and ii) TB patients regarding HIV testing as an entry point to HIV services. Quantitative methods were used to ascertain TB patients’ access to HIV services provided for by the collaboration.

Results
The study demonstrated that although there were varying levels of collaboration between TB and HIV programmes from the central to operational level in the health system, delivering joint services was feasible. Furthermore, despite the challenges TB patients faced in testing for HIV, overall implementing TB/HIV collaborative activities increased TB patients’ acceptability and accessibility to HIV services. These were facilitated by the improved collaboration at the operational level, and enhanced service provider-patient alliance which was instrumental in building patients’ trust in the health system. Collaboration also led to cross-training and teamwork between staffs from both programmes, and improved networking between service providers and other actors involved in TB and HIV care. Nevertheless, there were health system constraints including inadequate leadership and management, shortage of human and infrastructural resources, frequent interruptions in the supply of essential drugs and laboratory materials.

Conclusion
TB/HIV collaborative activities have improved service delivery and TB patients’ access to HIV services. Nonetheless, appropriate stewardship which guarantees joint planning, monitoring and evaluation of essential activities, and accountability at all levels in the health system is invaluable. Besides, the identified health system constraints which could adversely influence effective joint service delivery and a sustainable collaboration deserve due appraisal.

Keywords: Tuberculosis, HIV/AIDS, collaborative activities, Northwest Region, Cameroon.
Abstract in French

Introduction

L’épidémie du virus de l’immunodéficience humaine (VIH) a conduit à une augmentation globale de la tuberculose (TB), particulièrement dans les régions à forte prévalence du VIH. Il y avait par le passé un manque de coordination tant sur le plan mondial que national, des programmes de lutte contre la TB et le VIH pour freiner les effets dévastateurs liés à la co-infection des deux pathogènes. Cependant, l’initiative pilote “ProTEST” conduite en 1997 en Afrique sub-saharienne a montré que les programmes de lutte contre le VIH et la TB pouvaient collaborer avec succès en combinant leurs services. Cette étude pilote a inévitablement incité à un changement de politique du bureau intérimaire a l’Organisation Mondiale de la Santé (OMS), de lutte contre le VIH/TB à mettre sur pieds en 2004 des objectifs pour la réduction de l’impact du VIH/TB parmi les populations atteintes des deux infections. Cette thèse explore comment la collaboration entre les activités des programmes de lutte VIH/TB a été établie au Cameroun, et comment son application se fait dans la région du nord ouest. Il est également mis en exergue et les réalisations les difficultés que rencontrent les services combinés lors de la dispensation des soins aux malades de TB avec une coïncidence au VIH.

Méthodes

L’étude a été faite dans la région du nord ouest, une des 10 régions du Cameroun, avec le taux de prévalence au VIH le plus élevé. L’étude utilise le système de recherche en santé combinant des méthodes qualitatives et quantitatives pour explorer les objectifs de la recherche. Les méthodes qualitatives ont été utilisées pour enregistrer les données suivantes: i) centre offrant les services combinés; les personnes en charge au niveau central, régional, et des districts, qui sont responsables de l’intégration au processus et qui d’autre part veillent a ce que les malades de TB bénéficient des services du VIH ; et ii) les malades de TB qui considèrent le dépistage du VIH comme porte d’entrée dans les services VIH. Des méthodes quantitatives ont été utilisées pour confirmer l’accès des malades de TB aux soins de services VIH offerts par la collaboration.

Résultats

L’étude a démontré que bien qu’il y ait plusieurs niveaux de collaborations entre les programmes de VIH et TB depuis le sommet jusqu’à la base du système de santé, la provision de services combinés est faible. Malgré les difficultés rencontrées par les malades de TB pour avoir accès au dépistage du VIH, l’application en somme de la collaboration des activités entre les programmes de VIH et de TB a augmenté l’acceptation et l’accessibilité des malades de TB aux services de VIH. Ceci fut facilité par l’amélioration de la coopération au niveau des opérations des deux programmes permettant ainsi la facilitation de l’établissement d’une alliance entre le personnel de soin et le patient, alliance qui fut primordiale dans l’élaboration du rapport de confiance que le malade doit avoir à l’endroit du system de santé. La collaboration a également conduit à un travail d’équipe et une formation croisée entre les équipes des deux programmes, il a été également établi une amélioration du réseau d’échange entre les personnels de soins et toutes personnes actives dans le secteur du VIH et TB. Néanmoins, il a été relevé des défis dans le système de santé
telle une insuffisance dans le leadership et la gestion de fréquente interruption dans la chaine de distribution des médicaments essentiels et du matériel de laboratoire.

**Conclusion**

La collaboration des activités des programmes VIH/TB a amélioré la qualité des soins et services avec pour résultante une meilleure accessibilité des malades de TB aux services de VIH. Néanmoins, une conduite appropriée qui garantie une planification mixte, une évaluation et un suivi des activités essentielles, ainsi qu’une gestion fiable a tous les niveaux du système de santé est indispensable. Outre, les difficultés liées au système de santé identifiées par cette étude et qui méritent une évaluation, du fait qu’elles pourraient affecter négativement l’application effective du but recherché et la collaboration durable entre les deux services,

*Mots clés:* Tuberculose, VIH/SIDA, activités de collaboration, Région du Nord-ouest, Cameroun
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# Acronyms

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<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>ART</td>
<td>Anti-Retroviral Therapy</td>
</tr>
<tr>
<td>BCG</td>
<td>Bacille Calmette-Guérin</td>
</tr>
<tr>
<td>CBCHB</td>
<td>Cameroon Baptist Convention Health Board</td>
</tr>
<tr>
<td>CD4</td>
<td>T-helper cells</td>
</tr>
<tr>
<td>CENAME</td>
<td>National Centre for Essential Drugs Procurement and Medical Disposables</td>
</tr>
<tr>
<td>CPT</td>
<td>Co-trimoxazole Preventive Therapy</td>
</tr>
<tr>
<td>CTG</td>
<td>Central Technical Group</td>
</tr>
<tr>
<td>DOTS</td>
<td>Directly Observed Therapy, Short-course</td>
</tr>
<tr>
<td>Global Fund</td>
<td>Global Fund to fight AIDS, Tuberculosis and Malaria</td>
</tr>
<tr>
<td>GPA</td>
<td>Global Programme on AIDS</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>IEC</td>
<td>Information, Education and Communication</td>
</tr>
<tr>
<td>IPT</td>
<td>Isoniazid Preventive Therapy</td>
</tr>
<tr>
<td>LTBI</td>
<td>Latent Tuberculosis Infection</td>
</tr>
<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MDR-TB</td>
<td>Multiple Drug Resistant-Tuberculosis</td>
</tr>
<tr>
<td>MOPH</td>
<td>Ministry of Public Health</td>
</tr>
<tr>
<td>NACP</td>
<td>National AIDS Control Programme</td>
</tr>
<tr>
<td>NTCP</td>
<td>National Tuberculosis Control Programme</td>
</tr>
<tr>
<td>OI</td>
<td>Opportunistic Infection</td>
</tr>
<tr>
<td>PITC</td>
<td>Provider-Initiated Testing and Counselling</td>
</tr>
<tr>
<td>PLWHA</td>
<td>People Living with HIV/AIDS</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>UNAIDS</td>
<td>Joint United Nations Programme on HIV/AIDS</td>
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<tr>
<td>VCT</td>
<td>Voluntary Counselling and Testing</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
Glossary

Approved treatment centre (ATC): An ATC is equipped with a CD4 machine to perform immunological tests, and also carries out biological tests associated with HIV management. Additionally, an ACT serves as a mentor and reference centre for HIV management units at the district level, assists in capacity building and oversees the decentralization process in their geographical area of competence [1].

CD4 count: When HIV enters the human body, it infects specific white blood cells in the immune system known as CD4 cells or helper T-cells. These are important parts of the body’s immune system that fight infection and disease. The CD4 count measures the number of CD4 cells in a sample of blood and assesses the immune system, the stage of HIV infection, guides treatment, and predicts how the disease may progress [2].

CD4 machine: The models commonly used in the country are: i) The BD FACSCount™ Flow Cytometer, is a medical equipment designed to provide absolute and percentage results of CD4 T-lymphocytes to stage progression of HIV/AIDS, guide treatment decisions for HIV-infected persons, and evaluate the effectiveness of therapy in a wide range of laboratory settings [3]; ii) Guava EasyCD4™ designed by Guava technologies.

First-line ART regimen: This is the initial regimen prescribed to HIV-positive patients who meet the eligibility criteria (clinical and laboratory) for commencing ART. WHO currently recommends one non-nucleoside reverse transcriptase inhibitor and two nucleoside or nucleotide reverse transcriptase inhibitors [4].

Global Plan: The Stop TB Partnership, established in 2000 under the auspices of WHO aims to eliminate TB as a public health problem and, ultimately, to secure a world free of TB. The Partnership developed the first Global Plan to Stop TB for 2001–2005. The second Global Plan (2006–2015) has as part of its targets for 2015, offering HIV testing to all TB patients, enrolling all TB patients co-infected with HIV on CPT and ART, and providing IPT to all eligible PLWHA [5].

HIV/AIDS: HIV is a retrovirus that infects cells of the immune system, destroying or impairing their function. It is transmitted through unprotected sexual intercourse, transfusion of contaminated blood, sharing of contaminated needles, and between a mother and her infant during pregnancy, childbirth and breastfeeding. As the infection progresses, the immune system becomes weaker, and the person becomes more susceptible to infections. The most advanced stage of HIV infection is AIDS [6].

Latent TB infection (LTBI): People may become infected with the TB bacilli but their immune system is able to fight the infection and so they do not feel sick, have no symptoms, and are not infectious. Such individuals will have a positive result from a TB test and can develop TB later in life (reactivation), if their immune system becomes weak [7].

Management units (MU): A MU is located at the district level and is supplied with only first-line ART regimens. It normally refers complicated HIV cases and patients who require second-line regimens to its mentor ATC. However, some MUs can also perform immunological and biological tests associated with HIV management [1].
Multiple drug resistant tuberculosis (MDR-TB): is caused by strains of TB that are resistant to at least Isoniazid and Rifampicin, the most effective anti-TB drugs. MDR-TB results from either primary infection with resistant bacteria or may develop in the course of a patient’s treatment [8].

Opportunistic infection (OI): An OI is an infection that takes advantage of a damaged or weakened immune system caused either by immunosuppressive diseases or states (e.g. HIV). In most cases, an OI is caused by micro-organisms that are common and may have lived dormant in the body for many years, but later become reactivated. TB is known to be the commonest OI in HIV-infected persons [9].

Provider-initiated testing and counselling (PITC): refers to HIV testing and counselling which is recommended by health care providers to persons attending health care facilities as a standard component of medical care. The major purpose is to enable specific clinical decisions to be made and/or specific medical services to be offered that would not be possible without knowledge of the person's HIV status. [10].

Second-line ART regimen: This is the regimen prescribed to HIV-positive patients who have had a failure in the first-line regimen. The failure could be clinical, immunological or virological. WHO currently recommends one ritonavir-boosted protease inhibitor and two nucleoside or nucleotide reverse transcriptase inhibitors [4].

Tuberculosis (TB): Tuberculosis is an ancient and widespread infectious disease which affects both humans and animals. There are three main species: *Mycobacterium tuberculosis*, *Mycobacterium africanum* and *Mycobacterium bovis*. The vast majority of TB cases occur after exposure to *M. tuberculosis* and there are two types of TB: pulmonary (affecting the lungs) and extra-pulmonary (affecting other organs of the body) [11]. The discussions in this thesis specifically refer to pulmonary TB.

Universal access: This is defined by WHO as coverage of at least 80% of the population in need of ART and/or interventions to prevent mother-to-child transmission of HIV [12].

Voluntary counselling and testing (VCT): Also referred to as client-initiated HIV testing and counselling involves individuals actively seeking HIV testing and counselling at a facility that offers these services. The focus of VCT is on individual risk assessment and management by counsellors, discussing the desirability and implications of taking an HIV test and the development of individual risk reduction strategies [10].
Original Papers

This thesis is based on the following four papers which will be referred to by their Roman numerals (I–IV) in the text.


II. Njøzing NB, Edin K, Hurtig AK: “When I get better I will do the test”: facilitators and barriers to HIV testing in Cameroon with implications for TB and HIV/AIDS control programs. SAHARA-J, 2010, 7.4*

III. Njøzing BN, Edin KE, San Sebastián M, Hurtig AK. “If the patients decide not to tell what can we do?”. Voices from the frontline: TB/HIV counsellors’ dilemma on partner notification for HIV (submitted).


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**The article has been published in an open-access journal
Prologue

It is said that occurrences in peoples’ lives are twists of fate and mine have not been an exception. I am the “Benjamin” in a family of nine: 6 girls and 3 boys. My father (May his soul rest with the Almighty), who was a very dedicated Catholic Christian introduced me to the parish priest in our local church, where I later became a Mass servant. This I presuppose was the initiation process into the priesthood vocation which was the dream he had for me in life. I eventually attended a junior seminary that was a formation ground for the priesthood vocation. Then the first twist appeared!

During my last year in the junior seminary, the upsurge of juvenile hormones in my body brought about rebellion!! My interest in the sciences resulted in me being disinterested in the priesthood. It was my dream to become an engineer, but this decision enraged my late father. However, he eventually succumbed to my decision after the local priest made him to realise that parents are there to guide their children choose their rightful profession rather than imposing their wishes on them. Shortly after putting this misunderstanding to rest, came the next twist!

I came to know a humane in-law (Mé Etah-Akok) who soon after took over the role of a father and has since been my mentor. He guided and supported me to become a medical doctor amidst the hardships. After graduating from medical college in 1999, pursuing a residency in surgery became my primary objective while I served as a house officer in the University Teaching Hospital in Calabar, Nigeria. But then a third twist occurred!

Upon returning to Cameroon from Nigeria in 2001, I took up a job as a medical officer with the Cameroon Baptist Convention Health Board, a faith-based organization involved in health care delivery in the country. During my period of service, I developed a very cordial relationship with the Director (Prof. Pius Tih), co-incidentally a public health expert (who later became one of my co-supervisors in the PhD training). I was appointed the TB/HIV treatment officer in one of the renowned Health Board hospitals (Banso Baptist Hospital) in the Northwest Region of Cameroon. This position required that I receive further training in the TB/HIV management and I was eventually sent to Uganda to this effect. The training I received, the work experience and my interactions with the Director sparked off my interest in public health issues. However, to be actively engaged in the public health domain entailed acquiring the appropriate analytical and programmatic skills to be aptly prepared for the numerous challenges in the profession. I then seized the opportunity to pursue a Master’s Degree in Public Health at Umeå University in 2005. After completing the programme in 2006, I still felt a void in me if I did not put these acquired knowledge and skills into practice. Then the zeal surfaced particularly to explore why TB patients were generally reluctant to test for HIV in order to benefit from HIV services on offer from my personal experience in the region. This was guided by the absence of informed data on this topic to effect decision-making.

As I pondered on the above issues, the immediate challenge I faced was how to go about performing such studies under the umbrella of a PhD programme. Although I was convinced that Umeå
University provided a conducive environment to pursue this dream, there were real and perceived uncertainties on how to go about the application process. Firstly, I was made to understand that PhD positions were customarily granted to students whose local universities had a working collaboration with the Department of Epidemiology and Global Health. I had no affiliation with any universities back home. Secondly, would I be able to find a supervisor interested in a student who had no academic affiliations? Finally I decided to take the bull by the horns and met with one of the faculties in the Department (Anna-Karin Hurtig, who eventually became my main supervisor) and spelt out all my concerns. This encounter I believe has been the last milestone so far in both my academic and professional careers. She allayed all my worries and accepted not only to supervise me but also contribute to the development of my career.

These milestones in my life have to a large extent shaped who I am today, and enabled me to confront both the academic and professional challenges from different perspectives. It is from these different perspectives that I conducted this study.
Introduction

It has been demonstrated that tuberculosis (TB) and human immunodeficiency virus (HIV) infections potentiate the deleterious effects of each other both in terms of morbidity and mortality [13–15]. Despite the available evidence, it was not until 1997 that concrete attempts to explore collaboration between TB and HIV programmes were piloted via the ProTEST Initiative in Malawi, Zambia and South Africa [13, 16]. The Initiative established that TB and HIV programmes could collaborate successfully in joint service delivery. Subsequently, the World Health Organisation (WHO) in 2004, recommended collaborative activities between TB and HIV programmes in order to decrease the burden of both infections in populations affected by the co-epidemic. Cameroon being a high HIV-prevalent country, TB/HIV co-infection poses a significant threat to the population. This thesis explores how the gap between independently operated TB and HIV programmes (both structurally and functionally) has been bridged with regards to establishing TB/HIV collaborative activities nationally, and implemented in the Northwest Region (NWR). The NWR is one of the 10 regions in the country, and has the highest HIV prevalence nationally where TB/HIV co-infection poses a substantial threat to the general population.

The thesis begins with a presentation of the global TB and HIV/acquired immune deficiency syndrome (AIDS) epidemiology. The synergistic effects of both infections in increasing TB and HIV morbidity and mortality are also highlighted. Thereafter, a brief history of the global response to TB and HIV infection is presented together with the justification for concerted efforts to control both epidemics based on WHO’s interim policy on collaborative TB/HIV activities. This is followed by a presentation of Cameroon, including some important socio-demographic and health indicators; the organisation of the health system and the national TB and HIV/AIDS control programmes; the local strategies adopted to control TB and HIV infections; and the rationale for conducting the study. The next sections discuss the objectives of the study and the conceptual framework (health systems framework) used in the thesis, including its application to the various study objectives. The methods section describes the research setting including the study hospitals where the data were collected; the different methods in data collection and analysis using both qualitative (Grounded Theory, Content Analysis and Situational Analysis), and quantitative methods (descriptive statistics and logistic regression). The strengths and limitation of the studies based on the different methodologies employed are highlighted. Thereafter, the main findings of the studies are presented building on the applied framework of analysis. Relevant discussions regarding the implications of the findings are highlighted. This is followed by the conclusion and lessons learnt from the study. Finally, recommendations for policy-makers and programme managers involved in the implementation and scale-up of TB/HIV collaborative activities are discussed, together with suggestions for further research.
Tuberculosis and HIV: global burden and control

Global burden of TB and HIV

Tuberculosis

In 2009, it was estimated that 9.4 million new TB cases were recorded globally; 1.1 million (12%) of these were reported to be co-infected with HIV. Asia and Africa accounted for the majority of all the TB cases (55% and 30% respectively). In addition, there were an associated 14 million prevalent TB cases [5]. It was also estimated that 440 000 cases of multiple drug resistant TB (MDR-TB) were reported in 2008; with China, India, the Russian Federation, and South Africa having the highest number of these cases. In terms of mortality, 1.7 million TB deaths were reported amongst the new TB cases in 2009, which is equivalent to 26 deaths per 100 000 population. An estimated 1.3 million of these deaths occurred in HIV negative TB cases [5]. Additionally, 0.4 million (24%) of all the TB deaths were HIV-related [5].

HIV

Despite enhanced global efforts to curtail the HIV/AIDS epidemic, 2.6 million new HIV infections occurred globally in 2009. Although the overall incidence has fallen by more than 25% between 2001 and 2009 in 33 countries, 22 of which were in sub-Saharan Africa, the continent continues to bear the overwhelming brunt of the infection. An estimated 1.8 million new infections (almost 70% of the global cases), were recorded in sub-Saharan Africa in 2009 [17]. Despite the significant decrease in the number of new infections globally, the number of people living with HIV/AIDS (PLWHA) continues to rise. At the end of 2009, there were 33.3 million PLWHA; sub-Saharan Africa bore the majority of this global burden with 22.5 million cases (68%) [17]. Globally, the number of AIDS-related deaths have also declined steadily after the peak in 2004 (2.1 million) to an estimated 1.8 million in 2009. These figures above are explained by the increasing availability of antiretroviral therapy (ART), and HIV care/support services especially in low and middle income countries [17].

TB and HIV: a lethal synergy

HIV causes new TB infections to progress rapidly to the active disease [18]. In addition, it is known to be the most powerful risk factor for reactivation of latent TB infection (LTBI). It has been shown that people with LTBI infection and co-infected with HIV have a higher risk (>20 times) of developing active TB with increasing immunosuppression compared to HIV-negative people [14–15]. The risk for TB in PLWHA compared to the general population is 20–37 times higher depending on the HIV prevalence in the population [12]. In this regard, TB is the most common opportunistic infection (OI) in PLWHA, with approximately 30% of PLWHA said to be co-infected with TB, usually LTBI globally [13].

In addition to the adverse effect of HIV on TB, an adverse effect of TB is suggested by studies which show that the host immune response to Mycobacterium tuberculosis, the causative agent of TB enhances HIV replication in vivo [19] and in vitro models [19–20] which may accelerate the natural progression of HIV infection. TB is also the commonest cause of morbidity and mortality
in PLWHA in Africa and a significant cause globally [11]. It is also documented that PLWHA, and co-infected with active TB have higher early mortality compared to those without TB [21–24].

Global policy responses and achievements

Global TB control

The aim of TB control is to reduce morbidity, mortality and transmission of the disease, while preventing the development of drug resistance strains of \textit{M. tuberculosis}. The essential strategies to control TB include: i) preventing the infection, ii) stopping the progression from latent to active TB, and iii) treating the active disease [11]. Prior to the development of anti-TB drugs, TB control focused mainly on prevention\textsuperscript{1} [25]. The discovery of anti-TB drugs in the 1940s revolutionised TB control and from the 1950s, truly effective public health measures became possible with treatment to cure being the goal of TB control globally [25]. Initially, treatment consisted of a standard 18 months regimen with a combination of anti-TB drugs. This was subsequently reduced to 6 months duration following the development of improved anti-TB drugs in the 1970s [25]. As a result of improved living conditions and availability of anti-TB drugs, TB control became effective in most industrialised countries. Subsequently, TB slipped from the international agenda and effective control became the responsibility of each country.

The emergence of HIV in the 1980s led to the resurgence of TB and especially MDR-TB cases globally. The WHO eventually declared TB a global emergency in 1993 [26], and later developed the directly observed therapy, short-course (DOTS\textsuperscript{2}) strategy in 1994. The aim of this strategy was to guide nations towards effective TB control after acknowledging that TB had been a neglected and poorly managed disease that was associated with HIV [27]. The DOTS strategy remains the core intervention for TB control recommended by WHO globally. The strategy was subsequently adopted by most WHO member states, but its scale-up was constrained by weak political commitment [28]. This led to the launch of the Stop TB Initiative in 1998 after conceding that TB was a public health concern with political, social and economic dimensions. This initiative comprised of all key partners and countries with heavy TB burdens. The Stop TB Partnership was eventually established in 2000 as a global movement to accelerate social and political action to stop the spread of TB around the world [29]. The partnership’s goal is to eliminate TB as a public health problem and, ultimately, to secure a world free of TB. In 2001, the “Stop TB Partnership” launched the Global Plan to Stop TB 2001–2005\textsuperscript{3} [30]. Building on the success of the first plan,

\textsuperscript{1} TB prevention techniques include the following: i) quarantining TB patients in sanatoriums and supplemented with rest, nutrition and supervised exercises; ii) surgical techniques to either rest the diseased lungs or to close the tuberculous cavities thereby converting the patients to sputum negative; iii) through vaccination with Bacille Calmette-Guérin (BCG) mainly to prevent serious forms of disease in children; and iv) screening of the population with chest radiographs and tuberculin skin testing to identify TB cases [25].

\textsuperscript{2} DOTS consists of five components: i) political commitment, ii) quality assured sputum microscopy, iii) uninterrupted supply of anti-TB drugs, iv) standardised short-course chemotherapy for all cases of TB under directly observed therapy, and v) recording and reporting system [27].

\textsuperscript{3} Objectives of the Stop TB Plan 2001–2005: i) to expand DOTS coverage to achieve a 70% detection of smear-positive TB cases and 85% cure rates for TB, ii) to adapt to the challenges of HIV and MDR-TB, iii) to improve development of new diagnostics, drugs and vaccines, and iv) to improve the Stop TB partnership [30].
the “Stop TB Partnership” launched the second plan for 2006–2015. Its targets are in line with the Millennium Development Goals (MDGs) which aim to reduce TB prevalence and deaths by 50% by 2015 compared to the 1990 levels [31]. In addition to expanding and enhancing DOTS coverage, the second plan also covers the DOTS-Plus approach which addresses MDR-TB, and provides strategies and policies for countries to implement and monitor TB/HIV collaborative activities through the TB/HIV Working Group [31].

Global HIV control

HIV was first reported in the United States in 1981, and the virus was later isolated in 1983. By 1985, more than 17,000 cases of AIDS from 71 countries had been reported to WHO [32]. Since the virus was recognised, the response to HIV/AIDS has developed in four phases: from a danger to be alerted, to a problem of individual behaviour, to a socially contextualised behavioural issue, and finally to a human rights-linked challenge [33]. Due to the initial lack of knowledge about the modes of spread, and difficulty in diagnosis during the early stages of the infection, emphasis was rather placed on warning the public about the “danger” of the infection [33]. When the modes of transmission and diagnosis were identified, specific risk-reduction programmes were designed to change individual behaviours. The focus was mainly on information, education and communication (IEC) about HIV/AIDS and providing counselling and testing, and distribution of condoms [33]. Later on in the epidemic, it was recognised that socio-economic, political and cultural factors including gender inequality, poverty and marginalisation of specific groups of population were associated with HIV/AIDS [32–33]. Despite this increasing knowledge about the infection, there was lack of a coherent response from nations to address the infection [34]. Nonetheless, its rapid spread and the global threat it posed prompted the WHO to launch the Global Programme on AIDS (GPA) in 1987 which was tasked with supporting and strengthening national AIDS programmes, and providing global leadership [35]. In that same year, the World Health Assembly declared HIV a “worldwide emergency” that required urgent and globally directed action. The human rights framework was later championed by the GPA to analyse and address individual and societal factors including discrimination and other human rights violations directed towards PLWHA, and also to protect at risk and vulnerable populations to HIV [33]. Because the GPA lacked the ability to engage the required political response from both affected and donor countries, and because of the rivalries between other United Nations (UN) agencies and HIV/AIDS experts regarding priority HIV prevention issues [32, 34], the Joint United Nations Programme on HIV/AIDS (UNAIDS) was established in 1996 to replace GPA. This new body was given the mandate to lead an expanded, coordinated, multi-sectoral global response. In 1996, ART became available as the standard of care [36], though its access was initially limited mainly to developed nations. The increasing global threat of HIV/AIDS generated more coordinated and enhanced approaches within the global community. In Africa, the situation was referred to as a “state of emergency” and led to the Abuja Declaration in 2001 [37], where African Union member states committed themselves to allocate at least 15% of the health sector budget to tackle HIV/AIDS, TB and other related infectious diseases. In that same year, the UN convened a General Assembly Special Session on HIV/AIDS (UNGASS) where political leaders adopted a declaration of commitment, setting up targets for affected countries and funding levels for donor governments. The Global Fund to fight AIDS, TB and Malaria
(Global Fund) was subsequently established in 2002 as a public/private partnership which sources for funds and provides money to support countries in preventing and treating HIV/AIDS, TB and Malaria [38]. The United States government also announced the President’s Emergency Plan for AIDS Relief (PEPFAR) in 2003 which since then has provided funds for preventive, community outreach, and prevention of mother-to-child transmission (PMTCT) of HIV activities, and increased access to ART in 15 countries [32].

The fight against HIV/AIDS has continued to receive global support, since it is regarded as part of the commitments to achieve global health goals as highlighted in the MDGs[^4] [39]. Since WHO launched the “Treat 3 million by 2005” initiative in 2003 to scale-up ART to PLWHA in developing countries, the number of PLWHA on ART has increased steadily [40]. This increased coverage prompted the commitment to scale-up universal access to HIV prevention, treatment, care and support services by 2010 [12]. At the end of 2009, an estimated 5.2 million people were on ART in low and middle-income countries which represented a 30% increase compared to the previous year. In sub-Saharan Africa, almost 37% of all eligible patients were on treatment in the region. However, there were regional variations with some countries like Botswana, Namibia and Rwanda achieving 80% coverage [17]. The incidence of new HIV infections has declined globally, with much of this decline partly attributed to behavioural change including increased condom use, delayed sexual debut and reduction in multiple partnerships [17]. Since it is estimated that only 22% of all AIDS spending in 106 low and middle-income countries is on prevention [17], much effort is still needed in scaling-up HIV preventive strategies as it has been questioned “if we can only treat our way out of HIV” [36].

**Bridging the gap between TB and HIV control**

During the early stages of HIV epidemic (1980s), researchers had heralded the association between TB and HIV/AIDS and the devastating impact of the co-epidemic [11]. However, there were marginal coordinated responses between TB and HIV programmes globally to curb the associated morbidity and mortality. This was despite the alarming increase in the incidence of TB cases especially in high HIV-prevalent countries that were sometimes implementing good-quality DOTS programmes [13]. **It was not until 1989 that WHO set the stage to discuss modalities for controlling both epidemics.** It was concluded that countries with poor TB-control programmes (mostly countries with increasing HIV prevalence) should prioritise improving TB treatment and cure through DOTS [13]. After a decade of almost no action, finally in 1997, the first steps towards exploring TB and HIV collaborative service delivery were piloted by WHO at the sub-district level in three sub-Saharan Africa countries (Malawi, South Africa and Zambia) [13, 16]. **The objective of the project (ProTEST Initiative) was to promote testing for HIV using voluntary counselling and testing (VCT) as an entry point to access a range of interventions aimed at decreasing the burden of HIV-related TB.** The projects demonstrated that TB and HIV programmes could collaborate in service delivery both at the sub-district and national levels [16]. The lessons learned from this project prompted calls from participants at the “Global DOTS

[^4]: Part of the MDGs commitment is aimed at halting and reversing the spread of HIV/AIDS by 2015 and to have achieved universal access to HIV/AIDS treatment for all eligible persons by 2010 [39].
Expansion Meeting” in Cairo, Egypt in 2000 for the creation of the Global TB/HIV Working Group [41]. The Working Group, coordinated by WHO was eventually established in 2001 under the auspices of the Global Stop TB Partnership. Its goal was to reduce the burden of TB in high HIV-prevalent populations [41]. The Group was instrumental in developing guidelines and strategy in 2003 [42], and an interim policy in 2004 [43] towards TB and HIV collaborative activities. The terms collaboration and integration have been used interchangeably in relation to implementing joint TB and HIV control activities. However, collaboration implies that TB and HIV programmes work together on a set of activities in order to achieve certain goals or objectives. Meanwhile integration infers that TB and HIV control programmes are brought under the responsibility, incorporated and blended into the general health services [44]. Therefore, the term collaboration better reflects the intention of the interim policy, and will be used in this thesis. The recommended activities to be carried out under the collaboration as part of the health sector response to the co-epidemic are presented in Table 1.

**Table 1 - Recommended collaborative TB/HIV activities. Source [43]**

<table>
<thead>
<tr>
<th>A. Establish the mechanisms for collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1 Set up a coordinating body for TB/HIV activities effective at all levels</td>
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<tr>
<td>A.2 Conduct surveillance of HIV prevalence among TB patients</td>
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<tr>
<td>A.3 Carry out joint TB/HIV planning</td>
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<tr>
<td>A.4 Conduct monitoring and evaluation</td>
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<tr>
<th>B. Decrease the burden of TB in PLWHA</th>
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</thead>
<tbody>
<tr>
<td>B.1 Establish intensified TB case-finding</td>
</tr>
<tr>
<td>B.2 Introduce isoniazid preventive therapy</td>
</tr>
<tr>
<td>B.3 Ensure TB infection in health care and congregate settings</td>
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<table>
<thead>
<tr>
<th>C. Decrease the burden of HIV in TB patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.1 Provide HIV testing and counselling</td>
</tr>
<tr>
<td>C.2 Introduce HIV prevention methods</td>
</tr>
<tr>
<td>C.3 Introduce co-trimoxazole preventive therapy</td>
</tr>
<tr>
<td>C.4 Ensure HIV/AIDS care and support</td>
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<tr>
<td>C.5 Introduce antiretroviral therapy</td>
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</table>

**Global achievements in collaborative TB/HIV activities**

It is required that TB and HIV programmes create a joint national coordinating body that is responsible for planning, implementing, supervising and monitoring collaborative activities from the national right down to the district and local levels. The joint coordinating body may either work together to produce joint TB/HIV plans or they may introduce TB/HIV components into each of the national TB and HIV control plans [11]. Globally, there has been progress in the
number of countries reported to have implemented joint TB and HIV/AIDS activities with their respective control programmes. In 2002, 11 countries were reported to have begun executing joint TB/HIV services, and this number increased to 102 in 2006 [11].

In order to decrease the burden of TB amongst PLWHA, intensified TB case-finding followed by Isoniazid preventive therapy (IPT) for those found without latent TB infection (LTBI); TB infection control in healthcare and congregate settings; and providing ART to eligible patients are recommended [11]. Globally, the number of PLWHA that have been screened for TB and provided with IPT has increased steadily since 2005. In 2009 alone, 1.7 million PLWHA (5% of the total number of PLWHA, and 10% of PLWHA medically eligible for ART globally) were screened for TB. Out of these, about 80 000 were found to have LTBI and were enrolled on IPT. However, this figure is far below the Global Plan target for 2015 which is to provide IPT to all eligible PLWHA attending HIV care services [5].

In order to reduce the burden of HIV in TB patients, it is necessary that HIV counselling and testing is provided to these patients. For those found to be HIV-positive, HIV care and support services including cotrimoxazole preventive therapy (CPT) and ART should be provided if medically eligible. Providing HIV counselling and testing for TB patients is recommended for the following reasons: i) to establish the diagnosis of HIV, ii) to serve as a gateway to HIV treatment, care and support services, iii) to prevent HIV transmission through HIV status disclosure, HIV testing of patients’ partners, reducing risky behaviours, reducing harm for injecting drugs users TB patients, to screen and treat sexually transmitted infections and for PMTCT [11, 45].

VCT has led many people to know their HIV status, reduce or modify risky behaviours, and prevent HIV transmission to others. Yet, less than 40% of the population in sub-Saharan Africa living with HIV know their status [46]. Consequently, in 2007, provider-initiated testing and counselling (PITC) was recommended by WHO to complement VCT in populations with generalised HIV epidemic (where HIV prevalence is consistently over 1% in pregnant women) [47].

Globally, the number of TB patients who have been tested for HIV has increased steadily since 2003. In 2009, over 1.6 million TB patients (representing 26% of notified new TB cases) knew their HIV status. The highest testing rates were reported in Europe (86%), Africa (53%) and the Americas (41%) [5]. The number of PLWHA and co-infected with TB enrolled on CPT and ART has also increased, especially since 2005. It is estimated that 300 000 co-infected patients were enrolled on CPT and 140 000 on ART in 2009. These figures represent 80% and 40% of the total number of TB patients known to be co-infected with HIV and enrolled on CPT and ART respectively [5]. However, the figures are much below the Global Plan target of starting 100% of TB patients co-infected with HIV on CPT and ART by 2015 [5].
Country setting: Cameroon

Geography
Cameroon is located in Central Africa and bordered by Nigeria to the West; to the South by Equatorial Guinea, Gabon and Republic of Congo; to the Southwest by the Atlantic Ocean; to the East by Central African Republic; to the North by Lake Chad; and to the Northeast by Chad (Figure 1). The country covers a total surface area of 475,650 km² [48].

Administration
The country is divided into 10 administrative regions; 58 divisions, 306 sub-divisions, 54 districts, and 339 councils. Cameroon’s population is estimated at 19,406,100 inhabitants with an average population density of 40 inhabitants per km². The administrative capital is Yaoundé, and Douala is the economic capital. The population growth rate for 2011 is estimated at 2.12%, and ranked 41st in the world [49]. The population structure consists mainly of youth, with those below 14 years of age representing 44%; 15–49 years making up 47%; and those above 50 years comprising 9%. The female population (51%) is quite as many as the males. In addition, slightly more than half of the population (57%) reside in the urban areas. English and French are the two official languages but there are more than 230 ethnic groups with a variety of languages, traditions and cultures.

History and politics
The country is said to have been discovered by the Portuguese in 1472 and colonised by Germany in 1884. At the end of the First World War, the country was placed under the League of Nations in 1919; the French administered the Eastern part which had Yaoundé as its capital, and the English administered the Western part with Buea as its capital. The country finally achieved independence on January 1st 1960 for East Cameroon and on October 1st 1961 for West Cameroon. Following a referendum on May 20th 1972, the country became a unitary state. In 1983, the country became known formally as the Republic of Cameroon. The President exercises executive power meanwhile the National Assembly made up of 180 seats exercises the legislative power. The judicial power is exercised by the Supreme Court. Since independence, the country was governed under a single political party regime until 1990 when multiparty politics was re-introduced. There are over 200 registered political parties but the major parties are the Cameroon People’s Democratic Party (CPDM) which is the ruling party, and the Social Democratic Front (SDF), which is the primary opposition party. Since independence, the country has had two presidents with the current President having been in power since 1982.
Economy

The gross domestic product (GDP) based on purchasing power parity was estimated at 2.168 United States Dollar (USD) in 2010, being one of the ten highest in sub-Saharan Africa [50]. The country’s labour force is mainly based on agriculture (70%), and agriculture comprises 20% of the GDP [49]. Coffee cocoa, cotton, rubber, bananas, and timber are some of the major agricultural products. Factory-based industries accounted for 31% of the GDP and 13% of the labour force in 2009. Petroleum exploitation also provides substantial contribution to the economy. More than 75% of the industries are located in the economic capital, Douala. Despite being one of the best economies in sub-Saharan Africa, Cameroon still faces many challenges similar to other developing countries which have impeded growth in the private sector. These include: stagnating per capita income, a relatively unequal distribution of income, bureaucracy, unfavourable climate for investment, and endemic corruption [49]. Fluctuations in international oil and cocoa prices have also had significant impacts on the economy. The country is currently ranked 131 out of 169 in the human development index (HDI). Approximately 30% of the population is unemployed and about a third of the population was estimated to be living below the poverty threshold in 2009 [51].

Important indicators

The adult literacy rate is about 68%; 77% for males vs. 60% for females. The average life expectancy at birth is 53 years; 53 for males vs. 55 years for females. Life expectancy has probably
been affected by the HIV/AIDS epidemic and other endemic diseases. The infant mortality rate is 62 deaths per 1000 live births, and the under five mortality rate is 131 deaths per 1000 live births [52]. The national HIV prevalence is 5.1% amongst the 15–49 years age-group, with an estimated 560 306 PLWHA in the country (326 278 females and 234 028 males). The HIV prevalence amongst pregnant women has increased from 7.3% in 2002 to 7.6% in 2009 [53]. All these challenges have negatively impacted the social, economic, educational and health sectors.

The health system
Structure and organization

Until 2001, Cameroon’s health policy has evolved through four major stages: i) the colonial period (up to the late 1950s), ii) the post-independence period (1960s), iii) the post Alma Ata: Primary Health care (1978), and iv) the reform of the health sector through the Reorientation of Primary Health care [54]. This reform was developed in 1989 and officially adopted in 1992 through the declaration of health sector policy. This was finally executed in 1993 through the declaration of implementation of the “Reorientation of Primary Health care” [54]. The basic elements of these reforms included: i) community participation with regards to their health problems, ii) linking health and development, and iii) the respect of human rights. The health centre became the cornerstone for integrated, continuous and comprehensive health care linking the community and health services. All these reforms led to the reorganisation of the national health system into a three-level pyramidal structure; the central level (at the apex), the intermediate and the peripheral level at the base (Figure 2).

![Image of the organisaion of the Cameroon health sector]

Figure 2 - The organisation of the Cameroon health sector. Source [54]

It should be noted that each of the three levels have administrative structures with specific functions and associated health facilities. Each of the three levels comprises three sub-sectors: i) the public sub-sector (including other health structures under the authority of other ministries like Defence, Labour and Social Security, National Social Insurance Fund, Education at the central
level; regional hospitals; and district hospitals/medical centres); and ii) the private sub-sector (including private voluntary health structures like faith-based organisations, various associations and non-governmental organisations), private-for-profit structures; and traditional medicine at the regional and district levels [54].

**Sources of health care and financing**

In Cameroon, 79% of all the functional health centres are in the public sub-sector and 21% in the private non-profit sub-sector. Sixty-five percent of hospitals in all categories are public and 35% are private non-profit. However, there are still inadequate human resources to cover the health needs of the population with an estimated 1 doctor/13,468 population and 1 paramedical staff/3,094 population in 2007 [54]. Traditional medicine is legalised in the country, and this sector also plays an influential role in health care delivery in the country although the sector is fraught with quacks.

The Cameroon government spends about 5.2% of the GDP on health which is far below the Abuja target of 15% pledged by African leaders in 2001 [37]. **Since the late 1980s, the government embarked upon a series of economic reforms advocated by the World Bank and International Monetary Fund to address poverty, privatise industries, and increase economic growth [55].** These reforms enabled the country to reach the decision point of the Highly Indebted Poor Countries (HIPC) initiative in 2000. In 2006, the country attained the completion point of HIPC after implementing the Poverty Reduction Strategy Paper (PRSP) [37]. This led to debt relief which enabled the social and health sectors, to benefit from funding opportunities from Debt Relief and Development Contract (C2D), and the Multilateral Debt Relief Initiative. The health sector also receives funding from the Global Fund, the Global Alliance for Vaccine and Immunisation (GAVI) amongst many other international donors [54]. Despite these sources of funding, the overall household out-of-pocket health financing is about 94.5% [56], with much being spent in the informal sector. Other sources of health financing include social insurance, private insurance and health risk coverage through mutual health organizations which is a form of pre-paid insurance scheme that covers households.

**The National TB Control Programme**

Until 1988, TB control was under the Ministry of Public Health (MOPH). However, the country experienced economic and financial crises in the late 1980s and TB control efforts subsequently backpedalled in the 90s. Following the health policy reforms in the 90s, TB control became a national priority and in 2002, the National TB Control Programme (NTCP) [37] was recognised as a priority programme by the MOPH. The programme is organised according to three levels of intervention: central, regional and peripheral. The MOPH is responsible for the organization and implementation of the programme at the central level, and provides the annual budget and

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5 Poverty Reduction Strategy Papers are documents required by the International Monetary Fund or World Bank member states, and drafted through a participatory process before they can be considered for debt relief.

6 The general objective of the programme is to reduce the morbidity and mortality associated with TB through proper case management. The specific objectives include: i) to detect at least 70% of existing smear-positive pulmonary TB cases, ii) to cure at least 85% of detected smear-positive pulmonary TB cases, and iii) to protect at least 80% of newborns yearly through BCG vaccination [57].
permanent financial support. The National TB Control Committee (NTCC) defines the general guidelines and objectives of the programme as well as mobilises resources, coordinates, follow-up and evaluates the programme’s activities [57]. The regional level is under the authority of the Regional Delegate of Public Health. The TB unit at the regional level carries out its activities within the framework of the Regional Technical Group for the fight against HIV/AIDS and TB. Its functions include organising, coordinating, monitoring and evaluating TB control activities in the regions. The peripheral level is comprised of the health districts, and participates in TB case finding and treatment, as well as keeping the TB register.

As regards service delivery, the cost of TB treatment and hospital care were borne by the government until 1988. However, the ensuing economic and financial crisis in the late 1980s led to a drop in the MOPH’s budget [57]. This implied that patients had to pay for the entire cost of treatment and TB no longer became a health priority for the government. The year 2000 saw a renewed government interests in TB control with the creation of decentralised units at the district levels that were integrated into primary health care activities. The national TB treatment guideline was revised based on WHO recommendations in 2006 [57]. Sputum microscopy became the basis for confirmation of suspected pulmonary TB cases, and patients were expected to pay an initial sum of 1000 franc CFA (2.0 USD) for sputum microscopy. The DOTS strategy became the basis of TB treatment with a 6 months anti-TB regimen for new TB cases. Anti-TB drugs have been provided free of charge to all patients in the treatment facilities since October 2004 [58]. However, associated costs of treatment including hospitalisation and transportation are still borne by the patients. Presently, there are 217 TB diagnostic and treatment centres in 142 health districts nationwide. DOTS coverage has achieved 100% since 2003 [59]. The case detection rate from DOTS services for all cases in 2009 was 69%. However, the cure rate for new smear-positive TB (61%) cases still lags behind the NTCP and global targets [5, 57]. There were an estimated 490 pulmonary cases of MDR-TB in 2009; 1.8% consisted of new cases and 7.7% of retreatment TB cases [60].

The National AIDS Control Programme

The first cases of HIV in the country were documented 1985. The fight against HIV/AIDS began in 1986 with the creation of the National AIDS Committee (NAC), and in 1987 the National AIDS Control Programme (NACP) was launched. The NAC drafted the first HIV/AIDS national strategy in 1987, and in 1988 a Short-Term Plan was developed. This plan was multi-sectoral, decentralised and with emphasis on prevention and transmission by sexual contact. Thereafter, the Medium-Term Program I (PMT1) for the period 1988–1992 was drafted [61]. A second Medium-Term Program II (PMT2) for the period 1994–1996 followed later and served as the national control plan until 1999. These plans focused on health promotion activities through IEC and condom social marketing, trained health care providers in handling blood transfusion and counselling, developed laboratory services and safe blood banks, and conducted surveillance epidemiology of HIV infection [61].

The short and medium-term strategic plans achieved varying levels of success until 2000. The devastating effects of the HIV epidemic on human and socio-economic development which threatened the nation’s future reawakened the national response to HIV/AIDS. The fight against
HIV/AIDS received political support and became one of the national priorities as highlighted in the PRSP [62]. The National AIDS Control Committee (NACC) became the official body responsible for coordinating and managing the NACP throughout the national territory, in collaboration with government, national and international partners. The services of the NACP are decentralized comprising the Central Technical Group at the central level, and the Regional Technical Group in all the ten regions. The Government drafted the first National Strategic Plan against AIDS for 2000–2005 which aimed at preventing new infections by promoting VCT, treating infected persons and reducing the cost of treatment, promoting research and PMTCT. The second plan for 2006–2010 was multi-sector based and decentralised. The third plan7 for 2011–2015 was launched in December 2010 [53].

In relation to service delivery, during the early years of the HIV/AIDS epidemic in Cameroon, HIV control targeted mainly preventive strategies as highlighted in the various short and medium-term plans [61]. The introduction of ART in Africa saw the initiation of the national ART programme in 2001. To increase access, a decentralised approach in the delivery of HIV care was employed making use of pre-existing primary health care facilities. New HIV/AIDS treatment centres were either created or existing ones were given approval by the government. A total of 140 functional treatment centres exist in the 10 regions of the country [53]. Staffs were also recruited and/or trained on the delivery of comprehensive HIV/AIDS services. As of June 2008, ART delivery was based in 24 approved treatment centres (ATCs) and 108 HIV management units (MUs). ART delivery facilities were available in 106 out of the 174 district hospitals and 35 (26%) ART delivery centres were located in private health care facilities, mostly not-for-profit hospitals managed by faith-based organizations [63]. Special incentives have also been allocated to health care providers involved in the delivery of HIV services. Until May 2007, patients were expected to pay 3000 FCFA (6.2 USD) per month for Trionum® and 7000 FCFA (14.6 USD) for other ART regimens. In addition, patients had to pay 3000 FCFA (6.2 USD) for their pre-therapeutic ART biological check-up and bi-annual monitoring including CD4 count tests. In addition to these fees, expenses for other services including consultation, drugs for treating OIs and hospitalisation, were fixed by each health care provider [64]. Following the government’s commitment to universal access to HIV/AIDS services, ART and drugs for treating OIs have been provided free of charge since May 2007. HIV testing is also provided free of charge to TB patients, pregnant women including their spouses and children, students and prisoners. Other patients pay a subsidized amount of 500 FCFA (1 USD). All these policies have been sustained through government funding, but mostly through grants from the Global Fund and other international donors. The decentralisation approach in the delivery of ART care increased medically eligible HIV-positive patients’ access to ART from 22% in 2005 when the policy was initiated to 39.1% (59 960) in 2008 [65]. These figures are based on the old ART treatment guideline [66]. However, following the revised WHO’s ART guideline for 2010 [4], where ART eligibility is set at CD4 count <350/mm³, an estimated

7 The third National Strategic HIV/AIDS plan for 2011–2015 places emphasis on multi-sectoral approaches, decentralising operations, strengthening leadership at all levels, greater involvement of PLWHA in targeted interventions, and addressing gender, human rights and equity issues [53].
41.2% (89,515/217,372) medically eligible adults and 13.2% (4,195/31,969) children were on treatment by the end of August 2010 [67].

**National response to TB and HIV/AIDS co-epidemic**

The increasing knowledge that the upsurge in TB incidence was associated with HIV/AIDS especially in high HIV prevalence settings in which Cameroon belongs, prompted a joint national response between the TB and HIV/AIDS programmes as recommended by WHO in 2004 [43]. At the central level, a TB/HIV working group consisting of members from both TB and HIV programmes exists that is responsible for developing policies, guidelines, supervision, monitoring and evaluation of collaborative activities. The regional levels are charged with implementation and supervision of these activities through the various Regional Technical Groups at the operational level, which consists of the various treatment centres in the health districts. Since 2006, counselling for HIV is routine and free for all TB patients and TB suspects with unknown HIV status. All eligible HIV-positive patients should be placed on ART, presently based on the recent WHO treatment criteria [4]. In addition, CPT should be routinely provided to all TB patients except if there is a contraindication. Meanwhile, policies to implement IPT, intensification of TB diagnosis amongst PLWHA and in cluster populations like schools and prisons nationwide have been piloted in some regions but are yet to be scaled-up nationwide. Since the implementation of collaborative TB/HIV activities, the number of TB patients tested for HIV increased from 36% (8,639/24,002) in 2006 to 74% (18,677/25,174) in 2009. The corresponding HIV co-infection rates were 39% for 2006 and 40% for 2009, with a peak of 45% observed in 2007 [5]. At the end of 2008, 95% of TB patients co-infected with HIV were on CPT compared to 7% in 2007; likewise 53% were on ART compared 7.6% in 2007 [53].

**Justification of the study**

TB and HIV/AIDS co-infection pose enormous threats to the population of the Northwest Region (NWR) and the country in general. Despite the fact that there is no universal model of implementing TB/HIV collaborative activities, to ensure that both infections are systematically and effectively controlled in the population, the contextual factors and available resources need to be considered when adapting these activities locally. The opportunities, challenges, and impact that joint TB and HIV/AIDS services will bring to the individual programmes, the entire health system, and the patients are critical. This implies that thorough planning and foresight about management, ownership and delivery of specific activities are necessary. These will ensure the smooth functioning and effectiveness of the collaboration and ultimately determine how the users accept, access, and utilise the services in order to achieve the goal of TB/HIV collaborative activities. This study specifically ascertains how the mechanisms for collaboration between both programmes have been established at the central, regional and operational levels, and how functional and effective they are; what were the specific activities put in place to reduce the burden of HIV in TB patients?; and how accessible they were to the users? (Table 1). The raison d'être for excluding activities to reduce the TB burden in PLWHA in this study is because this approach has not been implemented nationwide, particularly in the NWR.
Study objectives

General objective
The general objective of this study is to explore how TB/HIV collaborative activities have been implemented in the Northwest Region (NWR) of Cameroon, highlighting the achievements, constraints and the way forward in strengthening collaboration, and ultimately reducing the burden of HIV amongst TB patients.

Specific objectives
• To inquire about health service providers’ and managers’ perspectives on implementing joint TB and HIV/AIDS services (Paper I + sub-study A).
• To determine the facilitators and barriers to HIV testing as a gateway to accessing HIV services for TB patients (Paper II).
• To explore health service providers’ perspectives regarding partner notification as an HIV prevention strategy (Paper III).
• To ascertain the progress in accessing HIV services for TB patients following the implementation of joint TB/HIV service delivery (Paper IV + sub-study B).
Conceptual framework

It is worthwhile to discuss some of the concepts included in the framework for this study, and also in relation to collaboration between communicable diseases control programmes, in this context TB and HIV programmes.

What is a health system?
A health system has been defined by WHO to consist of “all organizations, people and actions whose primary intent is to promote, restore or maintain health” [68]. In this regards, a health system consists of six components referred to as “health system building blocks” and they include: leadership and governance, health financing, information system, health workforce, medical technologies and service delivery [68–69] (Figure 3). The multiple relationships and interactions between these six components result in four functions of the health system, namely: stewardship (oversight), creating resources (investment and training), financing (collecting, pooling and purchasing), and delivering services (provision) [70]. The overall health system goals (Figure 3) are to improve health and health equity, in ways that are responsive, financially fair, and make the best, or most efficient, use of available resources [68–69]. There are also important intermediate goals which are to achieve greater access to and coverage for effective health interventions, without compromising efforts to ensure provider quality and safety [68]. Worthy of note is that the people are at the centre of the health system because they play important roles including serving as key actors driving the components of the building blocks in various capacities, and as beneficiaries of the health system [69].

<table>
<thead>
<tr>
<th>System building blocks</th>
<th>Intermediate goals</th>
<th>Overall goals/outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership/Governance</td>
<td></td>
<td>Improved health (level &amp; equity)</td>
</tr>
<tr>
<td>Service delivery</td>
<td></td>
<td>Responsiveness</td>
</tr>
<tr>
<td>Health workforce</td>
<td></td>
<td>Social &amp; financial risk protection</td>
</tr>
<tr>
<td>Financing</td>
<td>Access</td>
<td>Improved efficiency</td>
</tr>
<tr>
<td>Medical products, vaccines &amp; technology</td>
<td>Coverage</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>Quality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3 - The health system building blocks and its overall goals/outcomes. Source [68]

The health system framework
This thesis uses the health system framework depicted in Figure 4 [71] to address the research questions. The framework incorporates elements of the health system building blocks (Figure 3);
the population; the context in which the health system operates; the values and principles of the health system; and the health system's specific outcomes and overall goals [71]. The framework considers service delivery as the key component of the health system whose emphasis should be towards achieving set outcomes and goals via inputs (which are resources) into the health system. The framework also recognises that the health system interacts with the population and other actors in a particular context to achieve its goals and outcomes. Besides, the framework acknowledges that a health system is not only a complex adaptive system whose elements are interdependent and interact in different directions, but additionally that it is an open system and influenced by the context in which it operates.

![Figure 4 - The health system framework Source [71]](image)

**Application of the health system framework**

Applying the framework (Figure 5) in this thesis, the focus is on how leadership/governance (Paper I + sub-study A) influence TB/HIV collaborative activities within the health system; and in delivering joint TB/HIV services particularly to TB patients co-infected with HIV (Papers I & III). The outcome of delivering joint TB and HIV services which is the access to HIV services for TB patients are assessed in paper IV and sub-study B. Although the study originally did not set out to investigate aspects of resources (human and infrastructural resources, drugs and laboratory supplies, knowledge and information, and financing) which serve as inputs into delivering joint TB and HIV services, they are invariably highlighted. The applied framework also considers TB patients' perspectives in testing for HIV (Paper II) in order to access HIV services. Mention is made also of the general population (patients' relations, traditional healers and other key actors in the community), and the socio-political context in which the health system is situated, the Global Fund and other international bodies as key actors directly or indirectly influencing service
delivery. Finally, the applied framework also takes into account that the health system operates on certain values and principles. These values include universal access, equity and social justice, community participation and negotiation [54].

Figure 5 - The applied health system framework

**NTCP** – National TB Control Programme

**NACP** – National AIDS Control Programme

Based on the applied framework employed in this thesis, Table 2 highlights the main components of the health system and the research questions in relation to the study objectives.
### Table 2 - Study objectives, research questions and the main health system components addressed

<table>
<thead>
<tr>
<th>Specific objective</th>
<th>Research questions</th>
<th>Main health system component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health service providers’/managers’ perspectives on collaboration</td>
<td>Why was collaboration between TB and HIV services implemented? What structures and functions have been collaborating, and at what levels? What were the constraints and successes of collaboration?</td>
<td>Governance</td>
</tr>
<tr>
<td>Facilitators and barriers to testing for HIV as a gateway to HIV services for TB patients</td>
<td>What where the structural and operational factors that influenced testing for HIV? How did the collaboration affect or influence the interaction between service providers and patients?</td>
<td>Service delivery</td>
</tr>
<tr>
<td>Partner notification as an HIV prevention strategy</td>
<td>What policies have been set regarding patient autonomy, confidentiality and disclosure of HIV results? How did the interaction between providers and patients influence partner notification? What were the obstacles to partner notification?</td>
<td>Governance, service delivery</td>
</tr>
<tr>
<td>Ascertaining the progress in accessing HIV services for TB patients</td>
<td>How did the collaboration between TB and HIV services influence TB patients’ access to HIV services? What were the constraints involved?</td>
<td>Service delivery</td>
</tr>
</tbody>
</table>
Methods

The study setting

The Northwest Region (NWR), one of the 10 regions in the country, has an estimated land area of 17,812 km², and a population of over 2 million inhabitants that are predominantly Anglophones. Administratively, it comprises 7 divisions: Bui, Boyo, Donga-Mantung, Menchum, Mezam, Momo, and Ngo-Ketunjia (Figure 6); and 34 sub-divisions [58]. Bamenda is the capital of the region with an urban population of over 300,000 inhabitants. The inhabitants in the region comprise both the natives and settlers from other regions and neighbouring Nigeria with the majority residing in the rural areas. Agriculture (farming and livestock) is the main economic activity although small-scale industries and the public service serve as alternate sources of employment.

In the NWR, there are 13 health districts with 1 regional hospital, 12 district hospitals, and over 50 health centres in the public sector [58]. In addition, there are both private not-for-profit (belonging to faith-based organisations) and private for-profit (belonging to individuals) hospitals and health centres. Both the public and private sectors deliver TB and HIV services according to the national guidelines. At the beginning of this study, there were 10 treatment centres providing comprehensive TB/HIV services. Presently, there are 13 approved HIV/AIDS treatment centres [73], and 21 TB diagnostic and treatment centres [74].

TB and HIV in the Northwest Region

The region has experienced an upsurge in TB and HIV co-infections with ramifications in the social, economic, educational, health and political sectors. According to the 2004 national health and demographic survey (EDSC III), the region had the highest HIV prevalence in the country (8.7%); 11.9% vs. 5.2% for females and males respectively [75]. Although the country has been
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experiencing political stability compared to its African neighbours, the declaration of multiparty politics in 1990 led to some political upheavals and civil unrests in which several people lost their lives. This was followed by civil protests and riots in 1992 as a consequence of electoral irregularities in the presidential election. There have been other incidences of civil demonstrations especially following the formation of other pressure groups like the Southern Cameroon National Conference (SCNC). This group has been calling for cessation of the Anglophones from the Francophones because of claims of marginalization by the latter after the referendum in 1972. This has led to the deployment of the military and the police on the streets especially in the NWR which is the fief of the main opposition party, the Social Democratic Front (SDF). During these periods, it is alleged that there was increased sexual promiscuity and sexual violence including incidences of rape by the military deployed to the region. Considering the high HIV-prevalence in the military (11.2%) [53], this could partly explain the high HIV prevalence in the region. In addition, the commercial sex industry is an important economic activity in the region. Heavy truck drivers who transport goods and services within and across the region serve as regular clients to sex workers. Bearing in mind the high HIV prevalence amongst truck drivers (16.3%), and transactional sex workers (36.7%) who do not regularly use condoms with their clients (60%) [53], this also could partly account for the reason the region has been the hardest-hit by the HIV epidemic.

It is worthwhile mentioning that organisation, coordination and delivery of health services within the region has been exemplary, a process that has been facilitated by the existence of good collaboration between and within the public and the private sectors, especially the not-for-profit faith-based organisations. The existence of TB/HIV managers and coordinators at the regional and operational levels (especially within the faith-based hospitals) responsible for implementing, coordinating and supervising various health interventions have been the key to improved service delivery in the region. Important public health HIV/AIDS control activities like the prevention of mother-to-child transmission of HIV programme was pioneered in the region by the Cameroon Baptist Convention Health Board (CBCHB), one of the faith-based not-for-profit organisations involved in healthcare delivery in the country. Its success led to its adoption as a leading programme within the country and in the Central Africa region [76]. Other examples include the Chosen Children Programme that caters for children orphaned by AIDS and other vulnerable children; the Mother To Child Transmission-Plus program (MTCT-Plus) to cater for HIV-positive persons and their infected partners and children, including pregnant women via the PMTCT programme; and HIV support groups for PLWHA were also initiated by the CBCHB.

The study hospitals
Rationale for the selection
Four hospitals providing comprehensive TB/HIV services in the region were purposively included in this study (Figure 6). This selection was based on their accessibility, similarity in patient load, and the diversity of patients received since they serve both rural and urban populations. In addition, the hospitals provide similar services since they act as referral centres in the region with functional CD4 machines (FACSCCount and Guava) to monitor HIV patients’ immune status. The centres include Banso Baptist Hospital, Mbingo Baptist Hospital, Njinikom Catholic Hospital, all faith-based, and the Bamenda Regional Hospital which is a public hospital.
METH

Banso Baptist Hospital (BBH) is the first of the five CBCHB hospitals and one of the most renowned hospitals in Cameroon. It was established in 1949 in Bui Division, and currently has a 250 bed capacity with staff strength of over 400 people. The staffs provide support services to other CBCHB hospitals besides supervising 11 rural integrated health centres in 3 regions in the country. The hospital provides services to more than 60 000 patients annually (both in-patients and out-patients) from all over Cameroon and some neighbouring countries. These services include preventative health care services to the local community, general consultation and in-patient services, general and orthopaedic surgery including training of surgical interns, eye and dental services, medical imaging, pharmaceutical and laboratory services, physiotherapy, reproductive and family health services. Being a government approved TB treatment centre, approximately 250 TB patients are diagnosed and treated yearly. Additionally, the centre is approved by the government as an HIV/AIDS treatment centre, and it provides both preventive, care, treatment and support services to HIV patients and their families [77].

Mbingo Baptist Hospital, another CBCHB hospital was started in 1952 as a leprosy settlement in Boyo Division. It eventually became a full-fledged hospital in 1965 and has over the years developed into one of the referral hospitals in Cameroon and the West African sub-Region. Currently the hospital has a 250 bed capacity with over 400 trained staffs. The hospital provides a comprehensive health care system in leprosy treatment, general consultation and in-patient services, eye and dental care services, general and orthopaedic surgery including residency training, medical imaging, internal medical specialisation, pharmaceutical and laboratory services, physiotherapy and prosthetic services, community rehabilitation, and technical and catering services. Additionally, since it is a government approved TB and HIV treatment centre, the hospital provides preventive, treatment, care and support services similar to those of BBH above [78] with an estimated 300 TB patients treated yearly.

The Njinikom Catholic Hospital was inaugurated in 1963 by the first President of the country. It is located in Boyo Division, and serves as a referral hospital receiving patients from the entire country and neighbouring Nigeria. It has a bed capacity of over 150, and staff strength of about 91 people. The services provided include: general consultations and in-patient services, general and orthopaedic surgery, pharmaceutical services including a production unit, an orphanage taking care of the disadvantaged and vulnerable children, maternity and child health services, and a hospital-based non-governmental organisation (Project Hope) that provides HIV/AIDS education through community outreach services, counselling, distribution of ART, and PMTCT. The hospital is also an approved TB and HIV/AIDS treatment centre that provides preventive, treatment, care and support services to patients and their families with almost 100 patients treated for TB every year in the centre. It also provides laboratory services for PLWHA.

The Bamenda Regional Hospital, located in Mezam Division, is a public hospital that provides services to both the rural and urban populations in the NWR and the neighbouring regions of the country. It is the main public referral hospital in the region with a bed capacity of over 500. Its services include general consultations and in-patient services, general surgery, maternity and child health services, dental care services, laboratory and pharmaceutical services, physiotherapy
and medical imaging. It also provides training for health care personnel with the school of nursing attached to it. In addition to being an approved HIV/AIDS and TB treatment centre with facilities to perform HIV-related laboratory investigations, it is the only centre in the region which provides second-line ART regimens. About 450–500 patients are diagnosed and treated for TB annually within the centre. The centre is also involved in capacity building of staffs involved in HIV and TB service delivery within the region.

Health system research: combining quantitative and qualitative approaches

The overall study is a health system research (HSR), which is defined as the production of new knowledge to improve how societies organize themselves to achieve health goals [79]. HSR can address any or several of the six health system building blocks (Figure 3). The objective of HSR is ultimately to promote the coverage, quality, efficiency and equity of health systems [79]. This study incorporated both quantitative and qualitative approaches since they complement and supplement each other. In addition, the back-and-forth inter-play between both methods with each approach affecting the other and vice versa in a circular manner [80] was valuable in capturing specific aspects of the intervention (delivering joint TB and HIV/AIDS services) within the health system. To depict the progress in accessing HIV services amongst TB patients (outcome of TB/HIV collaborative activities) as indicated in the applied framework (Figure 5), quantitative methods were used. However, the quantifiable indicators of access do not reflect the entire process of ensuring an effective collaboration between TB and HIV programmes, and in joint service delivery. Qualitative approaches were therefore used to explore the perspectives of: i) TB/ HIV managers and service providers, and other key actors involved in the collaboration process and in joint service delivery; and ii) TB patients who are the users/beneficiaries of HIV services. Triangulation was used in this study with the idea that different methods and perspectives surpass by far the use of only one method when trying to answer complex research questions. Findings from both the quantitative and qualitative studies provided feedback into each other and resulted in very rich data.

The different qualitative approaches used in the study

Qualitative research requires critical and creative thinking; being open to multiple possibilities, diverging from the usual ways of thinking and working in order to get a fresh perspective of issues [80]. The entire qualitative component of this thesis was inspired by the principles of Grounded Theory (GT) to which I had been schooled in and was practically conversant with. However, the aim of the study was not solely to develop a theoretical model as in GT, but also to offer multifarious perspectives to provide a better understanding and a meaningful guide to address the TB/HIV co-infection that were derived from the data [80]. This meant that besides GT, I decided to also use other qualitative methods, namely Content Analysis and Situational Analysis. It should also be stated that my pre-understanding of the context was recognised and appropriately dealt with during the phases of data collection, analysis and generation of the research findings [81].

Grounded theory

The first qualitative interviews were conducted with the TB patients (Paper II) and were performed with a GT focus. This implied that the interviews were executed with an open mind, guided by
the research questions and the responses from the interview participants, in order to discover new knowledge and ideas. The texts generated from the interviews were transcribed verbatim and analysed using GT [81].

**Content analysis**

Although the interviews for Paper I and sub-study A followed the same GT principles as for Paper II, Content Analysis was deemed the most appropriate approach for analysing the interview texts and generating the research findings. This choice was first of all because my focus was on the manifest content i.e. what the respondents actually said without doing further theoretical interpretations (as in GT) [82]. The objective for this paper and sub-study was to describe the mechanisms set up for establishing and implementing TB/HIV collaborative activities, while highlighting the achievements, barriers and the way forward for effective collaboration. The intention was to get new insights and increase my understanding of the collaboration process, and ultimately to generate knowledge that will inform decision-making as provided for by this technique.

**Situational analysis**

The aim of Paper III was to explore partner notification as an HIV prevention strategy from the health service providers’ perspectives. The interviews were also conducted using the GT principles. However, during the data collection/analysis phase, emerging and contentious matters regarding the research topic emerged. Therefore, it became obvious that a deeper analysis beyond the traditional GT approach but which was grounded in the data would provide deeper insights and clearly represent these controversial issues. Situational Analysis (positional map) provided the best and timely avenue for this study, especially since I had recently been schooled in this method. Moreover, constructing a positional map is an analytical exercise which gets the researcher to move back and forth from clarifying issues and axes to positions and vice versa [83] which I found very thought-provoking and creative.

**Study time frame**

The field work for this study was conducted over a period of 3 years (2007–2010) as depicted in Figure 7. A summary of the methods employed in the four papers and the additional unpublished materials (sub-studies A & B) are presented in Table 3. Sub-study A is a qualitative study, based on interviews conducted with TB/HIV managers and resource persons from the central and regional levels, hospital TB/HIV managers and pharmacists. The objective was to explore the mechanisms that have been established at the central level and implemented at the regional level regarding TB/HIV collaborative activities. It was also to triangulate and seek explanations for the findings in Paper I regarding joint TB/HIV service delivery at the operational level. Meanwhile sub-study B was conducted as a follow-up to Paper IV which assessed the uptake of HIV services for TB patients co-infected with HIV. The objective of this sub-study was to establish if there was progress in TB patients’ access to HIV services after the initial period (2006–2007) of implementing TB/HIV collaborative activities using routine TB and/or HIV registers in the study hospitals during the period 2008–2009.
Figure 7 - Study timeline in relation to data collection

Table 3 - Summary of the methods used in the individual studies

<table>
<thead>
<tr>
<th>Papers + sub-study</th>
<th>Study objective</th>
<th>Design</th>
<th>Sampling and data source</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper I + sub-study A</td>
<td>To explore health service providers’ and managers’ perspectives on TB/HIV collaborative activities</td>
<td>Qualitative: Semi-structured open-ended interviews</td>
<td>– 30 TB/HIV counsellors and 2 traditional healers using qualitative interviews; 2 HIV-support groups meetings using non-participant observation – Interviews with 11 key informants</td>
<td>Content analysis</td>
</tr>
<tr>
<td>Paper II</td>
<td>To determine the facilitators and barriers in testing for HIV</td>
<td>Qualitative: Semi-structured open-ended interviews</td>
<td>21 TB patients using qualitative interviews</td>
<td>Grounded theory</td>
</tr>
<tr>
<td>Paper III</td>
<td>To explore health service providers’ perspectives regarding partner notification as an HIV prevention strategy</td>
<td>Qualitative: Semi-structured open-ended interviews</td>
<td>Interviews with 30 TB/HIV counsellors and 2 legal professionals</td>
<td>Situational analysis (positional map)</td>
</tr>
<tr>
<td>Paper IV + sub-study B</td>
<td>To ascertain the progress in accessing HIV services for TB patients</td>
<td>Quantitative: Retrospective cohort study</td>
<td>– A cohort of 2270 TB patients diagnosed between January 2006 and December 2007 – A cohort of 2049 TB patients diagnosed between January 2008 and November 2009 Data obtained from hospital TB registers</td>
<td>Descriptive/logistic regression analysis</td>
</tr>
</tbody>
</table>

Sampling, data collection and analysis

To explore health service providers'/managers' perspectives on TB/HIV collaborative activities (Paper I + sub-study A)

Key informant interviews were conducted with HIV resource persons from the central level, TB and HIV managers, hospital TB/HIV managers and pharmacists (sub-study A). This was to determine the mechanisms that have been put in place regarding collaborative TB/HIV activi-
ties, and the challenges encountered in the process. The interviews covered the following areas: i) objectives A and C of WHO’s interim policy on collaborative activities (Table 1), ii) the barriers to collaboration (structural and operational), iii) measures to address these barriers, and iv) strategies for improvement. The interviews were conducted in English between September 2009 and January 2010. They were conducted either in the participants’ offices or at other convenient locations. They were mainly tape-recorded or notes were taken, and each lasted between 30–75 minutes. The taped interviews were later transcribed verbatim.

In order to explore the operational and structural aspects of the collaboration process, TB/HIV counsellors who regularly interact with co-infected patients in the study hospitals were purposively approached and asked about their willingness to participate in the study (Paper I). Qualitative research interviews served as the main tool for data collection. An interview guide with open-ended questions was developed based on findings from Papers II and IV, and also included items from WHO’s recommendations for collaborative activities [43]. The interview guide captured the participants’ background information; their reasons for becoming counsellors; the type of training received; their counselling experience including the type of supervision and support available for counsellors; the benefits and challenges of collaboration between TB/HIV units; and suggestions for improvement of services.

As part of an emergent design [84] in the data collection process, non-participant observations were also conducted in two HIV support group meetings (Figure 8) in one study hospital (Njinikom Catholic Hospital with the aid of the counsellors. This was done to get a better understanding of the support services available to HIV-positive patients since this was repeatedly mentioned in the interviews with some of the counsellors. Field notes and memos were taken and these served as alternate sources of data for this sub-study. In addition, a joint interview session was conducted with two traditional healers who had been collaborating with one of the study hospitals in HIV prevention. All the interviews were carried out between September and December 2009 and conducted in either English or Pidgin English (later translated into English). The interviews with the service providers mostly occurred at the clinic after working hours (or otherwise in their homes if more convenient to them). Each of the interviews lasted between 45–90 minutes and were tape-recorded and transcribed verbatim.
The interviews with the key informants and the health service providers were analysed using content analysis [82]. The interview texts were sorted into four major content areas: mechanisms put in place for collaboration; the strategies to reduce the burden of HIV in TB patients; the opportunities and constraints to collaboration; and strategies for improvement. Meanwhile, the health service providers' interview texts were also sorted into five major content areas: i) the reasons for becoming counsellors, ii) the training received, iii) the counselling experience, iv) the nature of collaboration between TB and HIV programmes and v) the challenges faced. Later, meaning units from both interview texts above were selected and coded manually. The codes were then grouped together based on their similarities or differences into categories. Finally, themes were developed from the categories that described the manifest meaning regarding the collaboration process. The observations and notes from the support group meetings and the interview with the two traditional healers were used to substantiate the findings from the interviews with the health service providers.

**To determine the facilitators and barriers in testing for HIV as a gateway to accessing HIV services for TB patients (Paper II)**

TB coordinators, nurses and counsellors in the four study hospitals were informed about the study and the participants were purposively selected based on their HIV testing history obtained from the TB registers. With the aid of the service providers, the TB patients were contacted and asked...
about their willingness to participate in the study. Data were collected mainly using qualitative research interviews which were regarded as the most suitable method to explore the patients’ perspectives about the barriers and facilitators to HIV testing, and ultimately their access to HIV services. This is because of the perceived double stigma associated with TB and HIV/AIDS, and the reluctance of these patients to speak out about their diagnosis in public. The interviews were either conducted in the counselling rooms within the study hospitals or in the patients’ homes based on their preference. A pilot study was initially conducted with 4 patients between April and June 2007 (Figure 7), to test the interview guide which was later revised based on emerging topics after preliminary analysis and debriefing sessions with the research team. The final interview guide captured the patients’ TB treatment-seeking trajectory and their choice of hospital; their reactions to the TB diagnosis and their relationship with the service providers; their counselling and testing history including reasons for accepting or refusing an HIV test; their reactions to the outcome of the test; if and to whom did they disclose their results to; their impressions about the barriers to testing for HIV; and suggestions for improvement of services. The interviews were conducted between December 2007 and April 2008 in either English or Pidgin English which is locally adapted English that everybody including the illiterate speaks in this region. All the interviews were tape-recorded and each lasted between 60 and 90 minutes. They were transcribed verbatim and the Pidgin English interviews were later translated into English.

Grounded Theory approach was used to analyse the interview transcripts as described by Dahlgren et al [84]. All the transcripts were coded manually to form categories which are theoretically generated concepts, including properties and dimensions in constant comparison with other categories and the transcripts. Matrices were then developed to group together and compare the various categories in order to discover recurring ideas. Finally, eight main categories (four related to facilitators and four to barriers) were developed which described the facilitators and barriers to HIV testing from the TB patients’ perspectives. In addition, a core category was finally chosen, which related to all the other categories and represented the most salient subject in the participants’ decision-making process regarding testing.

To explore health service providers’ perspectives regarding partner notification as an HIV prevention strategy (Paper III)

TB patients are routinely encouraged by counsellors to disclose their HIV status to their sexual partners as a strategy to improve access to HIV prevention, treatment and care services in the general population. Considering the high HIV co-infection rate amongst TB patients, TB/HIV counsellors usually face the challenge of encouraging patients to voluntarily notify their partners about their HIV status. In order to explore the counsellors’ perspectives regarding partner notification, qualitative research interviews were used as the main data collection tool. The interviews inquired about the counsellors’ background information; the nature and content of counselling for HIV; and how confidentiality and partner notification issues were handled in the study settings.

Legal issues emerged regarding patients’ confidentiality/autonomy and partner notification for HIV from the interviews with the service providers. This prompted two additional interviews with legal professionals to obtain their perspectives about these concerns. All the interviews were
carried out between September and December 2009. They were all conducted in English, with each lasting between 45–90 minutes. They were tape-recorded and transcribed verbatim.

The interview transcripts were analysed using Situational Analysis [83]. Initially, traditional Grounded Theory coding of the texts was performed manually. Later, codes with similar ideas regarding confidentiality and partner notification were grouped together. Four categories were developed from the grouped codes which represented the different positions taken by counsellors regarding confidentiality and partner notification. Finally, a positional map was constructed as a visual representation of these four categories. Two axes were used to map the positions, one which emphasised on patients’ autonomy (x-axis) and the other which emphasised on public health interest (y-axis).

To ascertain the progress in accessing HIV services for TB patients (Paper IV + sub-study B)

Mainly hospital TB and/or HIV registers, provided by the national programmes to approved treatment centres were used as sources of data for this sub-study. TB/HIV coordinators or nurses are usually responsible for manually documenting service activities in the register. The TB registers capture patients’ demographic information and TB treatment trajectory from diagnosis to treatment outcomes. It also captures HIV services including HIV testing and outcome, and uptake of ART and CPT. In cases where HIV services were incompletely documented or missing in the TB registers, HIV registers were consulted to complement the information from the TB registers.

All TB patients who were diagnosed in the study sites between January 2006 and December 2007 were included in the study (Paper IV). This period was chosen because TB registers were redesigned to capture HIV services as a surveillance measure as from 2006. Excel spreadsheet was used to input the data from the registers. The various components in the dataset: patients’ demographic information, TB category and type, TB treatment outcomes, offer of counselling/testing and outcome, HIV status, ART and CPT uptake were documented. As aforementioned, HIV registers were also used to crosscheck cases that did not have HIV services documented in the TB registers.

A follow-up study (sub-study B) was performed to monitor the progress in accessing HIV services for TB patients diagnosed between January 2008 and November 2009. Similar information was obtained from the TB and/or HIV registers as described above.

Data of the cohort of TB patients diagnosed within the two study periods (2006–2007 and 2008–2009) were analysed using descriptive statistics and logistic regression. Characteristics of the patients and the TB treatment outcomes were compared across the hospitals. The acceptability and accessibility of HIV services (offer of counselling/testing and outcome, HIV testing and outcome, ART and CPT enrolment) were compared across hospitals and patient characteristics using logistic regression.
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**Ethical considerations**

All the studies received approval from the Regional Delegation of Public Health for the Northwest Region (N°401/NWP/PDPH/08). Administrative clearance was obtained from the Internal Review Board of the Regional Hospital in Bamenda, the Cameroon Baptist Convention Health Board Institutional Review Board (IRBC20090112ez: IRB2007–09), and St. Martin de Porres Catholic Hospital Njinikom.

Moreover, the aims and benefits of the study were also explained to the regional TB and HIV managers, the respective hospital TB/HIV coordinators, and all the nurses in the units. With respect to the register data, assurance was given to the nurses in charge that all the patients’ information would be treated with strict confidentiality. During data entry, patients’ names were excluded to ensure anonymity, and the data were also password-protected. Besides, before conducting the interviews, all the participants were informed about the purpose of the study. They were also informed about their right to participate and withdraw from the study at any time without fear of undergoing any negative consequences. Permission was also requested from them to record the interviews, and for those who expressly declined, notes were instead taken. All the recorded tapes were securely stored after the interviews. I also obtained informed consent from the leaders of the HIV support groups to participate in their meetings as an observer after the objective of the study was explained to them. All the interview participants’ identities were protected during the entire process of data collection, analysis and dissemination of the study findings.

The results of the study have been disseminated to the Cameroon Baptist Convention Health Board Institutional Review Board and to the administrator of the Catholic Hospital, Njinikom. The study results will also be presented to the Regional Delegation of Public Health and the Review Board of the Regional Hospital, Bamenda.

**Methodological considerations**

To capture the perspectives of the various stakeholders’ involved in the collaboration process and in service delivery; and the beneficiaries of these services, this study used a qualitative design. The fact that I had served as a TB/HIV treatment officer in the region facilitated the communication process with the various stakeholders and the hospital authorities. My tacit knowledge and pre-understanding of TB/HIV service delivery within the region were instrumental in exploring the collaboration process and HIV service delivery to TB patients co-infected with HIV. Additionally, my prolonged engagement with the participants in the study setting improved the trustworthiness of this study. However, it was also challenging keeping my pre-understanding within brackets thereby overcoming potential biases in order to explore new ideas during data collection and analysis. Peer-debriefing sessions and consultation with a local resource person were conducted, including feedback of the findings to the authorities in the study centres to ensure trustworthiness of study. Since most of the service providers/managers were familiar with me, they may have either responded favourably to demonstrate their achievements or underreported the constraints with the assumption that I was already familiar with the context. However, there were no discrepancies between the participants’ responses and their observed practices during
the data collection phase of the study. In the interviews with patients, my status as a medical doctor may have influenced their participation in the study and also in providing favourable responses. Also, being a male researcher interviewing women regarding sensitive/intimate issues may have brought apprehension to the participants. These biases were however, challenged and counteracted by an active, open dialogue with the respondents, and by using carefully prepared themes and questions [81].

The sampling of the participants in this study was purposive in order to capture the perspectives of the various actors within the different levels in the health system. The sampling size was small, a factor inherent in qualitative methods. Therefore the perspectives from the participants in the various studies do not necessarily reflect those of the entire population. In addition, for logistic, financial and time constraints, the study hospitals were also purposively selected and therefore not representative of the entire TB/HIV treatment and care services in the region. Notwithstanding, a “thick” description of the study setting has been provided to enable the reader assess to what extent the results can be theoretically generalised, and hence transferable to other similar settings [84].

To measure the progress in the uptake of HIV services for TB patients, this study used routine hospital data from TB and HIV registers. However, it was difficult to ascertain the true uptake of these services since no baseline results were available. It was also not feasible to conduct a baseline study prior to the collaboration process since documentation of TB/HIV services were not systematically performed in all the treatment centres. The shortcoming of using routine register data is that certain patient-based variables like the level of education, occupation and income, and marital status could not be captured. These limited a detailed description of which TB patients co-infected with HIV/AIDS accessed HIV services. Moreover, the registers did not take into consideration the health sector factors like supply-oriented issues that might have affected access and uptake of these services. Furthermore, in the early period of collaboration (2006–2007), the registers were fraught with either missing or incomplete records of HIV services (HIV testing and outcome, CD4 results, ART and CPT enrolment) which made ascertaining true uptake of these services difficult. To improve the validity of the study findings, missing or incomplete records about HIV services were discussed with TB coordinators or nurses in charge of the registers. In addition, HIV registers were also reviewed to either crosscheck with the names of TB patients co-infected with HIV in the TB registers or by checking for patients on Efavirenz®-based ART combinations (used as part of the first-line ART regimen for TB patients co-infected with HIV) to identify TB patients. However, it is believed that these shortcomings do not introduce any systematic errors in the estimation of uptake of HIV services amongst TB patients.
Main findings

In this section, the principal results are presented in the following order: i) the mechanisms that have been established for collaboration, ii) the constraints to delivering joint TB and HIV services, iii) the factors that made joint TB/HIV service delivery feasible, iv) the facilitators and barriers to HIV testing amongst TB patients in order to access HIV services, v) health service providers’ perspectives regarding partner notification as an HIV preventive strategy, and vi) the outcome of collaboration with regards to access to HIV services for TB patients. Wherever necessary, relevant quotations and figures are included to support the findings.

Collaboration between TB and HIV programmes: what mechanisms have been put in place? (sub-study A)

The government has facilitated collaboration between TB and HIV programmes by creating a TB/HIV working group that was endorsed by the Minister of Public Health. The working group with representation from both programmes has formulated a national work plan on how to address the collaborative activities. The working group was formed as a result of the recommendations prescribed by WHO, and also taking into cognisance the fact that both infections fuel each other.

“We have understood that each infection is fuelling the other so there is no point having community relay agents that can work only for TB and another working only for HIV… You can’t take one individual and divide his lungs for TB and the rest of his body for HIV. He is a full human; one individual two diseases” (Central level HIV manager).

It was therefore important that a minimum but comprehensive package of services is delivered to patients and the community. The working group has recommended joint monitoring and evaluation of activities at all levels, including operational research in order to identify the factors fuelling TB and HIV co-infection, and consequently provide possible strategies to address the co-epidemic. It was mentioned that measures have been put in place to conduct yearly surveillance of HIV amongst TB patients by training TB staff to recommend counselling and testing for HIV, and also to document the results in TB registers.

The regional and district levels have also been given the mandate to create committees that will implement the recommendations from the TB/HIV working group. Informants declared that occasionally, seminars and workshops focusing on TB/HIV collaborative activities have been organised with staffs and service providers from both units invited and trained together at the regional level. In addition, there have been few occasions in which joint monitoring and evaluation of treatment services have been conducted with support from the central level.

What were the constraints to collaboration between TB and HIV programmes? (Paper I + sub-study A)

It was acknowledged that the members of the TB/HIV working group met infrequently. In addition, the responsibilities of each programme in the collaboration were not clearly defined, and providing funding for the various collaborative activities was problematic. Unlike the TB
programme which is small, better coordinated and with clearly-defined activities which makes it more efficient, the HIV programme is a huge body in terms of personnel, funding, and its activities. This inherently makes it more demanding to coordinate its activities, and the programme has also been plagued with allegations of mismanagement.

“I think TB is the most coordinated programme in the country. Our activities are well defined; we have regular supplies of our materials, our quarterly reports are good...The HIV programme has inherent problems. They were provided with lots of money and people got excited and mismanaged that is why you find many of them in prison...They are now trying to sanitise the programme and it is the patients and the staff who suffer now with lack of funds for many of the bi-programmes” (Regional level TB manager).

Overall, it was stressed that collaboration existed only figuratively at the central and regional levels since both programmes still functioned independently. There was scarcely joint planning and execution of each programme’s activities, and a communiqué had been released from the MOPH to that effect.

“So far we are like two separate coordinating bodies, we are here for HIV and the TB unit is there for their activities...We have tried that (joint TB/HIV activities) but the activities don’t go together and we are never invited. Likewise we (HIV unit) plan our activities and they are not aware, it is just by chance that they (TB unit) might say that HIV programme is planning something and they come and attend. So I can say at the operational level we have integrated our services to give them (patients) the best services but when you get to the Regional level the services are apart, the distance between the units is really there. When you get to Yaoundé again, it is even further apart. Here I am just a few metres away from the TB unit but in Yaoundé they are kilometres apart, distance-wise and in the activities” (Regional level HIV manager).

Sustaining the collaboration was another concern raised especially as the HIV programme has recently faced a plethora of problems. These included the unanticipated increase in the number of patients medically eligible for ART after the treatment guideline was revised in line with WHO’s ART treatment guideline for 2010. In addition, informants stated that the Global Fund rejected the HIV programme’s application for Round 9 funding which basically placed the government under the full responsibility to cater for both current and prospective HIV-positive patients. The consequences of these setbacks included the possibility that emphasis would be placed on securing ARTs for HIV-positive patients, while resources for providing drugs to treat or prevent HIV opportunistic infections, laboratory supplies including rapid HIV diagnostic test kits, reagents for performing CD4 counts, and incentives for health care providers involved in HIV care could be scaled down. The government was blamed for these constraints due to its overzealous plans and short-sightedness during the initial years of scaling-up access to ARTs which were guided for the most part by politics.

“At least I have attended meetings at the central level and you can understand that it is difficult. When they started providing free drugs it was because of a campaign, political. There was an election coming up....They just rushed things because even when we recommended that
patients should pay 500 frs (1 USD for ART), the Minister just gave it for free (laughs)….Now it seems it is backfiring on them but I know they will look for all possible means to take care of these patients else it will be a national disaster and we still have elections coming up in 2011” (Regional level Pharmacist).

At the operational level, the health care providers and managers revealed that there was shortage of staffs compared to the increasing workload as a result of the surge in TB/HIV patients accessing services. Some participants declared that they were inclined to perform multiple duties simultaneously, a situation which could jeopardise their efficiency considering the intricate task of repeatedly delivering HIV-positive results to their patients. Another concern raised was the perceived lack of adequate training on TB/HIV co-management, and supportive supervision from the seniors which occasionally generated anxiety in the service providers when delivering joint TB/HIV services to co-infected patients. The service providers and managers also acknowledged the shortage and/or lack of infrastructure in the treatment centres which affected service delivery. Overall there was perennial shortage of office space, counselling rooms, wards space and waiting area in the out-patient department for both TB and HIV patients in the treatment centres. As a result of this, the participants acknowledged they were sometimes in a rush to provide services in order to satisfy all the patients.

Another difficulty which both the service providers and managers recurrently faced was dealing with patients who default or poorly adhere to treatment. The reasons which they cited for these included lack of transport fare for patients living in distant places, and in difficult terrains to meet up with their appointment dates. Additionally, some patients abandoned treatment either to pursue economic activities or to seek traditional remedies. The service providers had devised several strategies to address such issues and these included providing patients with transport fare to ease their movements to the treatment centres, and also referring patients to treatment centres closest to their residence. Besides, they stated that they educate the patients, their relatives and the community in general about the importance of treatment adherence and the risk defaulting treatment posed to the society. Furthermore, they declared that occasionally they conducted home visits to trace defaulters.

Another barrier to effective service delivery which the health care providers and managers mentioned was frequent interruption of drugs and laboratory supplies, and breakdown of FACSCount machines in the public hospital. Ideally, CPT should be provided free of charge to all HIV-positive patients. However, some participants declared that due to repeated shortages, they were obliged to ration the drug only to patients who were either severely immunocompromised or to newly diagnosed co-infected patients. Older HIV-positive patients where therefore requested to pay for their personal supplies at subsidized costs. In addition, they stated that drugs for treating opportunistic infections had completely run out of stock for several months. There were reported incidences of shortage of ARTs which prompted them to request for supplies from other nearby treatment centres with whom they had created networks. Interruption in the supply of reagents for performing CD4 count tests in the treatment centres also required that patients paid the unsubsidised cost for the test. The breakdown of the FACSCount machine in the public hospital also implied that patients
were referred to neighbouring treatment centres or to other hospitals to perform the test at a much higher cost considering the distance involved in getting to these sites. The obstacles in ensuring a regular supply of drugs and laboratory materials were ascribed to the politicised nature of the central drug procurement body in the country (CENAME). Being a multibillion establishment with huge turnovers, it was asserted that the government has vested interests in the organisation, and its members are presidential appointees with political affiliation to the ruling party. The organisation has therefore been criticised for mismanagement and diversion of funds for purposes other than health with the resultant delay in procuring and delivering medical supplies.

“The only thing is that CENAME is a national body with a lot of capital and turn over so the Government has an interest there. My own problem with it is that it is the President now that appoints members. There is no real laid down system so the Government will only appoint people that have political lineage to the ruling party” (Regional level Pharmacist).

Service managers revealed that they faced difficulties with documentation of programme activities despite the restructuring of the TB registers. Although the situation had improved over the years, there were still instances of incomplete or sometimes missing data in the registers. Furthermore, there were reported cases of either missing or late submissions of quarterly reports from the TB treatment centres to the regional level since the reports are compiled manually, and physically submitted to the regional level. These setbacks, they revealed delayed the submission process of compiled regional statistics and surveillance reports to the central level since there is no electronic system put in place for such activities.

What made joint TB/HIV service delivery feasible? (Paper I + sub-study A)

Three themes emerged which reflect the service providers’/managers’ perceptions about the reasons for the achievements so far in delivering joint TB/HIV services to co-infected patients. Firstly, service providers revealed that they considered counselling to be more than just a profession. The profession was regarded as a vocation to assist the sick and the suffering. In this regard, they were gratified by the services they rendered to patients irrespective of whether their decision to become TB/HIV counsellors was voluntary or by delegation from seniors, coupled with the risks associated with their work environment. Secondly, the training which they received prior to becoming counsellors, and the work experience have facilitated the delivery of joint TB/HIV services. In addition, they declared to have had refresher courses and supportive supervision from their seniors to update their knowledge and improve their skills. Furthermore, they revealed that the respect for patients’ confidentiality is emphasised in their day-to-day interactions with patients with only few instances of violation of patients’ confidentiality recorded. All these measures they acknowledged have contributed to instill patients’ trust in the health care providers and in the health system in general, and ultimately improved HIV testing and access to HIV services.

“When we started..... most of us were inexperienced. We never knew how to present most of the things to most of the patients but with the trainings; it has made most of the patients to be understanding” (Male counsellor, 35 years old).
MAIN FINDINGS

Thirdly, the service providers declared to have been working together as a team. Since the majority of the patients are co-infected with TB and HIV, it became evident to service providers not to treat the infections in isolation. In this regard, TB and HIV have been co-located in the faith-based centres, and the staffs from each unit regularly interact and assist each other in service delivery. They also declared that they have been cross-trained on TB/HIV co-management and this has improved their confidence in delivering joint services. Additionally, they stated that it was the same medical officer who was in charge of managing both infections which they acknowledged has improved patient care and reduced duplication of services. In the public hospital, although both units were not co-located, participants mentioned that a therapeutic committee exists, comprised of staffs from both units that meet regularly to initiate and review ART regimen for medically eligible HIV patients. The service providers have also created local networks with nearby treatment centres so that they could refer patients to centres closest to their (patients’) area of residence in order to ease their movements and reduce the chances of treatment default. Some declared that they occasionally obtain drug supplies from these nearby treatment centres when they temporarily run out of stocks in order to meet up with the patients’ demands.

The teamwork extended outside the spheres of the health care setting where there was collaboration between service providers and other influential actors involved in TB/HIV control. These included community and religious leaders, youth peer educators whom they had trained on TB/ HIV, and the media in relation to IEC activities for TB/HIV and to fight stigma and discrimination in the society. Besides, service providers from one of the faith-based centres (Njinikom Catholic Hospital) declared to have been collaborating with traditional healers whom they had trained on HIV prevention and referral. Mostly material incentives like proper containers to store herbal concoctions, latex gloves to prevent direct contact with patients’ body fluids, and safety razor blades to prevent re-use when performing scarifications on patients were also provided to these traditional healers to encourage compliance. In spite of this, it was acknowledged that some traditional healers were still reluctant to collaborate with the hospital due to fear of eventual loss of their clients and their livelihood following repeated referrals, and also on suspicion of assimilation by mainstream medicine.

Some service providers also worked in close collaboration with HIV-positive patients through the creation of HIV support groups. They asserted that members of the support groups are educated on HIV, lifestyle/behavioural adjustments, nutrition and hygiene, and treatment adherence. In addition, members are also provided with financial assistance and encouraged to engage in income generating activities in order to become self-sufficient. Other membership benefits included being registered into a pre-paid risk-pooling insurance scheme which covers their health needs; the potential to gain employment as peer or “expert” counsellors; serving as volunteers to visit sick members at home and performing HIV sensitisation campaigns in schools and in the community. Finally, to address the psychosocial and spiritual needs of HIV-positive patients, the health care providers mentioned that they regularly employ the services of social workers and chaplains attached to the treatment centres.
Providing HIV testing for TB patients as a gateway to accessing HIV services (Paper II)

The interviews with the TB patients about their experiences during the counselling and testing process revealed that although the majority were interested to know their status, the decision-making process was complex. The patients had to weigh the benefits and the risks of knowing their status compared to being ignorant within their community before making the final decision.

What facilitated testing for HIV?

Four major categories emerged as the reasons for TB patients accepting to know their HIV status. However, the most salient motivation was to regain their health and live longer (Figure 9). The patients were determined to know the real cause of their protracted illness which in most cases had made them to spend valuable resources to seek alternative medical care without relief. With the knowledge therefore that HIV is a chronic and treatable disease, they were eager to know their status in order to facilitate their access to treatment.

“No, I was serious about doing the test because if my result were positive then I already knew the next step to take because I was aware that the antiretroviral were available that I could begin taking if the test came up positive. With the drugs, I will maybe get completely better or live longer. ………..Normally, I know there is a treatment for AIDS now, it is a normal illness…” (HIV-positive male, 37 years old).

![Figure 9 - Facilitators and barriers to HIV testing amongst TB patients Source [85]](image)

Some TB patients acknowledged that they could not shoulder the burden of their illness alone, especially after the initial trauma of the TB diagnosis coupled with the financial demands involved in TB treatment. Consequently, they thought it wise to know the underlying cause of their ill-
ness in order to receive both financial and moral support from their loves ones. The majority of these patients eventually confessed that they were generally supported by their relations despite the initial apprehension. Likewise, some patients resigned their fate to God whom they trusted, and were therefore prepared for whatever outcome of the test. Furthermore, some male patients decided to test because they wanted to demonstrate their manhood since men are supposed to be brave amidst challenges. Accordingly, this inspired them to know their status in order to be supported by their partners, and to ensure that their partners were also treated if infected. However, they acknowledged anxiety when disclosing their status to their partners. Finally, the empathetic nature of the health care providers inspired some patients to test and get treated for their illness. Nonetheless, some stated that the health care providers simply requested for an HIV test, and they were left with no option since the health care providers were more knowledgeable about their illness. In addition, some were apprehensive that any refusal could attract reprisals from the health care providers.

What impeded HIV testing?

Although four major categories emerged as the barriers to testing for HIV amongst the TB patients (Figure 9), the most outstanding obstacle was the apprehension of shouldering both TB and HIV infections simultaneously. This was because of the double stigma associated with TB and HIV infections in society since many people are currently conversant with the link between both infections. Besides, HIV patients are regarded in society to have had a promiscuous past. All these concerns prompted the patients to emphasise on treating only the TB infection until they became physically/psychologically stable to face the challenges involved in testing for HIV.

“It was too much for me. Just in a matter of two weeks everything was going wrong in my life. First I came here thinking it was a simple cough and was told it was TB. The next thing was doing an HIV test. I just couldn't handle it all at once” (HIV status unknown female, 38 years).

Meanwhile, others were hesitant to test because they were afraid their results would be disclosed to third parties by the health care providers without their consent. Amongst the women who objected to testing, they declared that they needed to obtain consent from their partners since men are the heads of the household, and therefore make the final decisions in the family. Moreover, they were also financially dependent on their partners to pay for the cost of their treatment and therefore could not make the decision unilaterally. Others were also apprehensive of being blamed, physically and/or verbally assaulted, and even divorced if they tested positive. Another reason which discouraged HIV testing was the misconception in society that HIV was either non-existent or was a spell inflicted on someone which could only be treated by faith or traditional healers. Besides, others felt that mainstream medicine could not provide treatment for HIV, and consequently were misled by some traditional healers who proffered curative treatment usually via media outlets to encourage these desperate patients to patronise their services.
Introducing HIV preventive methods: partner notification for HIV (Paper III)

In order to build and maintain patients’ trust in the healthcare system and thereby encourage HIV testing, and ultimately patients’ compliance to HIV services, the health care providers emphasised that upholding patients’ confidentiality is paramount. The service providers revealed that patients are routinely encouraged to voluntarily disclose their status to their sexual partners. Although patients generally understood the rationale for notifying their partners, there were difficulties involved in the process. The major reasons cited why patients refused to voluntarily inform their sexual partners were fear of blame, verbal or physical assault, and even divorce. They further mentioned that from their experiences, male patients were more hesitant to disclose their HIV status to their partners compared to their female counterparts because of their promiscuous past. In addition, patients who disclosed their status were more likely to engage in safer sex, and had better treatment adherence/outcome compared to those who concealed their status.

A positional map was constructed to situate the various perceptions held by the service providers on how to address partner notification for HIV. Four positions were taken (Figure 10), but many of the service providers shared multiple positions simultaneously and they demonstrated that their perceptions could change over time depending on the legal and ethical obligations in place. In position one, it was opined that respecting patients’ autonomy is the benchmark of counselling. It would therefore be unethical if health care providers disclose HIV-positive patients’ results to their sexual partners without their consent irrespective of the justification. A perception that was endorsed by a legal professional, citing breach of professional ethics as a consequence of disclosing patients’ result without their consent.

“No we cannot do that. That will be against our professional ethics because we are not supposed to disclose a patient’s information without his consent. If we do that we might run into problems with the authorities [the hospital] because they will say we have breached confidentiality” (Male counsellor, 33 years old).

Meanwhile in position two, the perception was that although it is important to safeguard patients’ autonomy, patients should be encouraged to disclose their status to their sexual partners since it will be beneficial for the entire family.

“The law states that we should respect peoples’ privacy or confidentiality… We just try to educate them and make them realise that it is important for the partner to know so that they can treat each other and help the family” (Male counsellor, 35 years old).

The health care providers mentioned that part of their duty was to protect patients’ sexual partners at risk of HIV infection, and enable those already infected to seek prompt treatment. To this effect, they had devised strategies to encourage and ensure that patients voluntarily disclose their HIV status to their partners. The strategies included: i) counselling both partners concurrently and educating them about the benefits of disclosing their status to each other, ii) continuously counselling patients who initially refuse to notify their partners during subsequent hospital visits until they appreciate the need to do so, iii) obtaining the patients’ consent to directly inform
their partners in their presence in cases where the patients lack the communication skills, and iv) voluntarily obtaining the sexual partners’ physical addresses or telephone numbers from the patients and later informing these partners about the possible exposure to the virus and encouraging them to seek counselling and testing without disclosing the identity of the patients.

In position three, the health care providers opined that protecting patients’ sexual partners at risk is essential if the patients refuse to voluntary inform them about their HIV status. They indicated that upholding absolute confidentiality is morally wrong since patients who conceal their status from their patients are acting selfishly. However, legal provisions should be available for the health care providers to directly notify patients’ partners in this scenario. A legal professional partly subscribed to this opinion stating that sexual partners in a legal relationship deserve to know the diagnosis of their partners. In this regard, some health care providers stated that they occasionally “threaten” to disclose patients’ results to their partners as a desperate measure to facilitate voluntary disclosure although they eventually respected the patients’ autonomy.

“.... if I try other measures and don’t succeed, I will tell you that if you don’t do it I will do it for you. When you do that many will not want you to be the one to do it. They will rather prefer to do it themselves” (Female counsellor, 48 years old).

However, the health care providers raised concerns that adopting this position could deter future patients from seeking treatment, and also cause unintended matrimonial disharmony.

Finally in position four, the health care providers were of the opinion that HIV should be considered as any chronic disease with lifelong treatment. Therefore, HIV testing and disclosure should be a routine process in health care settings. The premise for their argument was that ARTs are available free of charge, hence it was imperative that as many people as possible get tested, and offered treatment in order to reduce the morbidity and mortality associated with HIV/AIDS.

“.....because the drugs are available now for free, I don’t see why we should not consider it [routine testing and disclosure of HIV result] as every disease like diabetes, hypertension where people come for check up every time and they also have to take their drugs for life” (Male counsellor, 33 years old).
**Accessing HIV services for TB patients (Paper IV + sub-study B)**

During the initial two years period (2006–2007) of implementing joint TB/HIV service delivery, a total of 2270 TB patients were registered in the study hospitals. There were 1163 (51%) males and 1107 (49%) females, and the majority (77%) were within 15–44 years. There was marginal difference in their area of residence, with 1180 of all the registered patients (52%) residing in rural areas and 1090 (48%) living in urban areas. All 2270 TB patients were offered counselling for HIV, and 95% accepted the offer of an HIV test (Figure 11). In the subsequent two years study period (2008–2009), a total of 2049 patients were diagnosed with TB and offered counselling for HIV. There was an increase in the acceptance of HIV testing (98%) compared to the initial period (Figure 11).

Out of the 2150 TB patients who accepted the offer of an HIV test in 2006–2007, 69% were found to be co-infected with HIV. In addition, TB patients diagnosed in the public hospital, patients who had been previously treated for TB, patients with smear-negative TB, female TB patients, TB patients within the age range 15–59 years, and patients residing in rural areas were significantly more likely to be co-infected with HIV. In the subsequent period (2008–2009), the co-infection rate was 63%, indicative of a considerable decrease (Figure 11).
ART services for TB patients were not vigorously documented in the TB/HIV registers during the initial period (2006–2007). Out of the 1220 co-infected TB patients with available ART records, 50% were enrolled on treatment. In the ensuing years (2008–2009), there was a slight increase in the number of co-infected TB patient enrolled on ART (54%). Substantial improvements were also observed in the documentation of HIV services in the TB registers (Figure 11).

Documentation of CPT activities in TB registers was also erratic in the initial two years period with just over 75% of co-infected patients having complete CPT records and 47% of these enrolled on CPT. However; there were improvements in both documentation and access to CPT services in the subsequent period (2008–2009) with 93% of the co-infected patients enrolled on CPT.

**Figure 11** - Schematic representation of uptake of HIV services for TB patients between 2006–2007 (first figure) *Source [86]*; and between 2008–2009 (second figure).
Discussion

The discussion is centred on the research questions, relating them to the main health system components (governance and service delivery) addressed in this thesis, and the outcomes of the collaboration with regards to delivering HIV services to TB patients co-infected with HIV.

Establishing mechanisms for TB and HIV collaboration:
the role of governance

Leadership in the health system is necessary to ensure that strategic policy frameworks are developed to guide the collaboration process. This is in combination with providing supervision, coalition building, accountability, regulations, and incentives [69]. Setting up mechanisms for collaboration between TB and HIV programmes underscores why collaboration is needed, what structures and functions are to be involved at all levels, and how the collaboration process would affect the various actors involved in service delivery. This study revealed that implementing joint TB/HIV service delivery had a high priority in the country as demonstrated by the government’s commitment to fight HIV/AIDS and TB epidemics. The justification for implementing collaborative TB/HIV activities was based on empirical knowledge about the synergistic effect of both infections which increased the disease burden in the population. It therefore became imperative to initiate a joint and comprehensive response to address both infections concurrently translated into the creation of a TB/HIV working group at the central level responsible for re-enforcing policies and creating operational frameworks that would be implemented and supervised at the regional level, and operationalised at the district levels (point of service delivery). This is similar to the Kenyan setting where a TB/HIV Steering Committee exists, and in Malawi where the TB/HIV Technical Working Group are both responsible for developing policies and discussing TB/HIV collaboration at the national level quarterly [87].

Leadership at the central level has ensured that HIV testing for TB patients has been made routine and free of charge. TB unit staffs have been trained and encouraged to recommend HIV testing for all newly diagnosed TB patients and suspects. Counsellors have also been trained to ensure the respect of patients’ confidentiality and autonomy while encouraging patients to disclose their status to their loved ones, especially their partners as an HIV prevention strategy. Training health care providers to encourage HIV services for TB patients has also been documented in the DR Congo [88]. To capture HIV services for TB patients, TB registers were revised to facilitate HIV surveillance amongst TB patients. Laboratory investigations for HIV-positive patients including CD4 count tests and other biological pre-therapeutic tests have also been subsidised by the government. In addition, ARTs and CPT are supposed to be provided free of charge to all medically eligible HIV-positive patients including TB co-infected patients.

Despite the achievements in establishing mechanisms for TB/HIV collaboration, this study revealed that collaboration between both programmes existed in terms of coordination. Each
control programme still operated independently (structurally and functionally) at the central and regional levels. Although a TB/HIV working group exists, interaction between members was infrequent. Despite having agreed to work together on specific activities and on certain common objectives, there was rarely joint planning, supervision, monitoring and evaluation of TB/HIV activities. A similar situation has been observed in other sub-Saharan African countries including Kenya and Malawi [87]. Sustaining the collaboration was another constraint highlighted in this study considering the fact that the HIV component which is a relatively bigger programme with larger funding has recently been plagued with financial misappropriation and reduced financial resources especially from its main funder, the Global Fund. Good planning and foresight is vital if the government is to maintain its promise of universal access to HIV services since more patients will become medically eligible for ARTs based on the revised treatment guideline [4]. Most importantly, adequate measures should be put in place to foster accountability and transparency in the use of programme funds in order to ensure donor confidence and sustained financing of programmes.

**Providing joint TB and HIV service delivery**

Service delivery refers to providing effective, safe, and quality personal and non-personal health interventions that are provided to those in need, when and where needed with a minimal waste of resources [69]. It is therefore regarded as the central process within a health system. How health services are organised to a large extent will determine if all the inputs (infrastructure, human resources, knowledge and information, finances) into the system will produce the desired outcome of the health system which is to ensure access to quality care [71]. In this context, the way joint TB and HIV services are organised and delivered within and between service providers (public and private), and the population will ensure that TB patients access HIV services.

**Organisation of TB/HIV service delivery**

With regards to delivery of joint TB and HIV services, this study demonstrated that there were varying levels of collaboration between and within the treatment centres. Different models in delivering joint TB and HIV services have also been documented in Malawi and South Africa [89]. In this study, co-locating TB and HIV services was perceived to have improved accessibility and the quality of service delivery. In the faith-based hospitals, co-locating both units reduced the waiting time for patients within the service. Besides, since the patients were managed by the same medical officer, the possibility of duplication of services was also reduced. This approach in delivering joint TB/HIV services is similar to the Khayelitsha model in South Africa [89]. On the contrary, TB and HIV units in the public hospital were located some appreciable distance apart. However, the existence of a therapeutic committee comprised of members from both units ensured that co-infected patients were properly managed and monitored.

Despite the co-location of services within the faith-based centres, there was still shortage of infrastructure in these centres. A feature that was more pronounced in the public hospital, and which could be strenuous for co-infected patients who are usually frail to shuttle between the two units. Besides, if proper tracking and referral mechanisms are not put in place, there is the possibility of losing these patients within the system as they are referred from one unit to the
other. Poor health system infrastructure as a general problem within treatment centres has also been documented in South Africa and Uganda [90–91]. An important concern with regards to inadequate infrastructure is the recurrent interactions between HIV and TB patients in congested out-patient waiting rooms, and in the wards which could expose high risk HIV-positive patients to nosocomial TB infection. A distressing situation since TB infection control measures were not observed in all the treatment centres.

Overall, providing joint TB/HIV services led to cross-training (both formally and informally) of staffs from both units on HIV and TB co-management. These trainings were instrumental in building their confidence towards delivering better services to co-infected patients. Besides, the teamwork observed in this study between staffs from both units since they carried out their activities in parallel, further improved service providers’ knowledge and skills in TB/HIV co-management. Despite the cross-training in TB/HIV co-management, this study revealed that the trainings were inadequate. Additionally, the persistent shortage of staffs to provide services compared to the ever increasing patient load, compelled staffs to perform multiple duties. This situation could affect staff moral and compromise quality as it was mentioned that incentives for staffs could be written off as a result of the budgetary constraints within the HIV programme in order to address more pressing needs. Staff shortage and inadequately trained staffs providing integrated TB/HIV services have also been reported in South Africa and Uganda [89–91], and these require due consideration in other to sustain TB/HIV collaborative activities.

This study also demonstrated that the treatment centres created local networks with other centres both in the public and private sectors either for referral purposes or for material support, especially medical supplies in times of need. This strategy was to improve the quality of services rendered to co-infected patients. In addition to networking with other treatment centres, health care providers also collaborated with the patients’ relatives and the community in general to encourage patients’ adherence to treatment and follow-up services. This was done using IEC approaches either by directly meeting with the patients’ relatives and the communities or via the media. Additionally, a faith-based centre also collaborated with traditional healers on HIV prevention strategies and hospital referral. However, some pertinent issues like financial and material support for the traditional healers were raised that require due consideration in other to foster and sustain this collaboration. Traditional medicine is recognised in Africa to cover the primary health needs of 80% of the population [92]. Additionally, it has been reported that 60% of PLWHA use complementary and alternative medicine (CAM) to manage HIV-symptoms and side-effects of conventional HIV medication [93]. In Cameroon, traditional medical practice plays an important role in health care delivery in the private sub-sector. However, the sector is plagued with issues of mistrust between its members and with mainstream medicine. There is also absence of a recognised official structure, illiteracy of the majority of the practitioners, mystification of their practices, and infiltration by quacks [54]. In some African settings (Tanzania,
Kenya and Uganda), traditional healers have been incorporated into HIV/AIDS prevention and control strategy [94] considering their influential roles. This strategy is worthwhile, however, the contextual issues which influence and regulate their practices deserve due attention to achieve a sustainable collaboration between mainstream and traditional medicines.

Strategies to decrease the burden of HIV amongst TB patients are not only limited to clinical care for PLWHA. A holistic approach in the delivery of HIV services which also takes into consideration the financial and material, psychosocial and spiritual needs of these patients will improve their access to these services and ultimately the outcomes. This approach was demonstrated in this study by the creation of HIV support groups in the treatment centres to assist patients with their non-clinical needs. HIV support groups have been recognised in other settings to increase patients’ access to HIV treatment, care and support services, foster patient unity, fight stigma and discrimination, peer education, providing patients with income generating activities to ensure self-subsistence and ultimately improve patients’ treatment adherence and outcomes [95–99]. This strategy is commendable and needs to be scaled-up to other treatment centres in the region and the country in general.

**HIV testing as an entry point to accessing HIV services for TB patients**

This study revealed that joint TB/HIV service delivery was implemented in order to increase TB patients’ access to HIV services. Because the population serves both as producers and beneficiaries of health care, delivery of health services is produced at the interface with the population [71]. This refers to the interaction between the service providers and the patients and/or the community. Ultimately, the health-seeking behaviour of the population and how patients eventually accept and access these services is partly determined by the trust in the service providers, and in the overall health system as a result of this interaction. This trust is influenced at the personal level by the relationship between service provider and the patient/population, and at the institutional level by the organisational set-up which provides services that are responsive to the needs of the population based on the appropriate human, financial and material resources. In addition, respecting and upholding the ethical and professional codes of conduct are vital to gain patients’ trust [71].

This study showed that accepting an HIV test was motivated by TB patients’ desire to know their HIV status so that they could have access to free and life-saving ARTs, and consequently lead healthier and meaningful lives. The role of the service provider was important in facilitating this process since they demonstrated compassion during their interactions with the TB patients which encouraged them (patients) to know their status. The influential role of counsellors has been documented to be vital in facilitating uptake of HIV counselling and testing in Tanzania [100]. Furthermore, to foster patients’ trust in the health system, it was established that service providers upheld their patients’ confidentiality and this also facilitated the testing process. Also critical was the training which the service providers received, their working experience and interactions with other colleagues, and supportive supervision from their seniors. All these factors contributed in instilling confidence in the service providers, improved their communication skills, and interaction with the patients. Studies have shown that patients’ trust in their service providers [101–102] and in the health system in general [102] influenced the acceptance of HIV services including use of [102–103], and adherence [103–104] to ART.
However, it was observed that encouraging HIV testing was not without setbacks. The persistent double stigma associated with both TB and HIV infections in the society discouraged some patients from testing, consistent with finding from South Africa and Zambia [105–106]. From the various IEC campaigns, the society has become more knowledgeable about HIV and TB, and generally tend to associate TB with HIV infection. Moreover, the sexual connotation of HIV in society also impeded testing since a positive outcome would have indicated a promiscuous past to some patients. Worthy of note also was the reluctance of some women to test without obtaining consent from their partners as a pre-emptive measure from receiving blame, assault or even divorce in extreme cases from their partners as has been documented in other developing countries including Tanzania, Malawi, South Africa and Zambia [100, 107–109].

HIV prevention services: the role of partner notification

When people inform their partners about their HIV status, it alleviates the anxiety associated with hiding one’s status and increases social and material support. It also increases opportunities for HIV risk reduction and planning for the future with the partners [110–111]. The success in encouraging patients to disclose their status to their partners to a large extent depends on the trust generated from the interactions between the patients and the health care providers/health system in general.

Despite the benefits of notifying one’s partner about the HIV status, there are both perceived and real risks involved. These include loss of economic support, blame, rejection, physical and emotional abuse, stigma and discrimination from society and loss of family relationships [110–111]. These concerns were also highlighted in this study as some of the reasons why some patients refused to voluntarily disclose their HIV status to their partners. When faced with this scenario, health service providers maintained varying but flexible positions on how to address partner notification. Some opined that patients should be granted absolute autonomy to decide if and to whom they should disclose their HIV status to after receiving the necessary information during counselling. This was to pre-empt administrative and/or legal sanctions for breaching professional ethics. This position has been endorsed by some advocates for the respect of absolute confidentiality in health care provider-patient alliances [112–113]. However, other service providers suggested that every effort should be made to encourage patients to disclose their status to their partners while respecting the patients’ confidentiality and autonomy. In contrast to the two positions discussed above, some service providers advocated for legal protection to enable them directly notify the sexual partners of patients who refuse to do so voluntarily for beneficial reasons. It has been argued that health care providers owe a responsibility not only to their patients but also to those at-risk of being infected. The premise for this argument is based on the famous “Tarasoff” ruling in the United States which asserted that “protective privilege ends where the public perils begins” [114]. This implies that health care providers on utilitarian grounds should be protected to directly notify the sexual partners of patients who refuse to voluntarily disclose their HIV status. However, the implications of upholding this third opinion could be that future patients would be deterred from seeking treatment, and consequently increase HIV transmission in society. Additionally, it could cause unintended matrimonial tensions if HIV-positive patients’ partners are informed about their status without their consent. Finally, some health care providers sug-
suggested that HIV testing and disclosure of HIV status should be made routine processes in health care settings since the entire society is to benefit from treatment with free ARTs. Routine HIV testing [115] and third party disclosure [116] in health care settings have also been advocated by some authors. However, the challenges of implementing this approach especially in developing countries with already weakened health systems will require strengthening of human and material resources to cater for the increased number of HIV-positive persons that will be identified. Moreover, proper legal and socio-political structures would have to be put in place to protect the rights of PLWHA against stigma, discrimination, and other social vices which affect these patients’ sense of wellbeing in the society.

Outcome of collaborative activities: access to HIV services for TB patients

Overall the study revealed that much progress has been made in screening TB patients for HIV with a corresponding high acceptance rate for HIV testing amongst these patients. During the initial two years period (2006–2007), over 94% of TB patients accepted the offer of an HIV test. This subsequently increased to 98% between 2008 and 2009. This high testing rate is commendable when compared to results reported from Kenya (61–91%) and Uganda (65%) [117–119]. The corresponding HIV co-infection rates were 69% and 63% respectively for the two study periods mentioned above. These figures are consistent with studies from Kenya (61%) and Malawi (68–71%) [120–122]. This study also revealed that there was marginal increase in the access to ART amongst TB patients co-infected with HIV over the years. During 2006–2007, 50% of co-infected patients were enrolled on ART and this increased to almost 54% during 2008–2009. This could be explained by the fact that because of resource constraints, CD4 count levels are still used as the eligibility criteria for ART enrolment in the treatment centres even for co-infected TB patients. These results are consistent with the national figure of 53% [53], but comparatively higher than findings from Kenya (26–34%) [123–124] and Malawi (13–16%) [125–126]. Plausible explanations for the comparatively higher ART enrolment observed in this study could be as a result of the continuous decentralisation of ART services initiated in 2001 in the country. This could additionally be due to the creation of new ATCs and MUs for ART, recruitment and training of staffs in the delivery of HIV services, providing ART free of charge to eligible patients, and subsidising the cost of CD4 count and other ART pre-therapeutic biological investigations. Notwithstanding the relatively higher ART enrolment amongst TB patients compared to other sub-Saharan African settings, much effort is still required to scale-up access considering the fact that all TB patients co-infected with HIV are eligible for ART based on the new treatment guidelines [4]. Besides, ensuring a constant supply to the treatment centres is invaluable. Repeated interruptions in ART supplies were reported in this study and which could have drastic consequences to patients and the society in general since this could result in drug resistant strains of HIV and consequently jeopardise control efforts. Furthermore, breakdown of the FACSCount machine in the public hospital, and delay in supplying medical reagents to perform CD4 count tests and other laboratory materials were also reported. These could further limit access to ART since patients were expected to incur both travel cost and higher fees to perform these tests in other centres at unsubsidised rates.
CPT has been demonstrated to be effective in reducing the morbidity and mortality in PLWHA [127–130]. This study revealed that access to CPT increased over the years from 47% between 2006 and 2007 to 93% between 2008 and 2009. This increase in CPT enrolment is comparable to other sub-Saharan African settings like Kenya (86–94%) and Malawi (97%) [118, 122–123]. The increase in access to CPT could be as a result of the improved monitoring of CPT services as observed in the TB registers during the study period. It could also be explained by the trust which the patients developed in the health care providers who encouraged them to procure their personal supplies despite the interruptions in the supply of free stocks from the government to the treatment centres. Supply constraints of this very important medication for co-infected patients highlighted in this study were ascribed to bureaucratic bottlenecks within the central drug purchasing body (CENAME), managerial problems within the HIV programme, and the governments’ overambitious plans to provide universal access to HIV services for political motives. It is imperative therefore that a secure supply mechanism is put in place in order to maintain the scale-up of HIV services for TB patients and collaborative activities in general.

Despite these policy changes, this study showed that documentation of TB/HIV services (especially ART/CPT services) in the revised registers was not vigorously conducted. This was particularly so during the initial years after the implementation of TB/HIV collaborative activities (2006–2007). However, considerable improvements were observed subsequently. A plausible explanation for this finding could be that the staffs were not properly acquainted with documenting these activities during the initial period of the collaboration. There was also a seemingly lack of joint reporting of programme activities with each programme having separate avenues for data reporting at all levels within the system. Issues of loss of, and delay in submitting programme reports were also documented which could eventually affect the quality of data for programme evaluation and HIV surveillance amongst TB co-infected patients. This study also revealed that joint planning, supervision, monitoring and evaluation were not regularly conducted by both programmes as has been documented in other settings (Kenya, Malawi and Cambodia) [87]. Improved documentation of HIV services for TB patients will ensure better HIV surveillance amongst TB patients. In addition, efforts aimed at achieving a successful collaboration of TB/HIV services are dependent on a sound monitoring and evaluation system, and supervision which will ultimately identify priority areas to intensify HIV control measures.
Conclusion

This thesis has demonstrated that bridging the existing gap between vertically operated TB and HIV programmes with independent financing, structures and functions, is feasible especially at the operational level in terms of joint service delivery and improving access to TB/HIV services. Bridging this gap was facilitated by the improved collaboration between both programmes especially at the operational level. This was in addition to the overall responsiveness of the health care system to the patients’ needs which gained their trust and encouraged uptake of services. The overall health system research design employed in this study using the health system analytical framework was important in highlighting the different perspectives of the various actors involved in the collaboration process. In this light, many lessons were learnt from this study that are worth highlighting. Joint planning, monitoring/evaluation and reporting of common activities were sub-optimal and require strengthening. Testing for HIV and partner notification are complex decision-making processes, with associated dilemmas and gender dimensions which health care providers need to consider in order to reach the maximum number of individuals. Collaboration between both programmes has increased access to HIV services but there were frequent interruptions in the supply of essential medications and laboratory materials. It has also led to cross-training between staffs from both programmes; teamwork between health care providers and other important actors directly or remotely involved in service delivery; and improved joint service delivery although there were shortages in human resources and infrastructure. However, poorly regulated use of the media by traditional healers to disseminate conflicting messages could constrain TB/HIV prevention and control strategies.

The general approach advocated for TB/HIV collaborative activities is for the provision of comprehensive TB and HIV service delivery as close to the patients as possible while maintaining existing TB and HIV programme structures rather than instituting a new specialist or independent disease programme [43, 131]. This implies that there is no universal model to collaboration between both programmes. The collaboration between TB and HIV programmes was observed in this study to be realised at different levels. Collaboration between TB and HIV programmes at the central/regional levels existed in the form of coordination of activities with each programme still having structural and operational independence. In the public hospital, collaboration between TB and HIV units existed in the form of linkage in service delivery. Conversely, in the faith-based centres there were both managerial and operational integration of services. The authorities in these centres were more concerned with delivering holistic services to the patients. This approach was feasible because these treatment centres though dependent on government funding for both programmes have other sources of financing to provide joint services. However, it is evident that the existing collaboration between both programmes is fragile if the constraints discussed in this study are not promptly addressed.
Recommendations/Policy implications

This study has demonstrated that implementing TB/HIV collaborative activities is feasible although efforts to strengthen and sustain universal access to HIV services are required. These efforts are achievable if the following are given proper consideration:

• Proper leadership should be put in place to ensure that collaboration is implemented at all levels in the health system. Meanwhile, functional structures should also be established which monitor and ensure the smooth functioning of the collaboration process at all levels. Modalities should also be made for joint planning, monitoring/evaluation, supervision, recording, reporting and surveillance of critical activities between both programmes.

• All key actors from the central to the district level, including those outside the health sector should be considered and where appropriate involved in the collaboration process. However, guidelines should be created and disseminated defining their roles and duties within the collaboration.

• Strengthening of the health workforce is required since this will ultimately strengthen the entire health system. There is a need to invest in more human resources via recruitment of new staffs, re-training of existing staffs in TB and HIV co-management, providing refresher courses/seminars and supportive supervision habitually.

• Strengthening of the general health system also requires sustained investment in infrastructural development. This is essential to guarantee the smooth functioning of the collaboration process at all levels, but notably at the point of service delivery. This enhances provision of timely and quality services which ultimately improves patients’ acceptability, accessibility, and adherence to services.

• The effectiveness of delivery joint TB/HIV services requires that a secure and sustained supply of essential medications, laboratory materials and technology is guaranteed. This will not only increase patients’ access and uptake of services, but also create a healthy society in the long run.

• HIV counselling and testing services should be provided to TB patients based on the stipulated guidelines which should be updated regularly from the available evidence, and based on contextual factors, and disseminated to the counsellors. Where appropriate, possibilities to involve patients’ close relations in the entire counselling process will facilitate testing and disclosure of HIV status. The respect of patients’ confidentiality and autonomy should be re-emphasised during the process in order to enhance patients’ and society’s trust in the health care system.

• When considering disclosure of HIV status, adopting a human rights perspective in partner notification, which balances the rights of the patients and their partners/society’s in general will maximise the overall public health gain from this HIV prevention strategy. Meanwhile HIV/AIDS laws should be adopted and enforced in the country which protects the rights of PLWHAs to enable them benefit from HIV services.

• Gender-sensitive policies and strategies which address the dependent roles and statuses of women in relationships and society in general should be considered. Addressing poverty and women’s lack of economic independence which affects the dynamics of testing and access to HIV services will ultimately increase the uptake of HIV testing and partner notification services.
• Recognising the influence of traditional healers in TB and HIV prevention and control is essential. Where feasible, they should be involved in service delivery but their roles and responsibilities ought to be clearly defined. Providing them with basic training on TB/HIV infection prevention and control, proper and timely referrals of suspected cases is also valuable. Meanwhile, appropriate motivation (based on the available resources) should be provided to them in order foster an effective collaboration.

• Frequent TB/HIV awareness-raising campaigns should be provided to the various media organs (radio broadcasters in particular). They should also be educated on responsible broadcasting of TB/HIV messages. Where appropriate censorship of media houses disseminating irresponsible health information is also essential if TB/HIV control efforts are to be sustained.

• Ensuring that patients who are the eventual beneficiaries of the collaboration process access these services is crucial. Delivering support services (material/financial, psychosocial, and nutritional) tailored to their needs will facilitate acceptability, accessibility and adherence to TB/HIV services, improve treatment outcomes, and ultimately create a more healthy society.

• Finally, further research is also required to:
  i. Explore other elements of the health system (financing, information technology, pharmaceutical management and supply of medical technologies) involved in the collaboration process not fully covered in this study.
  ii. Ascertain TB patients’ perspectives on the challenges in accessing HIV services after testing for HIV.
  iii. Access the extent of partner notification after testing for HIV as a preventive method.
  iv. Determine how to adopt a system-wide approach in the collaboration process and in service delivery by involving other key actors including those outside the health sector.
  v. Uncover innovative ways to improve and sustain the existing trust between all the key actors involved in the collaboration process and in service delivery.
Epilogue

When I began the PhD journey, my goal was to explore why TB patients who were usually co-infected with HIV, generally refused to know their status and ultimately benefit from HIV services on offer then. Just freshly graduated with an MPH in 2006, I was fascinated with quantitative methods. I therefore wanted to apply the knowledge and skills on my different studies. However, during the course of the PhD journey, several policies regarding TB and HIV services were instituted in Cameroon. Recommending HIV counselling and testing for TB patients was no longer at the discretion of the attending health care personnel. It rather became a routine and free process. Antiretroviral drugs that were in most occasions unaffordable to the masses became subsidized. In addition, the prices of laboratory investigations associated with HIV management were also subsidized. Drugs for treating opportunistic infections associated with HIV became free of charge for all eligible patients. All these policies implied that TB patients became more willing to test for HIV and benefit from these services which earlier on were seemingly unaffordable and inaccessible. The real problem now became how to ensure that TB and HIV programmes collaborate effectively and sustainably in delivering joint services to co-infected patients.

This “emergent design” in my study required a deeper understanding of the collaboration process in TB/HIV service delivery, and also to evaluate how service delivery has improved TB patients’ access to HIV services. This entailed the use of mixed-methods; using both quantitative and qualitative lenses to get a complete picture of the situation. It is my aspiration that addressing this particular issue from several angles with different lenses has better highlighted the strengths and weaknesses, and ultimately provided a way forward in providing better services to TB patients co-infected with HIV who are the eventual beneficiaries. I am therefore confident that my work will positively impact TB/HIV co-infected patients, and definitely contribute to the knowledge regarding TB/HIV collaborative activities both for policy-makers and the academic community.
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Voices from the frontline: Counsellors’ perspectives on TB/HIV collaborative activities in the Northwest Region, Cameroon.

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Abstract

Background
The overlapping epidemiology of tuberculosis (TB) and human immunodeficiency virus (HIV) infections prompted the World Health Organization in 2004 to recommend collaboration between national TB and HIV programmes. The goal of this collaboration is to decrease the burden of both infections in the populations. This policy was subsequently adopted by the national TB and HIV programmes in Cameroon with TB/HIV counsellors acting as frontline implementers of the collaborative activities in the 10 regions of the country.

Methods
Qualitative research interviews were conducted with 30 TB/HIV counsellors in four approved TB and HIV/AIDS treatment centres in the Northwest Region of Cameroon to explore their experiences and challenges in delivering integrated TB and HIV services. This was complemented by interviews with 2 traditional healers and non-participant observations in two HIV support group meetings as part of an emergent design to triangulate the findings from the counsellors’ interviews.

Results
Counselling was regarded as a call to serve humanity irrespective of the reasons for choosing the profession. In addition, the counselling training and supervision received and the skills acquired, have all contributed to build trust in the healthcare system and foster healthcare provider-patient relationship. Several challenges in services delivery including shortage of human resources, infrastructure and drug supplies, treatment default and the influence of traditional medicine were cited. Teamwork amongst healthcare workers and other key stakeholders was used as a strategy
to address these challenges which has consequently improved service delivery and patients’ access to services.

**Conclusions**

In order to achieve a sustainable integration of TB and HIV services, adequate planning and investment/strengthening of the health system including human resources, infrastructure and ensuring uninterrupted supplies of medicines is essential. A multidisciplinary approach to service delivery particularly focusing on harnessing the enormous potentials of traditional healers in TB/HIV prevention and control would be indispensible.
Background

The human immunodeficiency virus (HIV) epidemic has contributed to the upsurge of tuberculosis (TB) infections with TB being the most common opportunistic infection in people living with HIV/AIDS (PLWHA), and the leading cause of death amongst PLWHA in Africa [1]. Because of the overlapping epidemiology of both infections, the World Health Organization (WHO) recommended collaboration between national TB and HIV programmes in 2004 [2]. The goal of this collaboration is to reduce the burden of TB and HIV in populations affected by both infections and has as its objectives: i) establishing mechanisms for collaboration between national TB and HIV programmes, ii) decreasing the burden of TB in PLWHA, and iii) decreasing the burden of HIV in people with TB [2].

Studies have shown that many opportunities to diagnose HIV in health care settings were missed [3-4] or would have been missed if counselling and testing was not routinely offered to patients seeking treatment [5-7]. Accordingly, WHO has since 2007 recommended that counselling and testing for HIV should be offered routinely by healthcare providers to all TB patients in areas of generalised HIV epidemic, i.e. where HIV prevalence is consistently over 1% in pregnant women [8]. This strategy will facilitate patients’ access to HIV prevention, treatment, care and support services including antiretroviral therapy (ART) and cotrimoxazole preventive therapy (CPT) in order to reduce the morbidity and mortality in PLWHA. Similarly, intensified TB-case finding has been recommended amongst PLWHA in HIV programmes with the provision of Isoniazid to prevent the development of active TB in those found to have latent TB infection [2].
Globally, much progress has been achieved in implementing TB/HIV collaborative activities. In 2008, about 9.4 million new TB cases were recorded. An estimated 1.4 million of these TB cases were co-infected with HIV, with Africa accounting for 78% of the cases. Out of the 1.4 million co-infected cases, 0.2 million were enrolled on CPT and 0.1 million on ART. The number of HIV-positive people screened for active TB also increased from 0.6 million in 2006 to 1.4 million in 2008 with a total of 50 000 provided with Isoniazid preventive therapy in 2008 compared to 30 000 in 2007 [9].

Since 1999, the fight against HIV/AIDS has been one of the national priorities in Cameroon. A National AIDS Control Committee is responsible for developing and implementing HIV/AIDS policy and mobilising resources. The Central Technical Committee acts as its executive organ. At the intermediate level is the Regional Technical Committee situated in all the 10 regions of the country and together with the Local Committees at the peripheral level is responsible for implementing the activities defined at the central level. The national TB programme is also organised into three levels: central, regional and peripheral. The central level defines the general objectives of the programme and the regional level organises, coordinates, monitors and evaluates TB control in the region. The peripheral level includes the health districts that constitute the primary structure of the TB programme which are responsible for TB case finding, treatment, and keeping the TB register [10]. Following implementation of collaborative activities, a coordination group consisting of members from both TB and HIV programmes at the central level is responsible for developing policies regarding collaborative activities. The regional levels are charged with implementation and supervision of these activities at the operational level. Counselling for HIV is routine and free for all TB patients with unknown HIV
status as well as anti-TB drugs. All eligible HIV-positive patients should be placed on ART/CPT and drugs for treating HIV opportunistic infections which have been provided free of charge since May 2007. At the time of data collection for this study, modalities were still being drawn-up for scaling up Isoniazide preventive therapy, intensification of TB diagnosis amongst PLWHA and in cluster populations like schools and prisons nationwide.

TB/HIV nurses and counsellors are at the frontline in implementing these collaborative activities and ultimately determine how patients access and adhere to TB/HIV treatment, care and support services. Studies that have addressed counsellors’ perspectives dealing with TB patients and HIV counselling indicated that the counsellors generally were supportive of provider-initiated testing and counselling (PITC) [11-12]. However, to improve the services rendered to these patients, challenges including how to address under-resourcing of health systems and shortage of human resources especially nurses [13] need to be addressed. Other challenges including the perceived lack of support and supervision from management, lack of staff motivation and time to initiate counselling for HIV and addressing patients who default treatment [11] also need consideration. Confidentiality issues and the ability of patients to freely consent to testing were also articulated since TB patients may be concerned about jeopardizing future medical care or upsetting health professionals if they refuse testing [12]. Since collaboration between TB/HIV programmes is a relatively new initiative with a dearth of knowledge, this study was conducted among TB/HIV counsellors in order to explore their experiences and challenges in service delivery following integration of TB and HIV services. Findings from this study are intended to increase the knowledge base, enhance collaborative activities and service delivery which will eventually maximise the health and wellbeing of the general population.
Methods

Study setting

Located in Central Africa, Cameroon has an estimated population of 18 million inhabitants and a land mass of 475 440 km$^2$. The country is divided into 10 regions with English and French being the official languages. This study was carried out in the Northwest Region with Bamenda being its capital. The region comprises 7 administrative divisions with a population of over 2 million that is predominantly English-speaking. In the last national health and demographic survey in 2004, the region had the highest HIV prevalence of 8.7% [14]. There are presently 13 HIV/AIDS approved treatment centres [15] and 21 TB diagnostic and treatment centres in the region. Four of these were purposively selected for this study as a follow up to previous studies evaluating TB/HIV collaborative activities [16-17]. The selection of the centres was based on their accessibility, similarity in patient load, the diversity of patients received since they all serve both rural and urban populations, and the similarity in the services provided since they act as referral centres in the region with functional FACSCount machines to perform CD4/CD8 counts in order to monitor HIV patients’ immune status. The centres include: Banso Baptist Hospital, Mbingo Baptist Hospital, Njinikom Catholic Hospital (all faith-based) and Regional Hospital Bamenda (public).

TB/HIV collaborative activities

At the operational level, all TB suspects from the HIV unit are referred to the TB unit for diagnosis and treatment. TB treatment normally lasts 6 months; 2 months intensive phase with Isoniazide, Rifampicin, Ethambutol and Pyrazinamide and 4 months continuous phase with Isoniazide and Rifampicin. All newly diagnosed TB patients with an unknown HIV status are
offered PITC which is performed either in the TB or HIV unit. Those found to be HIV-positive are offered CPT and referred to the HIV unit for follow-up biological and immunological tests. Co-infected patients are placed on ART between 2-8 weeks if the CD4-count is <200 cells/mm³, after the intensive phase if the CD4 is between 200-350 cells/mm³, or ART is differed and the patient is re-evaluated after the intensive phase and at the end of anti-TB treatment if the CD4-count is above 350 cells/mm³. In the absence of CD4-count, ART is introduced between 2-8 weeks of anti-TB treatment if the total lymphocyte count is <1200 cells/mm³ [18].

Data collection
TB/HIV counsellors were approached and asked about their willingness to participate in the study and all expressly accepted to be interviewed. An interview guide with open-ended questions was developed based on findings from previous studies in the region [16-17] and also included items from WHO’s recommendations for collaborative activities [2]. The first author performed the interviews which covered the following topics: the participants’ background information, reasons for becoming a counsellor, type of training, the counselling experience including availability and type of supervision and support for counsellors, benefits and challenges of collaboration between TB/HIV units and suggestions for improvement of services. Based on preliminary comparative analysis of 30 conducted interviews, approximately 7 in each of the study sites, it was decided that further interviews would probably not yield much more additional knowledge in relation to the research question [19].

As part of an emergent design in the data collection process, the first author assisted by two counsellors, participated as an observer in two HIV support group meetings. This was done to get a better understanding of the support services available to these patients as mentioned in the
interviews with some of the counsellors. Field notes were taken during and after these sessions. A joint interview session was also conducted with two traditional healers who had been collaborating with a treatment centre in HIV prevention. All the interviews were conducted in either English or Pidgin English (a local language adapted from English) from September to December 2009. Each of the interviews lasted between 45-90 minutes and they were tape-recorded and transcribed verbatim by the first author. The tapes and transcripts were de-identified to safeguard the participants’ identity.

Data Analysis
Qualitative content analysis [20] was used in the data analysis process. The focus was mainly on the manifest content of the texts which describes the counsellors’ perspectives regarding counselling and collaboration between TB and HIV services. Initially, the interview texts were read through several times to get an in-depth understanding of the participants’ perspectives regarding the interview topics. The texts were then sorted into five major content areas: i) the reasons for becoming counsellors, ii) the training received, iii) the counselling experience, iv) the nature of collaboration between TB and HIV programmes and v) the challenges faced. Later, meaning units which represent a group of statements relating to the same central meaning were selected on which codes were manually assigned to them while maintaining the practice of constant comparison. The codes were then grouped together based on their similarities or differences into categories. An example of this process is illustrated in Figure 1. Finally, three themes were developed from the categories that described the manifest meaning (Figure 2). The observations and notes from the support group meetings and the interview with the traditional healers were used to substantiate the findings from the interviews with the counsellors.
**Figure 1** - An example of the analytical process

- **Research question**: Becoming a counsellor
- **A meaning unit**: When you see human suffering, you know that with your own small contribution you can change lives
- **Selected codes from meaning unit**: Human sympathy, Showing compassion, Helping the suffering, Giving Hope
- **Codes developed into category**: Concern for humanity
Trustworthiness of the study

Several measures were employed before and during data collection/analysis to ensure trustworthiness of the study. Appropriate literature regarding the study objectives were reviewed combined with findings from studies [16-17] in the region to ensure reliability and validity of the interview instrument. Moreover, the first author’s pre-understanding of the local context having been involved in TB/HIV management in the region, together with the rapport created with the participants during the time spent with them before the interviews generated trust, and encouraged free flow of the discussions. Notwithstanding, a well prepared interview guide was used as a means of keeping the pre-understanding of the context and situation in brackets [21]. This measure was to ensure the discovery of new knowledge and explore new ideas. Finally, during the analysis phase, many joint sessions were conducted with members of the research team to ensure credibility of the findings.

Ethical approval

Ethical approval for the study was obtained from the Regional Delegation of Public Health for the Northwest Region (N°401/NWP/PDPH/08), the Internal Review Board of the Regional Hospital in Bamenda, and the Cameroon Baptist Convention Health Board Institutional Review Board (IRBC20090112ez: IRB2007-09). Verbal consent was also obtained from each participant and the leaders of the HIV support groups visited after the study objectives and measures to safeguard their identity were explained to them.
Results

A total of 32 participants were interviewed: 30 counsellors (24 females and 6 males), and 2 male traditional healers. The higher proportion of female counsellors compared to males in this study reflects that females make up the majority of the nursing profession in the country. Their ages ranged from 27 to 65 years with a mean age of 36.5 years. Detailed characteristics of the participants are presented in Table 1.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
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<tr>
<td>Male</td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
</tr>
<tr>
<td><strong>Professional background</strong></td>
<td></td>
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<tr>
<td>Nurse/counsellor</td>
<td>16</td>
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<tr>
<td>Full time counsellor</td>
<td>4</td>
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<tr>
<td>Community relay agent/counsellor</td>
<td>5</td>
</tr>
<tr>
<td>Social worker/counsellor</td>
<td>5</td>
</tr>
<tr>
<td>Traditional healer</td>
<td>2</td>
</tr>
<tr>
<td><strong>Counsellor training</strong></td>
<td></td>
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<tr>
<td>&lt;1 week initial training + refresher courses</td>
<td>15</td>
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<tr>
<td>1-2 weeks initial training + refresher courses</td>
<td>10</td>
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<tr>
<td>1-2 months initial training + refresher courses</td>
<td>4</td>
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<tr>
<td>&gt;2 months initial training + refresher courses</td>
<td>1</td>
</tr>
<tr>
<td><strong>Working experience</strong></td>
<td></td>
</tr>
<tr>
<td>0-2 years</td>
<td>4</td>
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<tr>
<td>2 - 5 years</td>
<td>16</td>
</tr>
<tr>
<td>&gt;5 - 10 years</td>
<td>10</td>
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*Excluding two traditional healers
From the analysis, three themes that illustrate the counsellors’ perspectives about counselling and collaboration between TB and HIV services emerged (Figure 2). The theme “Counselling is a call to serve humanity” is an illustration of the decision to become TB/HIV counsellors. Meanwhile, “Good training and devotion breed competence” is a reflection of the reason for the improved uptake of counselling and testing services on account of the appropriate training received and the skills acquired from their working experience. Finally, the theme “Teamwork amidst adversity is the recipe for success” is an illustration of the reasons for the success in the collaboration and in addressing challenges within both programmes. The themes are presented below with relevant quotations from the participants to elaborate on the findings.

**Counselling is a call to serve humanity**

In general, many of the participants stated that the decision to become counsellors was personal. They mentioned that they had concern for the suffering and enjoyed talking to such patients. This was particularly so when it came to giving hope to the sick and dying.

“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” (32 years old female counsellor).

Meanwhile, others stated that it was because they had been working as TB nurses and saw the need to become counsellors considering the increasing number TB patients that required HIV counselling. The desire for counselling skills and to reduce the number of patients referred to the HIV unit was the motivating factors. In contrast, some participants declared that they were simply delegated by the hospital administration to undergo the counselling training because of lack or shortage of qualified counsellors in the units. To this effect, some participants underscored the importance of delegating only staffs that were motivated to work in both
programmes considering the occupational risks and challenges of working in TB and HIV programmes.

“Generally, they don’t like to work in the TB ward.....To make things worse they say they are risking already a lot for HIV and they cannot do an extra risk for TB without being compensated” (33 years male nurse/counsellor).

<table>
<thead>
<tr>
<th>Counsellors’ perspectives on....</th>
<th>Categories describing meaning units</th>
<th>Themes describing manifest meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Becoming a counsellor</td>
<td>• Concern for humanity</td>
<td>counselling is a call to serve humanity</td>
</tr>
<tr>
<td></td>
<td>• Delegated to serve</td>
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<td></td>
<td>• Desire for skills</td>
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<tr>
<td>The training</td>
<td>• Building foundation</td>
<td>Good training and devotion breed competence</td>
</tr>
<tr>
<td></td>
<td>• An ‘eye-opener’</td>
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<td></td>
<td>• A ‘crash’ course</td>
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<tr>
<td>Counselling experience</td>
<td>• Respect for humanity</td>
<td></td>
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<td></td>
<td>• Consolidating skills</td>
<td></td>
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<td></td>
<td>• Sensitive to patients’</td>
<td></td>
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<tr>
<td>TB/HIV collaboration</td>
<td>• Giving a helping hand</td>
<td>Team work amidst adversity is the recipe for success</td>
</tr>
<tr>
<td></td>
<td>• Building networks</td>
<td></td>
</tr>
<tr>
<td>Facing challenges</td>
<td>• Engaging patients</td>
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<td></td>
<td>• Engaging the community</td>
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**Figure 2** - Themes describing counsellors’ perspective on TB/HIV collaboration
Some participants in the faith-based hospitals further mentioned that some staffs had confided to colleagues that they despised working in the units since it was against their wish. The participants declared that delegating such unmotivated staffs could sometimes negatively impact their morals and productivity. To a few participants, training in counselling was an integral part of their formation as community relay agents working in TB and HIV programmes.

Regardless of the reasons of becoming counsellors, all the participants acknowledged that since embarking on the profession, they have found it gratifying and this has inspired them to continue helping other people to know more about TB and HIV, make important decisions to protect themselves, to prevent infecting others and receive appropriate/prompt treatment.

**Good training and devotion breed competence**

The participants highlighted the importance of the initial comprehensive training in counselling which they received because it served as an eye-opener. The majority of them stated that they were initially trained for less than 2 weeks with an exceptional case for 4 months (Table 1). The training was either organised by the government and/or their respective hospitals. The training materials included lectures, presentations and practical counselling sessions under supervision. Overall, they commended the training received despite the immense materials covered within the short period of training.

“*Overall it was good but I think there was too much information for the short time. We had to read and cover a lot of materials during that period but it was good because we learned a lot*” (55 years old female counsellor).

Although it was mentioned that refresher courses were organised either by the government or as part of in-service training, the participants declared that these have been infrequent. They
therefore expressed the need for regular courses to adequately equip them against the professional challenges. Some stated that they had resorted to reading books, searching for relevant materials in the internet and learning informally from experienced colleagues in order to improve their knowledge and skills. All the participants in the end acknowledged that the initial training complemented with the refresher courses and supervision from the seniors have served as foundations for their professional life.

Regarding their counselling experience, the participants stated that they were initially apprehensive at the onset about convincing patients to accept testing for HIV. However, from the trainings and experience gained over the years, there have been improvements in their interactions and communications with patients. They commented that this has been one of the reasons for the high HIV testing rate.

“When we started..... most of us were inexperienced. We never knew how to present most of the things to most of the patients but with the trainings; it has made most of the patients to be understanding” (35 years old male counsellor).

All the participants stressed that there is a minimum package of information they normally provide to patients during counselling. In pre-counselling, they mentioned that they ascertain the patients’ knowledge of HIV and probe for misconceptions, provide information about the link between HIV and TB and the benefits of testing for HIV. In post-counselling, they explain the significance of the result and check for any misunderstanding, address the patients’ psychological state and devise coping mechanisms, encourage patients to disclose their results to their loved ones, provide support services, discuss changes/reduction in risky behaviours,
provide sexual and reproductive education, and discuss the possibility of ART. They also underscored the importance of informed consent.

“HIV test is not really a must.... It is their choice but we try to as much as possible to continue letting them see the need for the test” (30 years old female counsellor).

Although they were sensitive to the patients’ feelings, the participants declared that upholding patients’ confidentiality and encouraging them to disclose their results especially to their sexual partners was challenging. Since respect for confidentiality is emphasized during their training and in their practice, it was a dilemma between respecting patients’ right to confidentiality and disclosing their HIV status to their sexual partners at risk when faced with recalcitrant patients. Generally, they stated that confidentiality issues have been properly handled within their settings and this has enhanced the patients’ trust in the health system and improved uptake of services. However, some participants mentioned there have been isolated incidences of breach in confidentiality by some staffs which were investigated.

**Teamwork amidst adversity is the recipe for success**

The participants underscored the importance of working as a team to face the challenges in service delivery as one of the major reasons for the success achieved so far in the fight against TB and HIV. This teamwork was either with colleagues within the healthcare setting or with other key stakeholders in the community.

**Teamwork within the healthcare setting**

The participants stated that collaboration between TB and HIV units has been beneficial both to the patients and the staffs. The participants in faith-based centres mentioned that since both TB and HIV units operated under the same roof, the staffs actually functioned alongside each other.
They affirmed this has greatly reduced the waiting time for patients in the hospital and improved patient monitoring.

“I think it makes us to follow up our patients properly because amongst our patients we easily know which of them has had TB or HIV. If we had separate units maybe we would not be able to follow them up well but since we operate in the same room we know them well” (32 years old female counsellor).

Some participants also remarked that since both TB and HIV patients associate with each other regularly in the same building, this has greatly reduced the stigma associated with both diseases thereby enhancing the uptake of TB/HIV services. Furthermore, they declared that it was the same doctor who is in charge of both units which has improved patient management since the doctor is familiar with all the patients and their treatment. Participants in the public hospital mentioned that although both units operated in separate buildings due to lack of space, a therapeutic committee exists which consists of nurses, counsellors and doctors from both units that meet regularly to decide the best ART regimen for eligible patients.

As regards benefits of collaboration to the staffs, the participant in the faith-based centres stated that although they supposedly work in different units, they assist each other in their daily work. Some also commented that although they were not officially trained in both diseases, they had broadened their knowledge of both diseases by working with colleagues in the other unit. This they stated has made them more comfortable rendering services to co-infected patients.

Despite these benefits, the participants stated that there were challenges that adversely affected their work. All the participants articulated the problem of shortage of staff in the units compared
to the heavy workload. They mentioned that they performed multiple duties including
counselling in their respective units. Some in the faith-based centres stated they were sometimes
delegated to assist in different units. They all acknowledged that this increase in workload
occasionally had a negative effect on their performance especially when they became
overwhelmed by constantly delivering HIV-positive results to patients. All the participants also
raised the problem of shortage of counselling rooms and were consequently obliged to use their
offices for counselling, consultation, drugs dispensing and documentation. Others stated that they
shared office space with other colleagues and this affected the time spent on counselling since
they have to make space for other colleagues and also satisfy all the patients. In one faith-based
centre, the participants declared that both TB and HIV units shared the same office space and
activities were carried out simultaneously by different counsellors. This they stated could
jeopardise patients’ privacy/confidentiality.

Another important concern which the participants mentioned was interrupted drug supplies.
They stated that supplies of anti-TB drugs and ARTs have been fairly regular although there
have been instances of temporary rupture of ART stocks for which they sought alternate supplies
from neighbouring treatment centres. The most pertinent problem which they mentioned was
with CPT supplies and drugs for treating HIV opportunistic infections which could run out of
stock for several months. To address this problem, some participants declared that they were
obliged to ration CPT supplies only to newly diagnosed co-infected patients or to those severely
immuno-compromised. However, they stated that they endeavour to educate the older patients on
the importance of taking CPT regularly and advise them to procure supplies at much subsidised
rates in the hospital pharmacies. This was not without suspicion since they declared that some patients doubted their explanation for this measure.

“....because we had told them it was free so they expect us to give them because some of them think we have hidden it to sell to them later. We try to explain to them why is it not available, some understand but it is very difficult to convince them” (32 years old female counsellor).

Teamwork with the community

Although the participants acknowledged that uptake of TB/HIV services have greatly improved, they mentioned that they were still frustrated by patients who refuse HIV testing. They cited fear of stigma, associating TB diagnosis with HIV, the lack of cure for HIV, lack of confidentiality, fear of accusation by partners and the influence of traditional healers as the main reasons. Realising the importance of involving all key stakeholders in TB/HIV prevention and control, the participants asserted to have been working with community and religious leaders, youth peer educators and people living with HIV/AIDS to educate and sensitize the community about TB and HIV and to fight stigma/discrimination. A participant declared to have been using the media for similar purposes. The participants from one of the faith-based hospitals mentioned that they have been collaborating with traditional healers in TB/HIV prevention. What prompted this strategy was the realisation that many traditional healers claim to “cure” HIV/AIDS unlike mainstream medicine which only offers treatment. This message the participants declared, has been the driving force behind the traditional healers’ success in convincing patients to patronize them. Some participants mentioned that there have been instances where patients who had improved dramatically while on ARTs, had defaulted to traditional medicine and later returned worse-off.
“...one other big problem is trying to convince our patients about traditional medicine because many still use them...The man told them after one year the virus is going to clear from their system. She took the drug for more than a year. She was really down because when she came back her CD4 was 2” (30 years old female counsellor).

Two traditional healers interviewed expressed to have benefitted a lot from collaborating with one of the treatment centres for over 8 years. They acknowledged to have been trained on HIV prevention. They also mentioned that they refer all suspected cases of HIV to the hospital using referral forms and document their activities in registers provided by the centre. Although they admitted to have received material gifts from the centre to enhance their practice, they declared it was necessary that they are regularly compensated for the collaboration and also given feedback about the patients they refer to the treatment centre. They also emphasized that all registered members in their association that have been trained by the centre have acknowledged their limitations in treating HIV. It was therefore the unregistered traditional healers who still ignorantly claim to cure HIV.

“Those who do not attend our meetings, they doubt themselves and their activities. They claim they can “finish it” (cure HIV) meanwhile they cannot really explain how it (HIV) affects the person (65 year old traditional healer).

Another important challenge which the participants mentioned was dealing with patients who default or do not adhere to treatment. Reasons cited for defaulting included lack of money for follow-up visits, long distance or difficult terrain from the patients’ residence to the hospital, and patients resorting to economic activities like farming after having improved on treatment. The
participants declared that they have been educating patients on the importance of adhering to treatment and respecting appointments. They also indicated to have extended the education to the patients’ relatives and the community about the dangers of not encouraging patients to respect their hospital appointments. Some participants declared that they occasionally provide patients with financial difficulties transport money either from private, hospital or donor funds when available.

Addressing HIV-positive patients’ psychological and materials needs was another big challenge mentioned by the participants since these could affect patients’ treatment follow-up and adherence. They declared to have been working closely with social workers and hospital chaplains in this regard. They stated that they also regularly refer newly diagnosed patients to HIV support groups that were created by the treatment centres. Members of two HIV support groups created by one of the faith-based hospitals stated that they are regularly educated on learning to live positive, supporting each other, lifestyle changes and HIV prevention, hygiene and sanitation, nutrition and treatment adherence. They also testified to have benefitted from funds to engage in income generating activities while some have been serving as “expert” counsellors in the centre. In one support group, all the members declared that they are registered with a community health insurance scheme that covers their HIV pre-therapeutic and follow-up tests. The members indicated that they conduct home visits to sick members and others in the community, do public sensitization campaigns in schools and in the communities to encourage health-seeking and fight stigma in the society.
Discussion

Training and counselling practice

This study highlights the various successes and challenges of collaboration between TB and HIV programmes from the perspective of the frontline actors. Our study revealed that the majority of the participants’ motivation to become counsellors was based on humanitarian grounds. However, some were selected not because of their interest in the profession but simply as a measure to address the shortage of counsellors in the centres. A finding consistent with other studies [22-23]. Such a measure could be counterproductive in the long run since such staffs lack the dedication to perform their duties and this could jeopardize service delivery. Moreover, the initial quality and duration of training received was variable and coupled with the fact that ongoing in-service training and supportive supervision was infrequent, some counsellors found it challenging attending to co-infected patients. It was also a dilemma to the participants between upholding confidentiality of patients’ results and encouraging disclosure of HIV status to patient’s sexual partners when faced with uncompromising patients. All these challenges could adversely affect the counsellors’ morals leading to burnout as has been documented [22]. These concerns therefore underscore the importance of addressing human resources development by identifying and selecting interested staffs for training, providing regular in-service refresher courses/seminars for staffs and supportive supervision. In addition, counsellor support groups should be encouraged which will provide a forum for members to meet and discuss challenges.

Health system challenges

Our study revealed that all the participants appreciated the integration of TB and HIV services because it was beneficial both to the staffs and most importantly to the patients. The success
achieved was attributed to the multidisciplinary approach to service delivery since staffs from both units collaborated with each other, with colleagues in other treatment centres, with the patients and HIV support group members, and with key stakeholders in the community. Staffs from both units assisted each other although they had specific duties to perform in their respective units. This was feasible because of the cross-training between staffs in the two units which enabled some of them to become conversant in the delivery of both services which is consistent with the finding from another study [24]. Additionally, the existence of a therapeutic committee in one of the treatment centres ensured that the best ART regimen was selected for patients. All these measures were demonstrations of team work which improved service delivery and reduced patient delay in seeking services.

Despite the above achievements, the shortage of staffs in the units compared to the heavy workload required that counsellors performed multiple duties which could adversely affect their efficiency. This shortage prompted some centres to use “expert” patients as lay volunteer counsellors in order to increase patient involvement in care. There is evidence that task-shifting is an effective strategy to address the immediate shortage of human resources in HIV treatment and care in Africa [25]. The Cameroon government had initiated the community relay agent programme, recruiting and training staffs in integrated TB, HIV and Malaria care. These staffs were later to serve as bridges between the patients in the community and the health system. However, there have been challenges with appropriate remuneration of these agents and sustainability of this programme. Political commitment is therefore required to scale-up such a strategy to all centres while taking into consideration the contextual factors and clearly defining the roles of such workers within the health system.
It was observed in this study that TB and HIV units operated in the same building in the faith-based centres with the same clinician overseeing patient care, similar to the Khayelitsha model in South Africa [26]. Such strategy enhances proximity of the units and reduces the possibility of duplication of services which ultimately improves service quality and delivery. However, due to shortage of space in the public hospital, TB and HIV units still operated in separate buildings. This could hamper inter-unit referral of co-infected patients and lead to patient delay in seeking services and loss to follow within the system if proper tracking and referral mechanisms are not put in place. Lack of infrastructure as a general problem within treatment centres has been documented [23]. Privacy/confidentiality concerns and delay in service provision as a result of shortage in working space were also raised in this study. Improvement in health system infrastructure is required to address these challenges while appropriate infection control measures should be put in place to prevent the spread of nosocomial TB infection to HIV-positive patients who are high risk [27] as a result of their exposure to TB patients in congested outpatient waiting rooms and in the wards.

It is a commendable finding in this study that anti-TB medications and ARTs supplies have been fairly regular in all the treatment centres with only minor and short-term incidences of interrupted supplies of ARTs. Such incidences were duly addressed by staffs who requested for relief supplies from nearby treatment centres with ‘surplus’ stocks. Such a strategy is a demonstration of the healthcare staffs’ ingenuity in addressing challenges which can be scaled-up by creating a network of all treatment centres and their corresponding staffs as has been reported in a South African study [22]. This will ensure timely request of relief supplies and the
possibility of referring patients to treatment centres with ‘adequate’ stocks if located close to patients’ area of residence. Notwithstanding, our study revealed that CPT stocks had been interrupted for several months consistent with a study reported in Uganda [23]. This resulted in rationing of CPT only to newly diagnosed and/or severely immunocompromised HIV patients and the older patients were expected to personally procure their supplies. Household out-of-pocket health expenditure has been documented to be over 80% in the country [28]. Asking patients who are already financially incapacitated would be catastrophic and could lead to treatment default. It is therefore imperative that a consistent and sustainable drug supply mechanism is put in place considering the benefits of this simple preventive strategy [29].

**Collaboration with key stakeholders**

It is worthy of note the collaboration that existed between the healthcare providers, the patients and the community to address treatment default and adherence through education and sensitization. Since poverty was cited as one of the reasons for treatment default, financial assistance was occasionally provided to paupers. However, a more sustainable intervention to tackle poverty and address the psychological needs of these patients was to refer them to HIV support groups where they were assisted by their peers. The patients were also empowered economically with subsidies for them to engage in income generating activities. Another interesting strategy that addressed HIV-positive patients’ health expenditures was the community insurance scheme which is a form of prepayment and risk-pooling scheme. This catered for HIV support group members’ HIV therapeutic investigations. Such a scheme could be rolled out nationwide and in other African settings with high HIV prevalence considering the high cost of out-of-pocket health financing in these settings [30].
Another interesting finding in this study was the collaboration that existed between one of the faith-based centres and traditional healers in HIV prevention. There has been documented reluctance of mainstream medicine to collaborate with traditional healers in Africa [31]. However, a study in Cameroon revealed traditional healers’ willingness to collaborate with the healthcare system [32]. Traditional medical practice has been legalised by the Cameroon government considering their huge influence in the population since they usually serve as entry points into the healthcare system. It has been estimated that 80% of people in Africa rely on traditional medicine for their primary health needs [33]. It would therefore be indispensible to harness traditional healers’ potentials by streamlining them into a comprehensive HIV/AIDS prevention and control strategy as has been reported in some Africa countries [34]. However, the concerns which the traditional healers raised in this study should be duly considered since treating HIV/AIDS and TB patients is part of their livelihood which they could regard as threatened if these groups of patients are taken away from them into mainstream medicine.

**Methodological considerations**

The study sites were purposively selected because they are approved HIV treatment centres with up to date HIV laboratory monitoring facilities. We therefore believe that they share similar characteristics and challenges as the other smaller treatment units in the region. However, inherent in the study design, the participants’ perceptions do not necessarily represent those of the entire counsellors and traditional healers in the region. Additionally, the first author has been involved in TB/HIV care in the region and was familiar to the participants. This might have influenced their responses either by them providing less information assuming that the interviewer was already familiar with the settings or they could have provided favourable responses to highlight their successes despite all the measures taken to reduce this bias. Finally,
although our findings are context specific, the lessons learned from this study can inform implementation or strengthening of collaborative activities in similar contexts with high co-infection rates which is the case with most countries in sub-Saharan Africa

Conclusions

In the past, TB and HIV programmes have provided their services as separate entities. However, the synergism between TB and HIV/AIDS has prompted collaboration between both programmes. Our study highlighted the importance of adequate planning and investment/strengthening of the health system while scaling up collaborative activities into already existing programmes. This is pertinent since shortages in human resources and health system infrastructure, and interrupted supply of drugs remain important challenges to a successful collaboration. A multidisciplinary approach to TB/HIV prevention and control involving key stakeholders is essential. Particular consideration should be given to the enormous potential that could be harnessed by collaborating with traditional healers while clearly defining their roles in the partnership. Finally, sustainable interventions to address poverty in this particularly disadvantaged group of patients would be invaluable while providing them with appropriate psychosocial support to encourage health seeking and treatment adherence.

Competing interests

The authors declare that they have no competing interests whatsoever.
Authors’ contributions

All authors contributed to the paper. NBN, AKH conceptualized and designed the study; NBN performed data collection and analysis which was interpreted by all authors. NBN drafted the manuscript with substantial revisions from all authors. All authors read and approved the final version of the manuscript.

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References


‘When I get better I will do the test’: Facilitators and barriers to HIV testing in Northwest Region of Cameroon with implications for TB and HIV/AIDS control programmes

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Abstract
The World Health Organization has recommended collaborative activities between TB and HIV programmes with routine counselling and testing for HIV among TB patients in order to improve the uptake of HIV services. We carried out qualitative research interviews with 21 TB patients in four selected TB and HIV/AIDS treatment centres in the Northwest Region of Cameroon to explore the facilitators and barriers to HIV testing. The desire to be healthy and live longer from knowing one’s status inspired by the anticipated support from loved ones, faith in a supreme being, influence and trust in the medical authority, encouraged HIV testing. Men also demonstrated their masculinity by testing, thus portraying themselves as positive role models for other men. Meanwhile, the overwhelming burden of facing both TB and HIV simultaneously, influenced by the fear of disclosure of results, harmful gender norms and practices, fear of stigma and discrimination, and misconceptions surrounding HIV/AIDS deterred HIV testing. However, as a result of conflicting emotional experiences regarding to test or not to test, the decision-making process was not straightforward and this complex process needs to be acknowledged by health care providers when advocating for routine HIV testing among TB patients.

Keywords: tuberculosis, HIV, counselling and testing, Northwest Region, Cameroon.

Résumé
L’Organisation mondiale de la santé a recommandé des activités collaboratives entre les programmes consacrés à la tuberculose et ceux sur le VIH, avec notamment la mise en place d’une assistance et d’un dépistage systématique du VIH pour les sujets atteints de tuberculose, l’objectif étant d’augmenter la fréquentation des services prenant en charge les patients atteints par le VIH. Afin d’étudier les facilitateurs et les obstacles au dépistage du VIH, nous avons mené dans quatre centres de traitement de la tuberculose et du VIH/SIDA de la région du Nord-Ouest du Cameroun, des entretiens qualitatifs avec 21 patients atteints de tuberculose. Les facteurs encourageant le dépistage du VIH étaient le désir d’être en bonne santé et celui de vivre plus longtemps, et le présupposé voulant qu’une fois que l’on connaît son statut, on bénéficie souvent du soutien de ses proches. Il y avait aussi la foi en un être suprême, et l’influence et la confiance dans l’autorité médicale. Les hommes ont aussi démontré leur masculinité en se faisant dépister car ils se présentaient ainsi comme des modèles positifs pour les autres hommes. En même temps, affronter simultanément la tuberculose et le VIH est un fardeau écrasant en raison de la crainte de la divulgation des résultats, des pratiques et des normes de genres néfastes, de la peur de la stigmatisation et de la discrimination, et des idées fausses qui entourent le VIH/SIDA. Tout ceci est un frein au dépistage du VIH. Cependant, en raison d’expériences émotionnelles conflictuelles sur le fait d’être dépisté ou non, le processus de prise de décision n’était pas simple, et sa complexité doit être reconnue par les prestataires de soins de santé lorsqu’ils preconisent le dépistage systématique du VIH chez les patients atteints de la tuberculose.

Mots clés: tuberculose, VIH, assistance et dépistage, région du Nord-Ouest, Cameroun.

Introduction
Tuberculosis (TB) was declared a global emergency in 1993 by the World Health Organization (WHO), but it still poses a threat especially in high human immunodeficiency virus (HIV) prevalent countries. In 2007, out of the 9.27 million incident TB cases reported globally, 1.37 million (15%) were HIV positive. Africa alone accounted for 79% of the co-infected cases. In Cameroon, a total of 36 088 prevalent and 35 556 incident TB cases were recorded in 2007 (WHO, 2009b).

Because of the overlapping epidemiology of both infections, WHO in 2004 recommended collaborative activities between TB and HIV control programmes geared towards reducing the...
burden of both HIV and TB among these patients (WHO, 2004). Subsequently, there has been scale-up of HIV services including antiretroviral (ART) and co-trimoxazole preventive therapies (CPT) to TB patients. However, to be able to access these services it is essential that the patients’ HIV status is known. Therefore, providing routine counselling and testing to all TB patients in health care services has been recommended to facilitate access to the much-needed HIV services (UNAIDS/WHO, 2004).

In 2007, WHO advocated that governments should adopt provider-initiated testing and counselling, which is counselling recommended by service providers to individuals seeking medical treatment with an ‘opt-out’ approach. This means that individuals, after receiving the pre-test information, can expressly decline the HIV test if they do not want it to be performed, (WHO/UNAIDS, 2007). However, uptake of testing is influenced by health policies, health care system factors including infrastructure, human resources and patient factors. Globally, HIV testing among TB patients has been impressive with the number of notified TB cases with a known HIV status increasing from 0.5% in 2002 to 16% in 2007. In Africa, testing increased from 22% in 2006 to 37% in 2007 among notified TB cases and the highest testing rates among countries with high HIV prevalence were found in Rwanda, Malawi, Lesotho, Swaziland and Kenya (WHO, 2009a). In Cameroon, the number of TB patients tested for HIV has increased since 2006 from 8 637 to 11 825 in 2007 and to 16 144 in 2008 with corresponding co-infection rates of 38.9%, 43.8% and 40.4% respectively in the adult population (CNLS, 2008).

In Cameroon, collaborative activities between the National TB Control Programme and National AIDS Control Programme began in 2004 and counselling for HIV is routinely offered free to all TB patients. There are 95 sites providing counselling and antiretroviral services nationwide and 10 in the Northwest Region (NACC, 2007). Since May 2007, ART and CPT are provided free of charge to all TB patients.

Studies in Africa and Asia have demonstrated several barriers to HIV testing among TB patients. They included fear of testing and stigma (Dafatary, Padayatchi, & Padilla, 2007 and Mahendradhata, Ahmad, Lefèvre, Boelaert, & Van der Stuyft, 2008), lack of confidentiality and privacy (Corneli, Jarret, Sabue, Duvall, Bahati, Behets et al., 2008), timing of testing and waiting time to do the test (Dafatary, Padayatchi, & Padilla, 2007), females needing to seek partners’ consent (Dafatary, Padayatchi, & Padilla, 2007). Although much can be learned from these studies it is important to ascertain these factors from a local perspective. This initial study was conducted to explore the facilitators and barriers to HIV testing among TB patients in four selected HIV/AIDS and TB treatment facilities in the Northwest Region of Cameroon. Such knowledge and understanding are important information to improve access to HIV services and enhance TB/HIV collaborative activities. It was also intended to gather information to plan for future studies among health care professionals about the counselling and testing processes in the region.

Methods

Study setting

Cameroon, located in central Africa, has a total population of over 18 million (WHO, 2009b) and is divided into 10 regions. This study was performed in the Northwest Region with a population estimate of 1.8 million. Bamenda, its capital, has a population of over 300 000. In the region there are 13 health districts in the public sector, 1 regional hospital, 19 district hospitals and 106 assimilated district hospitals and health centres. There are also private, faith-based hospitals and health centres. In 2004 the region had the country’s highest HIV prevalence estimate of 8.7% - 11.9% in females and 5.2% in males (INS, 2004).

Currently there are 10 hospitals offering comprehensive HIV care/support activities and TB control within the region and four were selected for this study: Bamenda Regional Hospital (public), Banso Baptist Hospital, Mbingo Baptist Hospital and Njinikom Catholic Hospital (all faith-based). The selection was made because of their accessibility, similar patient load, and a similarity in the services provided because they act as referral centres in the region, but also to get a variation of patients since they serve both rural and urban populations. Moreover, both faith-based and public hospitals were included because of perceived differences among the population with regards to the quality of patient care and user-friendliness between these settings.

Counselling and testing services

All newly-diagnosed TB patients in the TB units including referrals from other services are routinely offered counselling and testing for HIV using the ‘opt-out’ approach by trained counsellors. Their training usually lasts for 1 - 2 weeks with frequent refresher courses and in-service training thereafter. However, there are a few nurses/ social workers who have undergone 9 months’ intensive training courses in counselling to improve the quality of counselling within these settings. Basic information given about HIV includes its transmission, progression, manifestation, link with TB and the benefits of testing, including free ART/CPT. HIV test results are available the same day and post-test counselling including support services for HIV positive cases are also provided the same day and as the need arises.

Study design and data collection

The study design was informed by a grounded theory approach and the first author conducted the qualitative research interviews (Dahlgren, Emmelin, & Winkvist, 2004). A pilot study was initially conducted with 4 patients to test the interview guide, and after preliminary analysis and debriefing sessions with the research team emerging topics were added to the final interview guide. The final interview guide included open-ended questions regarding treatment-seeking trajectory and choice of hospital, reactions to TB diagnosis and relationship with providers, counselling and testing history, reasons for accepting/refusing HIV test, reactions to outcome of test, disclosure history, impressions about barriers and suggestions for improvement of services.

Hospital heads, TB coordinators, nurses and counsellors were informed about the study. Participants were purposively selected for the study based on the HIV testing history obtained from the TB registers. A total of 26 patients were approached with
the assistance of either the TB coordinators or the head nurses in the TB units and asked about their willingness to participate. Five declined to participate for fear of later broadcasting of the interviews, needed partners’ consent, or were just not interested. A total of 21 participants, approximately 5 in each study site, 11 who accepted (6 males and 5 females) and 10 who refused (4 males and 6 females) HIV testing, were interviewed. Their ages ranged from 17 to 49 years with a mean age of 31.7 years. Among those self-employed, their activities included farming, petty trading, carpentry, butchery, hairdressing, motor mechanic and contract work. Employed occupations included teaching, nursing, taxi driving, baking and, civil service. Demographic information of the participants was based on self-reports, and details of the participants’ characteristics are presented in Table 1.

After a total of 21 interviews had been conducted and not much new information was emerging in the preliminary comparative analyses, it was decided that further interviews would probably not yield much more additional knowledge in relation to the research question (Kvale, 1996). The interviews were conducted from December 2007 to April 2008 in either English or Pidgin English (locally adapted English that everybody including the illiterate speaks in this region) and lasted between 60 and 90 minutes. All interviews were tape-recorded and transcribed verbatim and the Pidgin English interviews were later translated into English by the first author.

Data analysis
The audio tapes and transcripts were de-identified to protect the confidentiality of the participants. All the transcripts were then coded manually to form categories (theoretically generated concepts according to a grounded theory approach) including properties and dimensions in constant comparison with other categories and the interview transcripts in its entirety (Dahlgren et al., 2004). Matrices were developed to group together and compare categories to discover recurring ideas and finally to form eight main categories (four related to facilitators and four to the barriers). From the analysis, a core category was finally chosen, one which related to all the other categories and represented the most salient point in the participants’ decision-making process regarding testing. Finally, a visual representation of the findings was developed describing how each of the categories were acting as facilitators and barriers to testing and were related to the two main categories – ‘The desire to be healthy and live longer’ and ‘Overwhelming burden of TB and HIV’ and to the core category ‘Complexity of choices’ (Fig. 1).

![Diagram](image-url)

**Fig. 1. A visual representation of facilitators and barriers to HIV testing.**
Trustworthiness of the study
The first author’s pre-understanding of the local context having been professionally involved in TB/HIV management might have affected his judgement and influenced the responses from the participants. However, in order to explore new ideas and discover new knowledge, an open-minded approach and a well-prepared interview guide was used as a means of keeping the pre-understanding ‘within brackets’ (Dahlgren et al., 2004) – a technique ‘borrowed’ from phenomenological researchers in order to reduce biases. In order to build trust in the participants and to encourage free flow of discussions, the first author spent almost a week in the study settings as preliminary visits to observe the activities in the units and interact with the participants. This was to gain the participants’ confidence prior to the interviews. During the analysis phase, several joint briefing and analysis sessions were held with members of the research team to ensure credibility of the findings and the transcripts and analysis were presented to senior colleagues for peer review.

Ethical approval
Approval for the study was obtained from the Delegation of Public Health for the Northwest Region (N°401/NWP/PDPH/08), the Internal Review Board of the Regional Hospital in Bamenda and the Cameroon Baptist Convention Health Board Institutional Review Board (IRB 2007-09). Verbal consent was also obtained from all study participants and they were assured confidentiality and made to understand that the interviews were not meant to disclose or to blame them for their HIV status.

Results
From the interviews, four categories surfaced as facilitators for testing from which a main category, ‘The desire to be healthy and live longer’ emerged. This was linked to the categories and was the central motive for testing. Another four categories also surfaced as barriers to testing from which a main category, ‘Overwhelming burden of TB and HIV’, emerged because it was linked to the four categories and interpreted as the most important factor which deterred testing. Finally, a core category, ‘Complexity of choices’, was selected, being the link between the two main categories and because it mirrors the complexity in the final individual decision-making process regarding testing. The different categories are presented below and the participants’ quotations are presented in italics and used as examples of the interpreted results described in the text.

The desire to be healthy and live longer – ‘It is better to know and treat and live longer’

‘The desire to be healthy and live longer’ was a strong motivator and emerged as the main category regarding encouragement for testing. According to 82% (9/11) of the respondents who accepted testing, the decision was influenced by the support they required from their loved ones to assist them to face both infections and also by their faith in God to cope during difficult times. Others wanted to display their ‘manly’ courage while some were convinced by the service providers. However, these factors were guided by the determination to find the true cause of their chronic illness so that they could be treated. Some declared to have spent money foolishly consulting faith-healers/traditional doctors believing it was a spell without relief. Equally, some female participants thought it was necessary to test and confirm their status after discovering their partners were HIV-positive. Others felt it was vital to know their status because of suspicion or after confirming their partners’ infidelity so that they could seek treatment. A driving force therefore to test was the knowledge that HIV is now recognised as a ‘normal’ disease with free treatment.

‘No, I was serious about doing the test because if my result were positive then I already knew the next step to take because I was aware that the antiretrovirals were available that I could begin taking if the test came up positive. With the drugs, I will maybe get completely better or live longer…. Normally, I know there is a treatment for AIDS now, it is a normal illness…’ (37-year-old HIV-positive male).

‘Well … I just decided that she (the counsellor) should do it because when you have been sick to this kind of stage when you were close to death, you don’t have to fear anything. It is better you know your status and if you have it (HIV) better you start taking medicines than to just to live blind and die carelessly’ (22-year-old male, HIV-).

Sharing the burden – ‘It is good to tell so that they will support you’

Sixty-four per cent (7/11) of the respondents who accepted testing stated that they could not shoulder the burden of their illness alone. Having been chronically ill and unable to work, they had become dependent on their families for support. They were initially psychologically traumatised by the TB diagnosis, followed by the possibility of being HIV-infected. It was therefore imperative to know their status so that they could disclose to their significant others for psychological/financial support, since it would have been difficult to offer assistance without their relatives knowing the real cause of their illness.

They expressed that the support received from their loved ones was amazing and unexpected because they were initially apprehensive that they had become a burden to them and their diagnosis would be regarded by the family as disgraceful or disappointing.

‘…He (brother) really took his time and talked to me that I should eat well as I am taking these drugs….I should even thank God that my TB has made them to discover another illness (HIV)’ (32-year-old female, HIV+).

However, it was difficult for partners to discuss HIV issues and this was more common with men because they were ashamed of having been unfaithful to their spouses. Most female participants (8/11) commented that it is important for partners to disclose their illness to each other so that they seek solutions early together rather than blaming one another.

Trust in a supreme being – ‘I surrendered everything to God’

Fifty-five per cent (6/11) of the participants who accepted testing were of the impression that life occurrences were willed by God and therefore convinced there was nothing they could do about it if they had already been infected with HIV before seeking treatment. They had a strong belief that God performs miracles...
in people’s lives, so it was better to test and know their status because they could be cured someday. This strong religious belief brought less apprehension about testing and enabled them not only to share their burden with God, but also with relatives for psychological support and assistance.

‘… when you have accepted that God is your God and He is taking care of you, and He is guiding you, why will I be afraid to walk in the shadow of darkness’ (32-year-old female, HIV+).

**Gendered expectations of masculinity – ‘I just behaved like a man’**

According to fifty per cent (3/6) of the male participants who accepted testing, their decision rested on their resolve to prove their manliness because a man is supposed to be courageous and must display strength at all times no matter the type of challenges faced. Thus, this ‘manly’ courage inspired them to find out the cause and also to share the burden of their illness with close relatives, especially their partners, in order to get psychological and nutritional support but most importantly so that they get tested and treated together. They declared that the health care workers were startled by the courage they displayed when asked to test and also when their result was revealed to them.

‘When the doctor told me I had AIDS, he did not even say I had HIV… I think the doctor was really surprised by the way I took the news … very normal’ (37-year-old male, HIV+).

One participant’s motivation for testing was to guarantee his future marital life and prove his virility to the community because a ‘real man’ is supposed to get married and have children.

‘I just thought that if I had it (HIV) then that will be the end about getting married and having children. You know if a man doesn’t have children then you are not a man because they will laugh at you in the village that you are infertile’ (25-year-old male, HIV-).

Nevertheless, they acknowledged uneasiness during the decision-making process because of their past sexual life and the undesirable reactions they anticipated from their partners if they were positive because of their infidelity.

When the male participants were challenged for making unilateral decisions regarding testing, 3/10 declared that traditionally the man is the head of the family and decisions are taken solely by him. Therefore, discussing HIV issues with their partners was unimportant. Others refused to test when requested by their partners because they claimed they were apparently in good health.

‘My wife actually forced but I was very reluctant. You know when you feel very healthy, you tend not to believe what people tell you. It’s just when I got sick that I realised I should have really taken her advice’ (37-year-old male, HIV+).

**Influence of medical authority – ‘It was the doctor who said I should do it’**

Three participants (27%) who tested declared that the health care staff simply asked them to test when they sought treatment. It was their belief that the providers were more knowledgeable about their illness and any decision taken was to assist in better diagnosis and treatment of their condition. They were therefore inclined to test because a refusal would have been conceived as a challenge to the medical authorities.

‘It was the doctor who said that I should do it … They just wrote it down and said I should do the test’ (20-year-old female, HIV+).

Other participants stated that the desire to test was strengthened by the empathetic nature of the counsellors and TB staff whose actions were perceived more as gestures of love and concern rather than performing their routine duties.

**The overwhelming burden of TB and HIV – ‘It was too much for me to handle’**

The overwhelming burden of TB and HIV emerged as the main category regarding barriers to testing. Eighty per cent (8/10) of the respondents who refused testing stated that awareness of the link between TB and HIV and the associated stigma in society brought anxiety and despair. Besides, they affirmed the misconceptions surrounding the aetiology and treatment of HIV and the fear of disclosure of their results to third parties brought apprehension. They declared that recommending HIV testing at that early stage was very devastating to them.

‘It was too much for me. Just in a matter of two weeks everything was going wrong in my life. First I came here thinking it was a simple cough and was told it was TB. The next thing was doing an HIV test. I just couldn’t handle it at once’ (38-year-old female, HIV status unknown).

They rather preferred to treat their TB and become physically/mentally strong before facing the challenges of testing for HIV. Some even blamed the providers for their overzealousness in testing every patient for HIV rather than paying attention to TB, which was life-threatening.

**Fear of lack of confidentiality – ‘They are humble but with diarrhoea of the mouth’**

Although the participants commended the health care staff, especially those in the TB units for being supportive and sympathetic, 30% (3/10) disclosed that they were afraid their result would be disclosed to third parties which would result in them being despised in the community.

‘… right back at home I sit and I hear people who work in the lab or some people who work in the counselling room discussing about people … How he (patient) was looking like this and they did this and that. I mean they discuss patients’ diagnosis to everywhere’ (26-year-old male, HIV status unknown).

When the subject of disclosure of patients’ result was posed to other participants, some alleged it was a common practice based
on complaints from fellow patients although they personally had not been victims. Others claimed to have overheard nurses discussing other hospitalised patients. Some male participants affirmed that such practices were common with female staff they said are fond of meddling into people's privacy. However, they responded unanimously that they could do nothing about it because of possible reprisals they could experience if they reported to the authorities and sanctions were taken against these staff.

“You might say it (complain) and they look at you badly, so I just kept it to myself. Maybe you can point this out in your study because it is not good’ (33-year-old female, HIV status unknown).

They rather preferred to test in a more confidential environment after their TB treatment. Others acknowledged that the authorities were aware of the problem but were unwilling to take appropriate sanctions.

**Gendered expectations of femininity – ‘I need to discuss with my husband’**

Some female participants (3/6) declined testing because they needed to discuss with or obtain consent from their partners. They mentioned that the man is the head of the family and therefore takes decisions regarding family matters. They stated that they were unable to challenge their partners' decisions since they were financially dependent on them to get treatment. They were also afraid they could be accused of cheating, assaulted, rejected or even divorced if their partners discovered they were HIV-positive. To them it was a dilemma because women were to blame for every mishap in the family because they were the ‘weaker’ sex.

“You know that women are not strong, so when we are infected it manifests quickly and when we go to the hospital and it is diagnosed, men will accuse us of having brought it from outside when maybe they are the ones who have brought it and infected us’ (41-year-old female, HIV status unknown).

Two women were discouraged from testing by their partners, the excuse being that TB treatment and not HIV testing was paramount since TB was life-threatening. Women who insisted on testing together with their partners and co-wives for fear of accusation later on encountered stiff resistance and were threatened to take full responsibility in the event of a positive outcome. A few women declared that since the onset of their illness they had received minimal financial support from their partners and were bound to fend for themselves and their children. A participant from a polygamous home had also suffered rejection from her co-wives because her husband had told them that she was probably sick of HIV. Another acknowledged she personally knew a woman who was sent away from her marital home because she tested HIV-positive.

Nevertheless, the female participants declared that women were compassionate and supportive of their HIV-positive partners despite their infidelity and were even expected to go to bed with them. An HIV-positive participant revealed that she concealed her status from her family in order to protect her partner because her family would have assaulted him for infecting her since they had cautioned him against infidelity.

’If I tell them (family) they will hate my husband because they always used to advise him against his women but he never listened and now he has infected me. They might even attack and beat him’ (26-year-old female, HIV+).

However, when these women were challenged for not using condoms to protect themselves despite the knowledge that they had unfaithful partners, some declared using condoms with their partners was not only a taboo in marriage but they will also be accused of cheating.

**Challenge of facing society if HIV-positive – ‘What will people say if they notice that I am sick and losing weight?’**

Fifty per cent (5/10) of the participants revealed that they were conversant with the possible association between having TB and HIV. Hence, their TB diagnosis brought anxiety due to suspicion that their immunity had been compromised, probably by HIV. They became concerned about society's reaction since it was common knowledge that people with TB have HIV. Some were apprehensive about testing because HIV was considered disgraceful by society. A participant claimed she would be uncomfortable facing her close friends if she knew her status, especially as she had lost weight since that was a telltale sign of HIV.

“You cannot be among people who know you are HIV-positive and live freely. They will talk about you and even behave funny towards you. It happens all the time and I know my colleagues, they talk a lot and I will not interact freely with them’ (33-year-old female, HIV status unknown).

These concerns were corroborated by many participants who stated that HIV-positive people are regarded as promiscuous or having been careless with their lives, therefore HIV is a reward for deviancy.

Moreover, because of the shame attached to weight loss and for fear of ridicule, some participants preferred to stay at home until they regained weight before resuming their normal activities. The issue of body image was even emphasised by some counsellors who advised their patients to eat well in order to appear healthy in the community.

“She (counsellor) said I should eat fruits … they will make me look healthy and that I should eat well so that when people look at me they wouldn’t know’ (30-year-old male, HIV+).

**Misconceptions about HIV – ‘You will die no matter what you do’**

Sixty-seven per cent (14/21) of the participants declared that there were misunderstandings surrounding the aetiology and treatment of HIV in society. According to them, many people still do not believe in the existence of HIV/AIDS unless they personally or a relative/friend became infected. To others, HIV is regarded as a spell and treated only by faith or traditional healers.
‘Some don’t even believe that the illness (AIDS) exists. People are just careless with their lives... some will say it is witchcraft, there is nothing like AIDS’ (41-year-old female, HIV status unknown).

They also mentioned the perception in society that HIV is untreatable, which discourages people from testing since they believe the outcome of HIV is death. Hence they preferred to remain ignorant rather than test for a lethal infection. They revealed that this false impression is propagated by traditional healers who dissuade the public from seeking conventional treatment on grounds that they provide cures for every illness including HIV, which cannot be treated in the hospital. Some stated that poverty has compounded the situation since people are inclined to patronise these healers because their remedies are ‘cheaper’. However, a participant blamed the media for promoting these healers through their adverts which are full of misleading messages, especially considering the level of illiteracy in the society. He accused the media authorities for being money-oriented with little regard for society’s health. Much blame was also levelled at the health authorities and policy makers who fail to regulate traditional medical practices and the media.

‘... all you hear over the radio is about quack traditional doctors who advertise cures for thousands of diseases with a single miracle drug ... How for Christ sake will someone allow such adverts to be aired for people to consume? People have stooped so low that they will do anything for money ... What are the Delegates of Public Health and Communication doing!... Don’t tell me the authorities are not aware of this!’ (45-year-old male, HIV).

Complexity of choices – ‘When I get better I will do the test’

‘Complexity of choices’ was chosen as the core category since it reflects the dilemma of making up the mind, being in the intersection between facilitators and barriers for testing. It is an illustration that the decision-making process to test can be seen as a tension between two opposing streams of thoughts, resulting in a process which is dynamic and where a decision not to test could change when realising that there is more to gain than to lose, by knowing the HIV status. Although it was the respondents’ desire to know the cause of their illness, most were apprehensive about the outcome of testing and the stress of having both infections. Meanwhile others were disturbed about reactions from society if their result was disclosed considering the stigma associated with HIV. Some women were also worried about the undesirable reactions they could receive from their partners if HIV-positive. Others were encouraged to test by the health care providers, inspired by their faith and the anticipated support from loved ones, or to prove their masculinity. Among some women, testing was to confirm their status and take care of themselves and others. Eventually, the desire for good health overpowered all the hindrances among some participants while others yielded to the challenges of facing both TB and HIV infections and declined to test.

Discussion

This study highlights TB patients’ perspectives on the challenges faced during testing for HIV. Based on the interviews, some main issues were inferred that influenced testing, the participants’ perceptions about HIV, gender positions, effect of stigma and the role of the providers.

Perceptions about HIV

Our study demonstrated that to many participants, HIV was regarded as a ‘normal’ and treatable infection. Coupled with this was the visible evidence of improvement in the health status of other patients on ART that motivated them to test for HIV.

Perceived benefits of testing, including access to ART (Day, Miyamura, Grant, Leeuw, Munsamy, Baggaley et al., 2003; Daftary et al., 2007) and improvement in the physical condition of other patients on ART (Grant, Logie, Munsana, Gorman, & Murray, 2008) were motivators for testing in previous studies in Africa.

The Northwest Region, being a high HIV-prevalent area in Cameroon, has had many HIV/AIDS sensitisation campaigns via different outlets and this awareness was evident among the participants. However, HIV awareness and its association with TB rather created apprehension and deterred testing among some participants. Also, misconceptions still existed regarding the aetiology and treatment of HIV in the society which negatively impacts HIV prevention and control. There was still non-belief in the existence of HIV and anxiety existed regarding testing because the infection was regarded as untreatable. This encouraged the utilisation of traditional medicine which was apparently cheaper, an issue promoted by the media. This is a strange finding considering the fact that the media is used customarily to educate the masses.

Future HIV/AIDS educational/sensitisation campaigns should incorporate proper information about its aetiology, treatment and prevention. The benefits of testing including the availability of free ART/CPT and support services should also be emphasised. Moreover, it would be valuable if people are given the opportunity to express themselves and clarify the many myths surrounding HIV. The society should also be educated that not all TB is associated with HIV, that TB is curable even in the presence of HIV, and that there is a better survival if both infections are treated concurrently (Varma, Nateniyoum, Akkuip, Mankaattham, Srinak, Sattayawuthipong, et al., 2009; Velasco, Castilla, Sanz, Gasper, Condes, Barros, et al., 2009). The media is used as a means of educating the public about HIV but if conflicting messages from traditional healers are also broadcast, this could be misleading with negative implications on HIV control. It is the responsibility of Ministries of Public Health and Telecommunication to properly educate and train the media on HIV/AIDS issues and the principles of responsible broadcasting without undermining the laws governing freedom of expression. Traditional healers should also be educated on HIV/AIDS and integrated into HIV control since their practice is a significant part of their livelihood.

Gender positions

Our study demonstrated that socially constructed gender positions and practices were present in our setting. Some women lacked autonomy in the decision to test, influenced partly by their financial dependency and most importantly because men were the decision-makers, especially regarding health and
sexual matters. These women desired to know their status but were apprehensive of reprisals from their partners if they were positive and, as has been documented in other studies, women are accountable for any wrongdoing in the family (Maman, Mbwanabo, Hogan, Kilonzo, & Sweat, 2001; Van Dyk & Van Dyk, 2003; Grant et al., 2008). However, these women were expected to be supportive and protective of their HIV-positive partners and even coerced into having unprotected sex because requesting condom use in marriage was regarded as a taboo or implied a woman’s unfaithfulness. Our findings are consistent with research by Taegtmeyer, Kilonzo, Mung’ala, Morgan, & Theobald (2006) and Feldman & Maposhe, (2003).

In contrast, most men in our study demonstrated autonomy in testing (see also Maman et al., 2001; Daffy et al., 2007). Testing for HIV to some men was to prove their masculinity and portray themselves as positive role models to other men, a finding which has not been documented before as a motivator for testing. On the contrary, some refused testing even after persuasion from their partners because of a lack of self-perceived risk and being in apparent good health. They only sought treatment when they became very ill and expressed regrets later. This behaviour has been documented whereby men generally tend to dismiss their health needs and take risks to legitimise themselves as the ‘stronger’ sex (Courtenay, 2000).

Encouraging women to negotiate their health and sexual matters and promoting shared responsibility in relationships would be mutually beneficial. However, men should be made to recognise that this is not an act of subversion but rather a means of fostering a healthy and successful relationship. Nonetheless, it is necessary to also address other factors that are inextricably linked to gender, such as women’s educational level, income/poverty which contribute to maintaining these positions in society. Moreover, engaging men and community leaders in addressing the harmful gender norms that undermine HIV control and teaching men to take up their societal responsibilities and to portray themselves as role models will improve health-seeking behaviours.

Effect of stigma

The fear of stigma from the society was influential in the decision to test among some participants. From this study, two types of stigma were evident – felt and enacted. ‘Felt’ stigma refers to the fear of discrimination whereas ‘enacted’ stigma refers to actual discrimination (Scambler, 1998). Most of the participants perceived they would be stigmatised if their HIV status was known to friends and society and therefore preferred to remain ignorant. Because HIV is associated with decadence and emaciation, HIV-positive individuals actually experienced discrimination. This pushed some participants to withdraw into privacy until they regained their body image, consistent with findings by Bond and Nyblade (2006) and Grant et al. (2008).

To properly address stigma and discrimination it is necessary for society to be provided with correct information about HIV and the socio-cultural factors promoting stigma need to be confronted with the active participation of all stakeholders. The community must be made to realise that stigma is a problem that involves everyone and a lasting solution is dependent on the participation of all. Health care providers should empower patients to make informed decisions regarding their health and social support networks created whereby positive patients can share their problems and seek solutions together.

Role of the provider

In this study health care providers were appreciated for their humanitarian gestures which influenced testing. A similar finding has been demonstrated by Maman et al. (2001), where counsellors’ actions were considered influential in the decision to test. Nonetheless, some participants felt they were coerced into testing rather than them making voluntary and informed choices; this was consistent with findings by Daffy et al. (2007) and Corneli et al. (2008). Health care professionals were considered more knowledgeable about the participants’ illness and a refusal would have been regarded as disrespectful.

TB diagnosis was devastating to some respondent and introducing HIV testing shortly after that was overwhelming and brought apprehension about the outcome of testing. Studies have demonstrated that fear of testing and unfavourable outcomes (Day et al., 2003, Mahendradhata et al., 2008), inappropriate timing in requesting for testing and preference to deal with the illnesses in succession (Daffy et al., 2007) acted as barriers to testing among TB patients. Furthermore, some participants were afraid their results would be disclosed to third parties but due to the hierarchical nature of the health care system, they were unable to report their grievances for fear of retribution. The fear of breach in confidentiality as a barrier to testing HIV has been a concern in HIV control programmes, an issue which has been attributed to the fact that HIV/AIDS has been treated as an ‘exceptional’ disease, different from other sexually transmitted or lethal infectious diseases (De Cock, Mbori-Ngacha, & Marum, 2002). However, upholding confidentiality by providers should not be confused with concealing vital information from those who are likely to be adversely affected by such measures. Disclosure of a patient’s HIV status to a partner for preventive or protective reasons is a dilemma to health care providers because it could be regarded as a breach of that individual’s confidentiality and a violation of human rights. However, refusing to inform that individual’s partner who later becomes infected also constitutes a violation of that person’s own human rights. Therefore, upholding an absolutely human rights approach to HIV/AIDS control where an individual’s rights are protected at all costs despite adverse effects on the public’s health (Gruskin & Loff, 2002) hinders HIV/AIDS control. Public health prevention and social justice should therefore take precedence over protecting individual human rights in such circumstances. However, existing policies/laws and support services that promote/protect the rights of HIV-positive persons should be adequately enforced in genuine cases of breach of confidentiality and in those whom disclosure might result in adverse consequences. It has also been recognised that the quality of counselling plays an important role in the uptake of HIV testing services, a factor which has been found inadequate in Africa (De Paoli, Manongi, & Klepp, 2002; Chopra, Doherty, Jackson & Ashworth, 2005). It is therefore important that counsellors are properly trained and regularly supervised as they perform their daily activities in order to improve uptake of HIV services.
Some limitations exist in our study. The sample was hospital based and purposively selected and therefore the patients' perceptions do not reflect those of the entire TB population. Moreover, our sample size was small, non-homogenous and the number of participants divided across each study site limited generalisability of our findings to the entire region. The decision-making regarding testing among participants who declined the interviews might have been different from participants in the study, whose perspectives we might not have captured. Besides, participation in the interviews might not have been entirely voluntary but influenced by the power dynamics between health care provider and patient. This might have led to 'courtesy bias' (Leine, Lundgren, Haapaya, Sinai & Jennings, 2007) whereby the participants might have unintentionally responded favourably to please the interviewer. The participants were encouraged to respond freely to the questions without any fear of reprisals from the authorities in an attempt to reduce this bias. However, being a preliminary study to gather information about the counselling and testing processes in order to improve uptake of HIV care packages among TB patients in the region, we believe our study participants' perceptions were informative and will be used for hypothesis generation in designing future studies and by policy makers.

Conclusion

Our study highlighted many important factors that influenced testing for HIV among TB patients in the region which could be relevant to other regions similar to our setting. While advocating for increase uptake of HIV testing and care services, it is important that health care providers take into consideration the complex choices TB patients are faced with during the decision-making process to test for HIV during counselling. This will not only ensure the scale-up of HIV diagnosis and treatment in those eligible ART but it will also mitigate the transmission of TB and HIV through responsible behavioural change and early health-seeking from information gained during the counselling process. This in the long run will ensure sustainability in the control of TB and HIV co-infection in the population, which is the goal of TB/ HIV collaborative activities.

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References


“If the patients decide not to tell what can we do?” - TB/HIV counsellors’ dilemma on partner notification for HIV

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Abstract

Background

There is a global consensus towards universal access to human immunodeficiency virus (HIV) services consequent to the increasing availability of antiretroviral therapy. However, to benefit from these services, knowledge of one’s HIV status is critical. Partner notification for HIV is an important component of HIV counselling because it is an effective strategy to prevent secondary transmission, and promote early diagnosis and prompt treatment of HIV patients’ sexual partners. However, counsellors are often frustrated by the reluctance of HIV-positive patients to voluntary notify their sexual partners. This study aimed to explore tuberculosis (TB)/HIV counsellors’ perspectives regarding confidentiality and partner notification.

Methods

Qualitative research interviews were conducted in the Northwest Region of Cameroon between September and December 2009 with 30 TB/HIV counsellors in 4 treatment centres and 2 legal professionals. Situational Analysis (positional map) was used for data analysis.

Results

Confidentiality issues were perceived to be handled properly despite concerns about patients’ reluctance to report cases of violation due to apprehension of reprisals from health care staffs. All respondents encouraged voluntary partner notification, and held four varying positions when confronted with patients who refused to voluntarily notify their partners. Position one focused on absolute respect of patients’ autonomy; position two balanced between the respect of patients’ autonomy and their partners’ safety; position three wished for protection of sexual partners at risk of HIV infection, and legal protection for counsellors; and position four requested making HIV testing and partner notification routine processes.
Conclusion

Counsellors regularly encounter ethical, legal and moral dilemmas between respecting patients’ confidentiality and autonomy, and protecting patients’ sexual partners at risk of HIV infection. This reflects the complexity of partner notification and demonstrates that no single approach is optimal, but instead certain contextual factors and a combination of different approaches should be considered. Meanwhile, adopting a human rights perspective in HIV programmes will balance the interests of both patients and their partners, and ultimately enhance universal access to HIV services.
Background

In recent years, there has been a global consensus towards the rapid scale-up and universal access to human immunodeficiency virus (HIV) services. This is especially so in sub-Saharan Africa which bears the overwhelming brunt of the epidemic. However, for this to be feasible, knowledge of one’s HIV-positive status is a prerequisite. HIV testing and counselling serves this purpose since it is a critical prevention and treatment tool in the control of HIV infection [1]. The conventional client-initiated approach to HIV testing, also known as voluntary counselling and testing (VCT), has led many people to know their HIV status, reduce or modify risky behaviours, and prevent HIV transmission to others. Yet, less than 40% of the population in sub-Saharan Africa living with HIV know their status [2]. Consequently, in populations with generalised HIV epidemic (where HIV prevalence is consistently over 1% in pregnant women), provider-initiated testing and counselling (PITC), which is counselling recommended by health care providers to every person attending health care facilities has since 2007 been recommended as a supplement to VCT [3]. This approach ensures the systematic diagnosis of HIV and thereby facilitating patients’ access to HIV services.

A major area of concern in counselling is how to encourage patients to disclose their HIV status after testing. Disclosure is defined literally as the action of making new or secret information known [4]. HIV disclosure however, is defined as a ‘complex and multifaceted process of making a voluntary or involuntary decision about whom to inform about one’s serostatus, why, when, where and how’ [5]. This is particularly challenging when it comes to informing patients’ sexual partners, also referred to as partner notification. The three approaches to partner notification include: i) source referral, whereby the health care provider encourages the patients
to alert their partners themselves, ii) provider referral, whereby the health care provider notifies
the partners with the consent of the patients while respecting the patients’ confidentiality, and iii)
conditional referral, whereby the patients in agreement with the health care provider are
supposed to inform their partners within a given time frame otherwise the health care provider
will do so (but without revealing the patients’ identity) [6]. The increasing emphasis on partner
notification in HIV control programmes is backed by empirical evidence that it is an effective
strategy of preventing HIV transmission to sexual partners at risk, and also promoting early
diagnosis and prompt treatment to those found infected [7-8].

The eventual motivation to notify one’s sexual partners is influenced by the patients’ ethical
responsibility and concern for the partners’ health, the desire for social support, the severity of
the disease, culturally related factors [9], and the important role played by counsellors [1, 10].
However, counsellors are frequently frustrated by the low rates of HIV-positive patients who
actually inform their partners about their status [11-12]. These low rates of disclosure eventually
lead to the likelihood of treatment default since such patients would prefer not to be traced in the
community [11]. It also leads to lost opportunities for prevention of new infections in partners at
risk, and inability to access appropriate HIV services for both the patients and their partners [13].

In 2001, the Cameroon government initiated a decentralised approach of its national
antiretroviral treatment (ART) programme to the district level. TB and HIV services have been
integrated and counselling for HIV amongst TB patients is routine and free of charge. Since May
2007, ART and drugs for treating HIV opportunistic infections have been provided without costs
to eligible patients. The decentralisation of HIV/AIDS care has improved access to HIV services
including partner notification, especially amongst women. It has been documented that 86.3% of
women informed their main sexual partners about their HIV status. This was especially so for
married compared to unmarried women (90.0% vs. 80.6%). However, only 46% of these women
knew their partners’ serostatus [14]. Plausible explanations for the difference between men and
women are that either the male partners’ status was unknown or they had refused to share their
results with their female partners. The results support other studies identifying gender inequality
as one of the factors fuelling HIV transmission in sub-Saharan Africa, and are noteworthy
because non-disclosure jeopardizes effective HIV preventive efforts [15-16].

Considering the high HIV co-infection rate amongst TB patients in the country (40.4%) [17],
TB/HIV counsellors are at the frontline to ensure that co-infected patients and their families
access HIV services. This study was therefore conducted to explore TB/HIV counsellors’
perspectives on confidentiality and partner notification; the challenges encountered in the
process; and the strategies used to address them. This will not only improve our knowledge about
the complexities surrounding partner notification, especially amongst this particular group of
patients with high co-infection rates, but also provide insights leading to possible strategies
towards a better HIV prevention and control.

Methods

Study setting
Cameroon is divided into 10 regions with a population of over 18 million inhabitants. This study
was conducted in the Northwest region which comprises seven administrative divisions.
Bamenda is its capital and the region has over 2.1 million inhabitants that are mostly English-
speaking. In the 2004 national health and demographic survey, the national HIV prevalence was 5.4%, and the region had the highest HIV prevalence of 8.7%; 11.9% for females and 5.2% for males [18]. There are presently 13 approved HIV/AIDS treatment centres in the region [17]. Four of these were purposively selected for the study as follow-up to other studies evaluating TB/HIV collaborative activities in the region [19-20]. The selection of these centres was based on the following: i) their fairly comparable patient load, ii) accessibility, iii) the diversity of patients treated since they serve both rural and urban populations, and iv) the similarity in the services provided since they all have CD4 machines to perform CD4/CD8 count in order to monitor the immune status of HIV-positive patients. The centres are connected to faith-based hospitals (Banso Baptist Hospital, Mbingo Baptist Hospital and Njinikom Catholic Hospital) and a public hospital (Regional Hospital Bamenda).

**HIV counselling services for TB patients**

All the newly diagnosed TB patients in the treatment unit, plus the referrals from other health services whose HIV status is unknown, are routinely offered counselling and testing for HIV using the ‘opt-out’ approach. Basic information about HIV and its link to TB is provided. Patients are also educated about informed consent, confidentiality of test result, the benefits of testing including free ART, co-trimoxazole preventive therapy, and the possibility of disclosing their HIV result to relatives. For those who consent, test results are available within a few hours using rapid diagnostic test kits. Post-test counselling is offered on the same day or as the need arises to all patients regardless of the HIV status, and includes certain support services for HIV-positive persons.
Study design and data collection

The counsellors were approached and asked about their willingness to participate and all expressly accepted. The first author performed the interviews using an inquiry guide with questions about the counsellors’ background, the nature and content of counselling, and how confidentiality and partner notification issues were handled. Based on preliminary comparative analysis of 30 conducted interviews (7-8 in each of the 4 study sites), it was decided that further interviews would probably not yield much more additional information in relation to the research question [21].

From the interviews with the counsellors, legal issues emerged regarding confidentiality and partner notification for HIV. To obtain a legal perspective about these concerns, two additional interviews were conducted with a lawyer and a judge. The interviews were carried out from September to December 2009, and were all conducted in English. Each of the interviews lasted between 45- 90 minutes, were tape-recorded and transcribed verbatim by the first author. The tapes and transcripts were de-identified to ensure anonymity.

Data analysis

Situational Analysis [22] was used to analyse the data. The transcripts were initially read through several times to obtain a thorough understanding of the participants’ views regarding confidentiality and partner notification. Thereafter, traditional Grounded Theory coding [23] of all the texts was performed manually. The codes from the different transcripts were then reviewed while maintaining the principle of constant comparison. Codes that contained similar ideas regarding confidentiality and partner notification were grouped together. From the grouped codes, four categories were developed which represented the different positions taken by
participants regarding confidentiality and partner notification. Finally, a positional map was constructed as a visual representation of these four categories (Figure 1). Two axes were used to map the positions, one with emphasis on patients’ autonomy (x-axis) and the other with emphasis on public health interest (y-axis). The axes reflect the fundamental questions or debates surrounding confidentiality and partner notification for HIV.

**Trustworthiness of the study**

Review of adequate literature and findings from studies in the region ensured reliability and validity of our interview material. Moreover, the first author’s pre-understanding of the local context having been involved in TB/HIV management in the region built trust in the participants and encouraged free flow of discussions. However, to be able to discover new knowledge and explore new ideas, a well prepared interview guide was used as a means of putting the contextual pre-understanding within brackets [23]. Also, to ensure credibility of the findings, many joint briefing and analysis sessions were conducted during the data collection and analysis phase with members of the research team and a senior local resource person. Feedback of the results was also provided to the relevant authorities/ethical bodies to further ensure credibility of the findings.

**Ethical approval**

Ethical approval for the study was obtained from the Regional Delegation of Public Health for the Northwest Region (N°401/NWP/PDPH/08). Administrative clearance was obtained from the Internal Review Board of the Regional Hospital in Bamenda, the Cameroon Baptist Convention Health Board Institutional Review Board (IRBC20090112ez: IRB2007-09), and St. Martin de
Porres Catholic Hospital Njinikom. Moreover, verbal consent was obtained from each participant after explanation of the study objectives and guarantee of secrecy.

**Results**

A total of 32 participants were interviewed; 30 counsellors (24 females and 6 males, probably mirroring the high proportion of female counsellors), and 2 legal professionals. Their ages ranged from 27 to 55 years with a mean age of 36 years. A summary of the participants’ characteristics is presented in Table 1. The findings are presented in two parts. Firstly, about how confidentiality issues are handled in the study settings, followed by a description of how partner notification for HIV is addressed. Secondly, a detailed description is provided regarding the various positions taken by the counsellors in relation to partner notification for HIV. Relevant quotations from the participants are provided in italics.

**Dealing with confidentiality**

All the participants stated that preserving confidentiality of patients’ HIV result is emphasized during their training and enforced in their counselling practice. They revealed that these measures maintain patients’ trust in the health care system, facilitate HIV testing and ultimately compliance to treatment and care. Although not all the treatment centres had clearly documented policies addressing confidentiality, the participants stated that a few cases of true breaches in patients’ confidentiality had been reported to authorities and these were duly investigated and appropriate sanctions taken against the perpetrators.

"A few patients have complained that they have heard their results in the quarters and they did not know how it got there. The authority summoned the staffs who were accused..."
by the patients and they were later sanctioned and one was dismissed” (Female counsellor, 32 years old)

However, some participants mentioned that patients are often initially overwhelmed by the HIV diagnosis, and some may unintentionally disclose their status to friends and relatives but later accuse the health care staffs for doing so. In addition, some mentioned that patients were generally reluctant to complain officially when they suspected that their confidentiality had been breached by staffs because they were apprehensive of reprisals from these staffs. It was therefore difficult to properly investigate true cases of breach in confidentiality since such accusations from patients were only treated as rumours.

“So far we have heard rumours but nobody has come up officially to complain and because of that we have not done anything because we cannot address anybody....You know most of the patients are afraid to come because they are afraid we might treat them badly after” (Female counsellor, 27 years old)

The participants stated that efforts have been made to address confidentiality within the treatment centres. They revealed that the hospital authorities regularly organise workshops and seminars for staffs where confidentiality is re-emphasized. Furthermore, some stated that only staffs directly involved in the management of patients have access to their medical records. Some also mentioned that the HIV results are documented with special codes as a protective measure for parties not directly concerned with the management of patients.

“Now there is a strategy we have put in place that HIV result of patients is not known to every staff who works in the unit. Only the counsellor and nurses in charge of that patient, and the doctor.... When the patient is sent to the lab, the lab test request slips are carried by the counsellor and the result is written with codes so that not everybody can understand” (Male counsellor, 33 years old)
Dealing with partner notification

Encouraging HIV-positive patients to disclose their status, especially to their sexual partners, was an important challenge faced by the participants. They mentioned that despite the improvement in their counselling skills from the training received and from their working experience, they still faced difficulties convincing some patients to voluntarily inform their partners about their HIV status. The major reason cited was fear of marital problems which included blame, verbal or physical assault, and even divorce. Based on the participants’ experiences, the refusal to notify sexual partners was commoner amongst men who were more likely to have been promiscuous prior to their diagnosis. They further had experienced that patients who disclosed their status were more likely to engage in safer sex, had better treatment compliance, and outcomes compared to those who concealed their status.

“I think from my experience this is common with men and it is just because of their lifestyle. You know when they have so many women and finally when they become sick... they will not want to tell their wives... so the ones revealing their status usually follow-up treatment very well. Some will not even use condoms with their wives because they don’t want their wives to know they are HIV-positive” (Female counsellor, 48 years old)

The four positions taken regarding partner notification are represented in the positional map (Figure 1). The positions include the following: “Respecting patients’ autonomy is the benchmark of counselling” (position one); “While safeguarding patients’ autonomy, patients should be encouraged to disclose their status to their partners for family benefits” (position two); “Protecting patients’ sexual partners at risk is essential but counsellors should be legally protected” (position three); and “HIV should be regarded as a chronic disease; testing and disclosure should be made routine” (position four). It is noteworthy that, although the positions are presented figuratively and in a somewhat linear manner, the participants’ perceptions were
not static. Many participants shared multiple views simultaneously and these seemed to change over time depending on the legal and ethical obligations at their disposal. The dynamic nature in their views highlights the complexities surrounding partner notification for HIV. It is also critical to state that positions one and two reflect the current counselling practices in partner notification for HIV in the region/country while positions three and four are the participants’ wishes for future policies.

**Position one**

The reflections in this position focused on absolutely respecting patients’ autonomy as enshrined in the counselling training and professional ethics. This position was shared mostly by the fairly younger counsellors with few years of working experience. The participants declared that during counselling, patients are provided with the basic information about HIV, the benefits of testing and disclosing their status to their relatives, and regarding informed consent. Therefore, if for whatever reasons patients object to inform their sexual partners about their HIV status, it was not the counsellor’s duty to do otherwise without the patients’ consent. According to them, endorsing that counsellors should disclose patients’ results to their sexual partners constitute a violation of their professional ethics which could attract undesirable consequences.

“No we cannot do that. That will be against our professional ethics because we are not supposed to disclose a patient’s information without his consent. If we do that we might run into problems with the authorities [the hospital administration] because they will say we have breached confidentiality.” (Male counsellor, 33 years old)

This position was also shared by one of the legal experts who stated that although the existing national laws have not been revised to specifically protect people living with HIV/AIDS (PLWHA) against discrimination, healthcare workers who disclose HIV-positive patients’ results
to their sexual partners without their consent could be prosecuted on the grounds of breach of professional ethics.

“In court that [notifying an HIV-positive patient’s partner] can be argued in terms of breaching professional ethics because as you know ethically it is wrong to disclose your patient’s result or diagnosis to third parties without that individual’s consent. But to say in strict terms that there is an existing text with particular reference to maintaining confidentiality with regards to HIV-positive patients’ results is a misnomer.” (Male judge, 55 years old)

**Position two**

This position incorporates both safeguarding patients’ autonomy and their partners’ safety which is beneficial to the entire family. This view was generally shared by the more experienced counsellors. Although the participants who held this view acknowledged the importance of respecting patients’ autonomy, they felt that it was their duty to also protect patients’ sexual partners at risk of HIV exposure, and to enable them to seek prompt treatment if already infected.

“The law states that we should respect peoples’ privacy or confidentiality…but I like to inform the partner because I know from experience that people who refuse to disclose to their partner will infect them….what if the wife comes tomorrow and is diagnosed positive?... It will be my fault because I did not inform her…” (Male counsellor, 35 years old)

The participants emphasized that their training and working experience have improved their communication skills and relationship with the patients immensely. They remarked that if counselling is properly done and much time spent with the patients to gain their trust, the patients would see the need for testing and subsequently informing their partners about their HIV status.
“When we started...most of us were inexperienced. We never knew how to present most of the things to most of the patients but with the trainings we take our time to give the best counselling to the patients so that they will not have misconceptions...it has made most of the patients to be understanding.” (Male counsellor, 35 years old)

In contrast to position one where the participants felt that nothing could be done if patients object to notify their partners, the participants in position two displayed creativity by devising strategies to encourage and ensure that patients willingly notify their partners. These strategies included the following: i) couple counselling, although they stated that some men were reluctant to participate, ii) continuous or ongoing counselling of recalcitrant patients, educating them on the benefits of disclosure, iii) seeking consent from the patients to directly inform their partners in the patients’ presence in scenarios where patients lacked the courage to do so personally, and iv) contact tracing, whereby the counsellors obtained telephone numbers or physical addresses of patients’ partners and could directly inform them about the possibility of having been exposed to HIV without releasing the identity of the index patient. However, some participants who have been using the last approach acknowledged that contacting faithful partners in relationships could result in adverse consequences since the partners would definitely know the source of the exposure.

“One other thing that we have developed is contact tracing where those who are afraid to disclose to their partners we ask them to give us the telephone number of their sexual contact or contacts and we call the partner but we do not release their identity....The problem here is that if the partner has been faithful, she will definitely know that it is the husband who has infected her and it will cause problems in the house.” (Male counsellor, 41 years old)
**Position three**

The focus in this position was on protecting the sexual partners at risk of HIV and providing prompt treatment to those already infected since it will be beneficial to the entire family in the long run. This position most often was shared by participants from the faith-based centres irrespective of their age and experience who incorporated issues about morality in encouraging HIV status disclosure. They opined that upholding confidentiality in absolute terms was morally wrong and patients who refuse to inform their partners about their status were selfish by not considering the health and wellbeing of their partners. Although in favour of counsellors to directly notify the sexual partners of such uncooperative patients, the participants stated that they could not do otherwise because of the legal constraints.

To back this position, some participants stated that after all attempts to encourage voluntary disclosure had failed, they occasionally ‘threatened’ their patients to make them notify their partners. Although they eventually respected the patients’ autonomy, they claimed this measure was only used as a last resort to encourage patients to inform their partners about their HIV status.

“.... if I try other measures and don’t succeed, I will tell you that if you don’t do it I will do it for you. When you do that many will not want you to be the one to do it. They will rather prefer to do it themselves....it is just a way of getting around because if they resist we will not do it.” (Female counsellor, 48 years old)

The participants mentioned that in scenarios where patients refuse voluntary disclosure, they were constantly in a dilemma between respecting patients’ confidentiality and disclosing the status to their sexual partners. This was even more disturbing if they were acquainted with the sexual partners.
“I think it is different if you know the man is positive but you have never met the wife. In this case [the counsellor is acquainted with the wife] the woman came to you. What will you tell? A lie and then she will not trust you because she will discover it later on and it will be worse.... personally I will not sleep well.” (Female counsellor, 33 years old)

However, they all acknowledged that in order for them to notify noncompliant patients’ sexual partners, the government has to step in with a policy that legally protects health care providers against litigation.

“My proposal is that there should be a law or by law protecting the health professionals in such special cases that they have the right to protect partners for public health benefits.” (Male counsellor, 27 years old)

A legal practitioner partly endorsed this position stating that sexual partners in a legal relationship deserve to know the HIV status of their partners. He therefore did not regard direct disclosure of HIV-positive patients’ results by counsellors to their legal partners as a violation of the patients’ autonomy.

“....It is your basic human rights for your results not to be disclosed to a third party but at the same time it also my basic human rights that I should know what you are sick of if you are my partner so that I can take care of myself if it warrants so. Therefore for you to refuse to disclose your status to me is a violation of my own human rights. There is a limit to privacy especially in a marital context because I see no violation in a partner’s privacy if he or she is HIV-positive but refuses to disclose his result to the other partner and a health official does so to protect that partner and the entire family.” (Male lawyer, 47 years old)
Notwithstanding, some participants acknowledged that endorsing partner notification by health care providers without patients’ consent could deter patients from seeking treatment. They further stated that it could lead to marital problems including divorce for which the counsellors would ultimately be blamed for by the concerned parties and society.

**Position four**

In position four, the emphasis was on addressing HIV/AIDS as any other chronic and treatable disease. This view was most commonly shared by male counsellors from faith-based hospitals. They mentioned that during the pre-ART era, recommending testing for HIV without offering treatment deterred testing. Following the scale-up of free life-time ART to all eligible persons in the country, there is the need to make testing and disclosure of HIV result normal and routine processes. According to these proponents, this measure would benefit many by prolonging peoples’ lives and making them more productive in society. Although they acknowledged that such a policy would be difficult to implement, they suggested that it was an initiative worth considering in the not too distant future.

“…..because the drugs are available now for free, I don’t see why we should not consider it [routine testing and disclosure of HIV result] as every disease like diabetes, hypertension where people come for check up every time and they also have to take their drugs for life.” (Male counsellor, 33 years old)


**Discussion**

The respect for patients’ confidentiality is a fundamental principle in medical ethics, and also a legal duty that healthcare providers owe to their patients. However, the respect of absolute confidentiality has been a subject of debate [24-26]. With the advent of the HIV/AIDS epidemic, this debate has been re-echoed if confidentiality should be compromised when HIV-positive patients refuse to voluntarily notify those at risk of infection, especially their sexual partners [27-29]. Disclosing one’s HIV status is particularly difficult because HIV is often associated with sexuality, coupled with the double stigma and discrimination experienced by patients co-infected with TB and HIV [20, 30]. Our study revealed that counsellors experienced the dilemma between upholding their professional ethics by not disclosing their patients’ HIV status to their sexual partners, and being morally upright by doing so when confronted with patients who refused voluntary disclosure. This therefore indicates the need to visualise the complexity of partner notification in order to move forward.

Our study demonstrated that upholding confidentiality and respecting patients’ autonomy is emphasized during the counsellors’ training and practice in all the study settings. However, the absence of a professional code of ethics within some centres is a call for concern since it is important for counsellors to know the existing laws regarding confidentiality and their professional ethics. Moreover, to foster a lasting patient-provider alliance and maintain patients’ trust in the health care system, it is inevitable that patients are properly educated on their rights to confidentiality and autonomy.
Partner notification for HIV is generally regarded as an ethical and legal issue, and position one underscored the importance of respecting patients’ confidentiality and autonomy. This position is drawn from the personal autonomy framework that is much more linked to biomedicine. Participants who held this opinion were mostly young and relatively inexperienced, and this could be understood from their apparent lack of adequate counselling skills. This might have limited their negotiating power to encourage patients to voluntarily inform their partners about their HIV status. They however provided justification for upholding this position which had both legal and ethical dimensions since they asserted that a counsellor’s duty to the patient supersedes every other duty. Consequently, patients should not be forced to disclose such information for the benefit of others. This argument is consistent with Kantian theory which postulates that human beings deserve to be treated with respect as ends in themselves and not as means to another individual’s ends [31].

The dilemma in public health between respecting individual rights in order to foster a trusting patient-provider relationship versus protecting the collective rights of the sexual partners was highlighted in position two. Resolving such conflicts was a daunting task to the counsellors since it entailed acting within the limits of the law, their professional ethics and morality. The salient difference between the participants in this position and those in position one is in fact that they were ‘morally autonomous’. This implies that their decisions were based on moral principles and understanding of the situational facts from which they acted upon their considered judgment [32]. This is expected since the participants who held this position were mostly older and more experienced counsellors. Although they respected the law and professional ethics regarding confidentiality, they did not literally pursue these rules without appreciating the rationale for
applying them. This was reflected in the various strategies which they devised to encourage uncompromising patients to voluntarily notify their sexual partners about their HIV status. This position regarding counselling and disclosure of HIV status seems to be the dominant position, and it is the policy recommended by UNAIDS and WHO [3, 6]. This policy incorporates the human rights framework into public health as a response to the HIV/AIDS epidemic. Human rights is a reflection of deeply held values of what states and governments should not do and what they should ensure to all its citizens [33]. The UNAIDS/WHO policy therefore promotes and protects public health, and also ensures that the human rights and dignity of HIV-positive people are not violated. In developing countries where the brunt of the HIV epidemic exists, patient referral has been found to be the most preferred method in partner notification strategies [34]. However it does not address the situation whereby patients deliberately conceal their status from their partners thereby placing them at risk despite counsellors’ efforts to encourage voluntary disclosure.

Position three is a wish to address the above concern since participants who held this position advocated for conditional confidentiality and legal protection to notify patients’ sexual partners. This position received legal backing with the premise that it is a violation of the sexual partners’ human rights if health care providers refuse to inform them about their diagnosed partners’ HIV status. However, this should be done for beneficial reasons in cases where such patients had refused to voluntarily do so. The legal backing was nonetheless restrictive in the sense that conditional referral advocated in such a scenario was limited only to partners in legal relationships. This implied that no protection would be available for unmarried partners which could eventually potentiate HIV transmission in the society. However, the assertions in this
position are consistent with the argument that the right to confidentiality is only possible between morally sensitive people. Therefore, individuals who place themselves ‘beyond the pale’, implying that their actions are potentially harmful to others forfeit the right to confidentiality [29]. The conditional referral strategy advocated for in this position is therefore grounded on utilitarianism which asserts that ‘decisions should be judged by their consequences, in particular by their effect on the total sum of individual wellbeing’ [31]. Our study also revealed that the participants were sometimes frustrated when patients objected to voluntary partner notification especially if the participants were loyal to the sexual partners. There is a need for proper education and sensitisation of counsellors, and the society in general about sexual ethics. This is the ethics within partnerships of mutual respect, consent, and shared responsibilities for sexual behaviour and its social, emotional and health consequences [10] that are fundamental to human rights. Moreover, the creation and enforcement of an official AIDS law that protects both the rights of PLWHA especially against stigma and discrimination, and that of their partners would facilitate voluntary disclosure. In addition, the existing laws and customs which discriminate against women, favours male dominance, polygamy, adultery, and fails to criminalise domestic violence including rape against women needs to be revised [35]. This is important as participants stated that patients were apprehensive of disclosure since it could attract negative consequences in relationships including divorce which have been reported in other studies [1, 13]. Furthermore, partner notification protocols should be made available and the counsellors properly educated that the duty to protect partners at risk should be based on ethical and legal justification and not because of personal sentiments and loyalty to a particular partner [32]. Most importantly, the concept of ‘proportionality’ [36] should be applied in cases of provider referral. This implies that in scenarios where public health ethics confronts individual human rights,
public interests subvert individual rights but there should be absolutely minimal infringement on the individual rights. These measures will help to address some of the complexities in HIV counselling and facilitate voluntary partner notification.

Besides the fact that conditional referral could exacerbate the negative consequences of voluntary disclosure, it was highlighted in this study that enforcing conditional referral could also deter prospective patients from seeking treatment. This is consistent with the views of the proponents for unconditional confidentiality [24-25]. This is a worthy concern especially in developing countries where alternative medicine is an integral part of the healthcare system [37] and could attract such disgruntled patients towards their services. Despite these arguments, there is lack of empirical evidence in support of the undesirable consequences of implementing provider referral approach in partner notification. Provider referral has been documented to be effective in identifying sexual partners at risk in developed countries [7, 38-39], and is generally permitted as a supplement to patient referral in North America [40] and Europe [41-42]. However, its feasibility and effectiveness in developing countries with different socio-cultural and political contexts is limited [43] and requires further evaluation.

The perception held in position four was that HIV should be regarded as any normal medical infection, whose diagnosis and disclosure should be based on medical as opposed to ethical or legal necessities. The implication of this approach is that HIV testing and partner notification could move from the counsellors to the physicians and thereby making the counsellors redundant. Alternatively, this position could normalise HIV/AIDS into a medical condition just as any other. The latter alternative was the premise for the participants’ argument in support of
routine HIV status disclosure since life-saving ARTs are now provided free of charge to all eligible persons in the country. Applying this approach would ultimately be beneficial both to the patients and those at risk since it would reduce HIV transmission and increase patients’ access to HIV services. It has been argued that ‘HIV exceptionalism’, whereby public health response in the early years of the HIV epidemic had been fundamentally different from other sexually transmitted infections and public health threats, has been the reason for the lag in global HIV prevention and control [44]. It is further argued that ‘exceptionalism’ has enhanced the stigma associated with HIV infection and led to the confusion between secrecy and confidentiality, and consequently promoting the silence around HIV/AIDS [45]. These arguments have prompted the advocacy for routine HIV testing [45] and third party disclosure [46] as a norm in health care settings in order to demystify HIV infection as highlighted in position four. The justification being that ‘normalization’ of HIV/AIDS is not a threat to individual human rights but rather failure to prevent HIV infection is an infringement on human rights’ [45].

**Methodological considerations**

Using a positional map in this study was very useful in delineating the full spectrum of the reflections regarding partner notification for HIV within and across groups of counsellors. This enabled us to visualise positions that were taken in the data which ultimately facilitated the formulation of ideas regarding the implications of these positions in counselling practice and in HIV prevention and control. However, there are limitations in our study that deserve consideration. First of all, our study sites were purposively selected and therefore the participants’ perceptions do not necessarily reflect those of the entire counsellors in the region. Notwithstanding, since our study sites are approved HIV treatment centres which also serve as referral centres in the region, we believe they share similar characteristics and challenges to the
other smaller centres. Additionally, since the first author was familiar to the participants, either they may have provided less information assuming he was already familiar with the settings or they could have provided favourable responses to demonstrate their achievements. Although these limitations might affect the extent to which our results could be generalised within the region and to similar contexts with generalised HIV epidemics, we believe our findings have provided valuable insights into the complexities faced by counsellors in the process of encouraging voluntary partner notification of HIV status and how these might affect policy.

**Conclusion and policy implications**

The ethical, legal and moral dilemmas between respecting individual patient rights and the collective rights of patients’ sexual partners encountered by counsellors were highlighted in this study. Although confidentiality is important in the health care provider-patient relationship, there are exceptions where this can be subverted. However, this should be balanced to ensure that the interest of both the patients and their sexual partners are served. This process will be facilitated by adopting a human rights framework recognising both individual and collective rights. Following the scale-up of access to HIV prevention and treatment, there is a need to re-examine partner notification policies and taking into consideration the contextual factors which might affect the feasibility and acceptability of a particular approach (or a combination of approaches). This will ensure that HIV transmission is significantly curtailed, and those at risk identified in time and provided with the necessary HIV services. Proper counselling guidelines addressing the legal and ethical challenges in HIV/AIDS should be made available to counsellors and within the treatment centres to facilitate the counselling process. Meanwhile, approaches like contact tracing, counsellor-mediated patient referral for patients who lack the communication skills to
disclose to their partners should be considered. In addition, continuous counselling for inflexible patients particularly on shared responsibility in relationships, and couple counselling where partners are encouraged to mutually disclose their status should be thoroughly explored and expanded where appropriate.

Competing interests

The authors declare no conflict of interests whatsoever.

Authors’ contributions

NBN, AKH conceptualized and designed the study; NBN performed data collection, analysis and drafting of the manuscript. All co-authors interpreted the results and provided substantial revisions of the manuscript. All co-authors have read and approved the final version of the manuscript for submission.

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Table 1 - Characteristics of interview participants (N=32)

<table>
<thead>
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<tr>
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<td>&gt;5 - 10 years</td>
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*Excluding two legal professionals
Figure 1 - Positional map depicting counsellors’ reflections about partner notification for HIV

Position 1 (current counselling practice): Respecting patients’ autonomy is the benchmark of counselling

Position 2 (current counselling practice): While safeguarding patients’ autonomy, patients should be encouraged to disclose their status to their partners for family benefits

Position 3 (counsellors’ wishes): Protecting patients’ sexual partners at risk is essential but counsellors should be legally protected

Position 4 (counsellors’ wishes): HIV should be regarded as a chronic disease; testing and disclosure should be made routine

Emphasis is on patients’ autonomy

Emphasis on public health interest
Assessing the accessibility of HIV care packages among tuberculosis patients in the Northwest Region, Cameroon

Nwarbébé Barnabas Njozing1,2,3*, San Sebastian Miguel2, Pius Muffih Tih4, Anna-Karin Hurtig2,3

Abstract

Background: Tuberculosis (TB) and human immunodeficiency virus (HIV) co-infection is a major source of morbidity and mortality globally. The World Health Organization (WHO) has recommended that HIV counselling and testing be offered routinely to TB patients in order to increase access to HIV care packages. We assessed the uptake of provider-initiated testing and counselling (PITC), antiretroviral (ART) and co-trimoxazole preventive therapies (CPT) among TB patients in the Northwest Region, Cameroon.

Methods: A retrospective cohort study using TB registers in 4 TB/HIV treatment centres (1 public and 3 faith-based) for patients diagnosed with TB between January 2006 and December 2007 to identify predictors of the outcomes; HIV testing/serostatus, ART and CPT enrolment and factors that influenced their enrolment between public and faith-based hospitals.

Results: A total of 2270 TB patients were registered and offered pre-HIV test counselling; 2150 (94.7%) accepted the offer of a test. The rate of acceptance was significantly higher among patients in the public hospital compared to those in the faith-based hospitals (crude OR 1.97; 95% CI 1.33 - 2.92) and (adjusted OR 1.92; 95% CI 1.24 - 2.97). HIV prevalence was 68.5% (1473/2150). Independent predictors of HIV-seropositivity emerged as: females, age groups 15-29, 30-44 and 45-59 years, rural residence, previously treated TB and smear-negative pulmonary TB. ART uptake was 50.3% (614/1220) with 17.2% (253/1473) of missing records. Independent predictors of ART uptake were: previously treated TB and extra pulmonary TB. Finally, CPT uptake was 47.0% (524/1114) with 24% (590/1114) of missing records. Independent predictors of CPT uptake were: faith-based hospitals and female sex.

Conclusion: PITC services are apparently well integrated into the TB programme as demonstrated by the high testing rate. The main challenges include improving access to ART and CPT among TB patients and proper reporting and monitoring of programme activities.

Background

Globally, tuberculosis (TB) morbidity and mortality is partly attributed to the co-infection with human immunodeficiency virus (HIV). In 2007, there were an estimated 13.7 million prevalent TB cases and 9.27 million new cases out of which 4.1 million (44%) were smear-positive cases. Africa accounted for 31% of the new TB cases [1]. Similarly, 33.2 million HIV prevalent and 2.5 million incident cases were recorded worldwide in 2007. Sub-Saharan Africa alone accounted for 22.5 million of the prevalent cases and 1.7 million of the incident cases [2]. Among the 9.27 million incident TB cases, 1.37 million (14.8%) were HIV-positive and Africa accounted for 79% of these cases. There were an estimated 1.32 million deaths from HIV-negative TB patients and 456 000 TB deaths among HIV-positive patients. Deaths from co-infected patients accounted for 23% of the estimated 2 million HIV deaths [1].

The increasing co-infection prompted the World Health Organization (WHO) to launch the "ProTEST" initiative as a strategy to reduce the burden of HIV-related TB requiring collaboration between HIV and TB programmes [3]. It promoted voluntary counselling and testing as an entry point to access a range of TB/HIV...
prevention and care interventions, especially in areas with high HIV prevalence. HIV counselling and testing has since been recommended routinely to all TB patients [4].

Currently, the concept of provider-initiated HIV testing and counselling (PITC) (which refers to HIV counselling and testing recommended by health care providers to people attending health facilities as a standard component of medical care) has been advocated. This presents an opportunity to ensure that HIV is more systematically diagnosed in health care services in order to facilitate patient access to needed HIV prevention, treatment, care and support services [5]. Through this strategy, TB treatment centres have been shown to serve as important fora for identifying patients with HIV infection [6-8] and uptake of HIV testing among TB patients has been impressive. Between 2002 and 2007, testing for HIV increased from 21 806 (0.5%) to 1 million (16%) among the notified TB cases globally. In Africa, 491 755 TB patients were tested for HIV in 2007 and this represented 36% of all notified cases compared to 22% in 2006. Meanwhile enrolment on antiretroviral therapy (ART) and cotrimoxazole preventive therapy (CPT) has also been growing steadily in absolute terms. In 2007, 90 000 TB patients were on ART and 200 000 were on CPT. However, this has been accompanied by a fall in the percentage of TB patients whom are diagnosed with HIV and whom are enrolled on ART and CPT (from 40% in 2006 to 34% in 2007 and 77% to 63% respectively). In Africa, enrolment reached 33% for ART and 66% for CPT [1].

In Cameroon, the National AIDS Control Committee was created in 1986 and later, in 1987, the National AIDS Control Programme (NACP) was launched. The national response to HIV/AIDS has received political support and since 1999 the fight against HIV/AIDS is one of the national priorities. The Government drafted the first National Strategic Plan against AIDS for 2000-2005 which aimed essentially to prevent new infections by promoting voluntary counselling, treating infected persons and reducing the cost of treatment, promoting research and preventing mother-to-child transmission of HIV. The second plan for 2006-2010 is multi-sector based, decentralized and involves the civil society, private sector and grass-root communities. The second plan comprises 6 strategic axes: universal access to HIV prevention, universal access to treatment and care among children and adults living with HIV/AIDS, protection and assistance to orphans and vulnerable children, involving actors in the fight against HIV/AIDS, epidemiological surveillance, promoting research and reinforcing coordination, partnership, monitoring/evaluation [9]. The national HIV-seroprevalence was 5.4% in 2004 [10] and there are 95 sites providing ART treatment nationwide. Since May 2007, ART and CPT have been provided free of charge to those eligible. At the end December 2008, there were 153 185 HIV patients eligible for ART (88 678 females [57.9%] and 64 506 males [42.1%]). A total of 59 960 (39.1%) of these patients were enrolled on ART (40 357 females [67.3%] and 19 603 males [32.7%]) [9].

The National TB Control Programme (NTCP) was launched in 1996 and, in 2002, it was recognized as a priority programme by the Ministry of Public Health. The NTCP is organized according to three levels of intervention: central, regional and peripheral. The Ministry of Public Health is responsible for the organization and implementation of the programme at the central level and provides the annual budget and permanent financial support. The central level comprises the National Tuberculosis Control Committee (which defines the general objectives of the programme), the Consultative Scientific Committee, the Central Technical Group (which is the executive organ), the Tuberculosis National Reference Laboratory and the Chest Service of the Jamot Hospital (which is a third referral level in matters of TB control in the country). The regional level is under the authority of the Regional Delegate of Public Health and has as its mission the organization, coordination, follow-up and evaluation of the fight against TB in the region. The peripheral level comprises the health districts that make up the structure on which the TB programme is built and participates in TB case finding and treatment, as well as the keeping of the TB register. The specific objectives of the NTCP are to cure at least 85% of detected cases of sputum-smear positive pulmonary TB (PTB), to detect 70% of existing cases of sputum-smear positive PTB patients, and to protect through BCG vaccination at least 80% of children born each year [11].

The country is implementing the Directly Observed Treatment, Short-Course (DOTS) strategy with 100% coverage [1]. There are 217 TB diagnostic and treatment centres in 142 health districts nationwide. The case detection rate from DOTS services in 2007 for all new cases was 65% and 91% for new smear-positive cases [1]. The case notification rate has been increasing steadily since 2000 from 33/100 000 population/year to 130 in 2007. A total of 36 088 prevalent and 35 556 incident TB cases were recorded in 2007. Among the 2006 cohort (13 811 patients) of smear-positive patients, a 64% cure rate was recorded with a 74% treatment success rate, 6% death rate and 13% default rate [1]. Collaboration with the AIDS Control Programme began in 2004 and HIV counselling and testing are now routine and have been free for all TB patients since 2006. Since 2006, the number of TB patients tested for HIV has increased from 8 637 to 11 825 in 2007 and to 16 144
in 2008 with corresponding co-infection rates of 38.9%, 43.8% and 40.4% respectively in the adult population [9].

In 2004, the Northwest Region (NWR), one of the 10 regions in the country, had the highest HIV-seroprevalence of 8.7% (11.9% amongst females compared to 5.2% amongst males [10]) and HIV-related TB still remains a public health priority in the region. Since 1990, when multi-party politics was introduced in the country, there have been several anti-government demonstrations especially in the NWR which is the stronghold of the major opposition party in the country: the social democratic front (SDF). This has led to riots and civil unrest with frequent clashes between law enforcement officials and the public with several reported incidences of sexual harassment and rape which could account partly for the high HIV prevalence in the region.

Although TB/HIV collaborative activities began in 2004, programmatic changes involved re-designing TB registers to capture uptake of HIV testing, ART and CPT services. These registers went operational in all TB diagnostic and treatment centres in January 2006. The staffs in the centres were also trained in TB diagnosis and treatment, as well as record keeping and reporting. This study assessed the uptake of PITC, ART and CPT services and also factors that influenced their uptake among TB patients in selected treatment facilities within the NWR between January 2006 and December 2007 when TB/HIV collaborative activities became operational.

**Methods**

**Study setting**

Cameroon’s population is approximately 18.4 million with an estimated land area of 475 440 km². There are 10 regions and this study was carried out in the NWR, which has a population of over 1.8 million and is comprised of 7 divisions; the capital, Bamenda, has an urban population of over 300 000. There are 13 health districts with 1 regional hospital, 19 district hospitals, and 106 assimilated district hospitals and health centres [10]. In addition, there are private and faith-based hospitals with primary health centres.

Four hospitals out of 10 providing comprehensive TB/ HIV treatment and support services in the NWR were purposively selected because of: i) their accessibility; ii) patient load; iii) diversity of patients since they serve both rural and urban populations; iv) similarity in the services provided since they act as referral centres in the region; and v) possibility to evaluate the services between public and faith-based settings because of perceived differences amongst the population with regards to the quality of patient care, user friendliness and cost in accessing treatment. These included 1 public hospital (Bamenda Regional Hospital) and 3 faith-based hospitals: Banso Baptist Hospital, Mbingo Baptist Hospital, and Njinikom Catholic Hospital.

**Tuberculosis services**

TB diagnosis, treatment, follow-up and documentation in these facilities are intended to follow the national guidelines [11]. Diagnosis is by sputum microscopy which costs 1000 FCFA (2.4 US$) during the entire TB treatment. Patients with at least 1 sputum smear positive for acid-fast bacilli are classified smear-positive PTB. In cases with negative smears, diagnosis is made clinically and/or by chest x-ray findings consistent with PTB since sputum culture is not routinely performed due to cost and inadequate human resources. Diagnosis of extra-pulmonary TB (EPTB) is based on clinical and/or radiological findings, biopsies and laboratory examination of aspires from affected areas.

Anti-TB drugs have been provided free of charge since 2004 and treatment of newly diagnosed PTB/EPTB lasts 6 months, comprising an initial 2-month intensive phase with a fixed dose combination of Rifampicin, Isoniazid, Pyrazinamide and Ethambutol with an initial 2 weeks of hospitalisation; this is followed by a 4-month continuous phase of daily Rifampicin and Isoniazid. Diagnosis and treatment are made by trained medical officers but follow-up and documentation are performed by trained nurses.

**Counselling services**

All diagnosed TB cases are counselled for HIV by trained counsellors within the TB unit using the ‘opt-out’ approach, where patients reserve the right to accept or refuse testing for HIV without reprisal from providers. Post-test counselling is offered to all who accept testing regardless of the outcome, support services to HIV-positive cases like the chaplaincy department and HIV support groups are also made available. Based on the national treatment guidelines, ART is initiated in the following scenarios: i) if the CD4-count is <200 cells/mm³ between 2-8 weeks after commencing anti-TB treatment; ii) if the CD4-count is between 200-350 cells/mm³ after 8 weeks of anti-TB treatment; iii) if the CD4-count is above 350 cells/mm³, ART is differed and the patient is re-evaluated after 8 weeks and at the end of anti-TB treatment; and iv) in the absence of CD4-count, if the total lymphocyte count is <1200 cells/mm³, ART is introduced between 2-8 weeks of anti-TB treatment [12].

**Data sources and analysis**

Data were obtained from TB treatment registers in the study hospitals for patients diagnosed between January 2006 and December 2007. Register data in the treatment centres are collated and forwarded to the Ministry of
Public Health. Basic socio-demographic information, TB profile and HIV services were obtained. HIV treatment registers were also reviewed for information on ART for cases not documented in TB registers.

Data were entered using Microsoft Excel™ and analyzed using Epi Info™ version 3.4.3. Descriptive statistics of patients were performed and main outcome variables (HIV testing and status, ART and CPT uptake) were dichotomized and potential factors associated with the outcomes were tested individually by univariate analysis. Logistic regression analysis was performed having controlled for other variables to identify independent predictors using odds ratio (OR), 95% confidence interval (95% CI) and p-values less than 0.05 were considered statistically significant.

Ethical approval
Ethical approval for the study was obtained from the Delegation of Public Health for the NWR (N° 401/NWP/PDPH/08), Internal Review Board of the Regional Hospital, Bamenda and, the Cameroon Baptist Convention Health Board Institutional Review Board (IRB 2007-09). Informed consent was also obtained from the Regional coordinator of TB and TB coordinators/nurses in the study hospitals. They were assured that all information in the TB/HIV registers would be treated with strict confidentiality. During data entry, only the patients’ serial numbers in the records were collected to ensure anonymity and the data was password-protected.

Results

Patient Characteristics
A total of 2270 TB patients were treated between January 2006 and December 2007. The mean age of the patients was 34 years (range 1 month - 88 years). The detailed patients’ characteristics are presented in Table 1.

HIV Testing
All 2270 patients were offered pre-HIV test counselling and the outcomes are presented in Figure 1.

Table 1 TB patients’ characteristics by study hospitals 2006-2007 (n = 2270)

<table>
<thead>
<tr>
<th>Variable</th>
<th>ALL n (%)</th>
<th>BBH† 468 (20.6)</th>
<th>MBH 564 (24.8)</th>
<th>BRH 1063 (46.8)</th>
<th>NJH 175 (7.7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1163 (51.2)</td>
<td>255 (55.4)</td>
<td>315 (55.9)</td>
<td>509 (47.9)</td>
<td>84 (48.0)</td>
</tr>
<tr>
<td>Female</td>
<td>1107 (48.8)</td>
<td>213 (45.5)</td>
<td>249 (44.1)</td>
<td>554 (52.1)</td>
<td>91 (52.0)</td>
</tr>
<tr>
<td>Age Group (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-14</td>
<td>98 (4.3)</td>
<td>20 (4.3)</td>
<td>29 (5.1)</td>
<td>44 (4.1)</td>
<td>5 (2.9)</td>
</tr>
<tr>
<td>15-29</td>
<td>772 (34.0)</td>
<td>164 (35.0)</td>
<td>197 (34.9)</td>
<td>343 (32.3)</td>
<td>68 (38.9)</td>
</tr>
<tr>
<td>30-44</td>
<td>971 (42.8)</td>
<td>193 (41.2)</td>
<td>232 (41.1)</td>
<td>464 (43.7)</td>
<td>82 (46.9)</td>
</tr>
<tr>
<td>45-59</td>
<td>308 (13.6)</td>
<td>61 (13.0)</td>
<td>75 (13.3)</td>
<td>158 (14.9)</td>
<td>14 (8.0)</td>
</tr>
<tr>
<td>≥ 60</td>
<td>121 (5.3)</td>
<td>30 (6.4)</td>
<td>31 (5.5)</td>
<td>54 (5.1)</td>
<td>6 (3.4)</td>
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<td>Residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>1180 (52.0)</td>
<td>404 (86.3)</td>
<td>302 (53.5)</td>
<td>323 (30.4)</td>
<td>151 (86.3)</td>
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<tr>
<td>Urban</td>
<td>1090 (48.0)</td>
<td>44 (13.7)</td>
<td>262 (46.5)</td>
<td>740 (69.6)</td>
<td>24 (13.7)</td>
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<td>TB Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPPTB</td>
<td>1369 (60.3)</td>
<td>361 (77.1)</td>
<td>330 (58.5)</td>
<td>582 (54.8)</td>
<td>96 (54.9)</td>
</tr>
<tr>
<td>SNPTB</td>
<td>354 (15.5)</td>
<td>38 (8.1)</td>
<td>130 (23.0)</td>
<td>290 (27.3)</td>
<td>76 (43.4)</td>
</tr>
<tr>
<td>EPTB</td>
<td>367 (16.2)</td>
<td>69 (14.7)</td>
<td>104 (18.4)</td>
<td>191 (18.0)</td>
<td>3 (1.7)</td>
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<td>TB Category</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>New</td>
<td>2081 (91.7)</td>
<td>458 (97.9)</td>
<td>543 (96.3)</td>
<td>920 (86.5)</td>
<td>160 (91.4)</td>
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<td>Others*</td>
<td>189 (8.3)</td>
<td>10 (2.1)</td>
<td>21 (3.7)</td>
<td>143 (13.5)</td>
<td>15 (8.6)</td>
</tr>
<tr>
<td>Treatment Outcome</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Success≠</td>
<td>1602 (70.6)</td>
<td>354 (75.7)</td>
<td>385 (68.2)</td>
<td>751 (70.7)</td>
<td>112 (64.0)</td>
</tr>
<tr>
<td>Cured</td>
<td>855 (37.7)</td>
<td>240 (51.3)</td>
<td>161 (28.5)</td>
<td>406 (38.2)</td>
<td>48 (27.4)</td>
</tr>
<tr>
<td>Completed treatment</td>
<td>747 (32.9)</td>
<td>114 (24.4)</td>
<td>224 (39.7)</td>
<td>345 (32.5)</td>
<td>64 (36.6)</td>
</tr>
<tr>
<td>Died</td>
<td>297 (13.1)</td>
<td>70 (15.0)</td>
<td>60 (10.6)</td>
<td>136 (12.8)</td>
<td>31 (17.7)</td>
</tr>
<tr>
<td>Treatment failure</td>
<td>13 (0.6)</td>
<td>5 (1.1)</td>
<td>5 (0.9)</td>
<td>3 (0.3)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Treatment default</td>
<td>111 (4.9)</td>
<td>21 (4.5)</td>
<td>31 (5.5)</td>
<td>40 (3.8)</td>
<td>19 (10.9)</td>
</tr>
<tr>
<td>Transferred out</td>
<td>247 (10.9)</td>
<td>18 (3.8)</td>
<td>83 (14.7)</td>
<td>132 (12.5)</td>
<td>13 (7.4)</td>
</tr>
</tbody>
</table>

† BBH (Banso Baptist Hospital), MBH (Mbingo Baptist Hospital), BRH (Bamenda Regional Hospital), NJH (Njinikom Hospital)

*Others - Includes treatment failure, treatment default, transferred in from another facility and relapse cases

≠ Treatment Success = Cured + Completed treatment
public hospital, 96.4% (1025/1063) patients were tested compared to 93.2% (1125/1207) in faith-based hospitals. Among all the variables considered, testing was significant only in the public hospital compared to the faith-based hospitals (crude OR 1.97; 95% CI 1.33 - 2.92) and (adjusted OR 1.92; 95% CI 1.24 - 2.97) (Data not shown).

HIV Seroprevalence
A total of 2150 patients were tested for HIV and the outcomes are presented in Figure 1. In the public hospital, 76.0% (779/1025) of patients tested positive compared to 61.7% (694/1125) in the faith-based hospitals. Patients in the public hospital were more likely to be HIV-positive compared to those in faith-based hospitals (crude OR 1.97; 95% CI 1.33 - 2.92) and (adjusted OR 1.92; 95% CI 1.24 - 2.97) (Data not shown).

Antiretroviral Therapy Uptake
Records on ART were available for 1220 of 1473 HIV-positive TB patients and 50.3% (614) were enrolled on ART; 52.9% (608/771) in the public and 45.9% (206/449) in faith-based hospitals. Enrolment was significantly higher in the public hospital compared to the faith-based hospitals in univariate analysis (crude OR 1.33; 95% CI 1.05 - 1.67). Previously treated TB and EPTB emerged as independent predictors of ART enrolment in multivariate analysis (Table 3).

Co-trimoxazole Preventive Therapy Uptake
Records on CPT were available for 1114 of 1473 HIV-positive patients and 47.0% (524) were enrolled on CPT: 35.2% (241/684) in the public hospital and 65.8% (283/430) in the faith-based hospitals. Enrolment was significantly lower in the public hospital compared to the faith-based hospitals (crude OR 0.28; 95% CI 0.22 - 0.36) and (adjusted OR 0.29; 95% CI 0.22 - 0.38). Female sex also emerged as an independent predictor of CPT enrolment in multivariate analysis (Table 4).

Discussion
Our study revealed that overall uptake of PITC among TB patients in the region is high (94.7%). This high testing rate might be attributed to the fact that HIV/AIDS is now seen as a "normal" disease for which there is free, life-saving treatment available. It might also be due to the influence of healthcare providers, since it is rare for patients to object to decisions from health authorities. High testing rates have also been reported in other studies in Africa [13-15]. Testing rates were slightly higher in the public hospital compared to the faith-based hospitals but other variables assessed in the study showed no significant associations with testing rates. Further research is needed to identify the reasons for the underlying structural differences in testing between treatment facilities and to evaluate the impact of other socio-economic factors on testing which we were unable to assess because they have not been documented routinely in TB registers.

The study demonstrated a 68.5% HIV prevalence among TB patients, similar to other studies in Africa [14-16] but higher than the national figures for 2006 (38.9%) and 2007 (43.8%) [9]. These discrepancies could be attributed to the high HIV prevalence in the NWR and because of improved monitoring and reporting services compared to the pre-TB/HIV collaborative era. HIV-seroprevalence was higher among females, 73.1% (773/1057) consistent with results of the 2004 country Demographic Health survey [10] and findings in other studies [15-17]. The 15-59 years age group, which is the productive population, was the group most affected by the epidemic. One of the strategies of the NACP is to provide universal access to HIV prevention as evidenced by the numerous HIV sensitization and prevention campaigns nationwide. However, future efforts should specifically address the needs of the adult population, especially females and the rural communities who are particularly disadvantaged socio-economically and thus more vulnerable to the infection.

Our study revealed a 50% (614/1220) uptake of ART among TB patients who had their HIV treatment history documented (82.8%). Assuming all co-infected patients are eligible for ART in the absence of CD4-count [18],
then the true coverage of ART among TB patients would be 41.7% (614/1473). These figures are relatively higher than findings in Malawian studies (13% and 16%) [19,20]. Plausible explanations for the findings in our study could be the scale-up and decentralisation of ART services in the country [21], increasing awareness of the benefits of ART which has encouraged testing for HIV, reduction in the cost of the CD4-count test to increase ART eligibility, and training/increasing the number of HIV treatment officers within the facilities. Despite the relatively high uptake of ART in the region compared to other studies, our study revealed lapses in data reporting. Seventeen percent (253/1473) of ART data were not documented in the registers, which reflects the operational challenges in establishing mechanisms for, and implementing, a sound monitoring, reporting, and evaluation of programme activities; this calls for a rigorous reporting system, an issue which could be addressed with the use of electronic medical records (EMR). Despite its challenges (which include setting up and maintaining the system, training of local staff in data entry and management and ensuring a stable power supply to minimise data loss) EMR have been used successfully to support HIV/TB treatment in resource-limited settings [22,23], improving not only patient and programme monitoring, reporting and evaluation, but also management of drug supplies. However, any consideration of such systems will have to reflect the local constraints and adapt to the local needs. Our study also revealed that previously treated TB patients were more

Table 2 Logistic regression analysis of HIV status with respect to potential predictors

<table>
<thead>
<tr>
<th>Variable</th>
<th>HIV Positivea N (%)</th>
<th>Univariate Analysis</th>
<th>Multivariate Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ORb 95% CIb P-value</td>
<td>ORc 95% CI P-value</td>
</tr>
<tr>
<td>All</td>
<td>1473 (68.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faith-based</td>
<td>694 (61.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>779 (76.0)</td>
<td>1.97 (1.63 - 2.37)</td>
<td>0.000 2.08 (1.66 - 2.61) 0.000d</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>700 (64.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>773 (73.1)</td>
<td>1.53 (1.27 - 1.84)</td>
<td>0.000 1.78 (1.45 - 2.19) 0.000</td>
</tr>
<tr>
<td>Age Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-14</td>
<td>44 (48.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-29</td>
<td>428 (58.5)</td>
<td>1.51 (0.98 - 2.34)</td>
<td>0.065 2.16 (1.33 - 3.50) 0.002</td>
</tr>
<tr>
<td>30-44</td>
<td>754 (81.3)</td>
<td>4.66 (2.99 - 7.25)</td>
<td>0.000 7.28 (4.47 - 11.87) 0.000</td>
</tr>
<tr>
<td>45-59</td>
<td>208 (72.0)</td>
<td>2.74 (1.69 - 4.45)</td>
<td>0.000 3.90 (2.31 - 6.60) 0.000</td>
</tr>
<tr>
<td>≥60</td>
<td>39 (45.8)</td>
<td>0.57 (0.32 - 1.00)</td>
<td>0.052 0.70 (0.38 - 1.28) 0.249</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
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<tr>
<td>Rural</td>
<td>756 (68.0)</td>
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<tr>
<td>Urban</td>
<td>717 (69.0)</td>
<td>1.05 (0.87 - 1.25)</td>
<td>0.631 0.72 (0.58 - 0.89) 0.003</td>
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<td>Category of Patients</td>
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<tr>
<td>Others*</td>
<td>143 (79.0)</td>
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</tr>
<tr>
<td>New</td>
<td>1330 (67.5)</td>
<td>0.55 (0.38 - 0.80)</td>
<td>0.002 0.58 (0.39 - 0.87) 0.008</td>
</tr>
<tr>
<td>TB Type</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EPTB</td>
<td>206 (60.2)</td>
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</tr>
<tr>
<td>SNPTB</td>
<td>417 (81.3)</td>
<td>2.87 (2.10 - 3.91)</td>
<td>0.000 3.03 (2.16 - 4.25) 0.000</td>
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<tr>
<td>SPPTB</td>
<td>850 (65.6)</td>
<td>1.26 (0.99 - 1.61)</td>
<td>0.064 1.13 (0.86 - 1.49) 0.387</td>
</tr>
</tbody>
</table>

a- crude odds ratio
b- 95% confidence interval
c- adjusted odds ratio
d- significant values are highlighted

*Others - includes treatment failure, treatment default, transferred in from another facility and relapse cases
# Denominator is the total number of patients tested for HIV (2150)
likely to be on ART compared to newly diagnosed TB patients. Recently, the SAPIT study in South Africa [24]
showed that mortality among TB/HIV co-infected patients can be reduced by 55% if ART is provided con-
comitantly with TB treatment. Therefore, to ensure a sustained scale-up of ART and reduce morbidity and
mortality associated with the co-infection, concomitant treatment with ART should be a priority. However, this
should be guided by their CD4-count result which underlines the need for a proper monitoring system.
Moreover, making CD4-count tests free of charge would increase eligibility and improve ART uptake in the long
run.

We also demonstrated a low uptake of CPT (47.0%) among co-infected patients with 24% (359/1473) of CPT
records missing. Assuming all HIV-positive patients are eligible for CPT, then 36% (524/1473) of the TB
patients were on CPT. Although uptake was better in the faith-based hospitals (65.8%) compared to the public
hospital (35.2%), these figures are lower than results from studies in Malawi with uptakes above 90% [13,15].
Considering the fact that CPT is a simple intervention with less stringent eligibility criteria compared to ART,
a higher uptake compared to ART could have reason-
ably been expected. The habit of clinicians tending to
place more emphasis on ART since it is regarded as
life-saving while neglecting CPT might be an explana-
tion for this finding. Besides, probably due to multitask-
ing in treatment centres, there might also be a tendency
for staff to neglect documenting CPT activities.

Table 3 Logistic regression analysis of ART uptake with respect to potential predictors

<table>
<thead>
<tr>
<th>Variable</th>
<th>ART N (%)</th>
<th>Univariate Analysis</th>
<th>Multivariate Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>OR^a 95% CI^b</td>
<td>P-value</td>
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<tr>
<td>All</td>
<td>614 (50.3)</td>
<td>- - - -</td>
<td>- -</td>
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<td>Health Facility</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Faith-based</td>
<td>206 (45.9)</td>
<td>1 - - -</td>
<td>0.018</td>
</tr>
<tr>
<td>Public</td>
<td>408 (52.9)</td>
<td>1.33 (1.05 - 1.67)</td>
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<tr>
<td>Sex</td>
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<td></td>
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</tr>
<tr>
<td>Male</td>
<td>281 (49.6)</td>
<td>1 - - -</td>
<td>0.617</td>
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<tr>
<td>Female</td>
<td>333 (51.0)</td>
<td>1.06 (0.85 - 1.33)</td>
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<tr>
<td>Age Group</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0-14</td>
<td>17 (44.7)</td>
<td>1 - - -</td>
<td>0.997</td>
</tr>
<tr>
<td>15-29</td>
<td>156 (44.7)</td>
<td>1.00 (0.51 - 1.96)</td>
<td>0.097</td>
</tr>
<tr>
<td>30-44</td>
<td>322 (52.1)</td>
<td>1.34 (0.70 - 2.60)</td>
<td>0.191</td>
</tr>
<tr>
<td>45-59</td>
<td>101 (56.4)</td>
<td>1.60 (0.79 - 3.25)</td>
<td>0.651</td>
</tr>
<tr>
<td>≥ 60</td>
<td>18 (50.0)</td>
<td>1.24 (0.50 - 3.08)</td>
<td>0.012</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>270 (46.6)</td>
<td>1 - - -</td>
<td>0.63 (0.43 - 0.93)</td>
</tr>
<tr>
<td>Urban</td>
<td>344 (53.8)</td>
<td>1.33 (1.07 - 1.67)</td>
<td>0.677</td>
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<td>Category of Patients</td>
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<tr>
<td>Others*</td>
<td>75 (57.7)</td>
<td>1 - - -</td>
<td>- -</td>
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<tr>
<td>New</td>
<td>539 (49.4)</td>
<td>0.72 (0.52 - 1.04)</td>
<td>0.077</td>
</tr>
<tr>
<td>TB Type</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EPTB</td>
<td>107 (56.0)</td>
<td>1 - - -</td>
<td>- -</td>
</tr>
<tr>
<td>SNPTB</td>
<td>212 (55.6)</td>
<td>0.98 (0.69 - 1.40)</td>
<td>0.931</td>
</tr>
<tr>
<td>SPPTB</td>
<td>295 (45.5)</td>
<td>0.66 (0.47 - 0.91)</td>
<td>0.011</td>
</tr>
</tbody>
</table>

^a- crude odds ratio
^b- 95% confidence interval
^c- adjusted odds ratio
^d- significant values are highlighted
*Others - Includes treatment failure, treatment default, transferred in from another facility and relapse cases
# Denominator is the total number of HIV-positive patients with ART records available (1220)
Incidences of inadequate supplies and rupture of CPT stocks have been reported and patients have been required to procure treatment personally and this might be another explanation for the low enrolment. However, it was encouraging to observe a higher CPT enrolment among females. It is common that African women are financially dependent on their partners and, because of this, there is apprehension about fair access to HIV services [20]. Studies in Africa have demonstrated that CPT reduces morbidity and mortality in TB/HIV co-infection [13,25,26]. It is essential for providers to be reminded of the importance of providing these simple but important interventions to HIV-infected patients and to vigorously monitor and report programme activities. Further research is also required to explore the reasons for the above finding and address the operational challenges.

Limitations in our study included the fact that the study sites were purposively selected and the figures obtained may not be a true reflection of the entire region. However, our samples were accredited treatment centres and also served as referral centres in the region and received a diversity of patients with characteristics similar to those in other centres. ART and CPT services should be recorded according to the national guidelines, but registers were not complete. Missing records in TB registers were searched in HIV registers by either comparing names on TB registers or checking for patients on Efavirenz®-based ART combinations to identify TB patients. This may have affected the accuracy and

Table 4 Logistic regression analysis of CPT uptake with respect to potential predictors

<table>
<thead>
<tr>
<th>Variable</th>
<th>CPT #</th>
<th>OR# 95% CI P-value</th>
<th>ORc 95% CI P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>524 (47.0)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Health Facility</td>
<td></td>
<td></td>
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<tr>
<td>Faith-based</td>
<td>283 (65.8)</td>
<td>1 (0.22 - 0.36)</td>
<td>0.000 0.29 (0.22 - 0.38) 0.000*</td>
</tr>
<tr>
<td>Public</td>
<td>241 (35.2)</td>
<td>0.28 (0.22 - 0.36) 0.000 0.29 (0.22 - 0.38) 0.000*</td>
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</tr>
<tr>
<td>Sex</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>231 (45.0)</td>
<td>1 (0.92 - 1.47) 0.215 1.32 (1.02 - 1.71) 0.036</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>293 (48.8)</td>
<td>1.16 (0.92 - 1.47) 0.215 1.32 (1.02 - 1.71) 0.036</td>
<td></td>
</tr>
<tr>
<td>Age Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-14</td>
<td>13 (35.1)</td>
<td>1</td>
<td>- - 1 - -</td>
</tr>
<tr>
<td>15-29</td>
<td>148 (45.7)</td>
<td>1.55 (0.76 - 3.16) 0.224 0.89 (0.42 - 1.90) 0.766</td>
<td></td>
</tr>
<tr>
<td>30-44</td>
<td>280 (49.4)</td>
<td>1.80 (0.90 - 3.61) 0.097 1.26 (0.60 - 2.60) 0.542</td>
<td></td>
</tr>
<tr>
<td>45-59</td>
<td>73 (46.5)</td>
<td>1.60 (0.76 - 3.38) 0.213 1.20 (0.55 - 2.61) 0.649</td>
<td></td>
</tr>
<tr>
<td>≥ 60</td>
<td>10 (34.5)</td>
<td>0.97 (0.35 - 2.70) 0.956 0.74 (0.26 - 2.15) 0.583</td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>290 (54.4)</td>
<td>1</td>
<td>- - 1 - -</td>
</tr>
<tr>
<td>Urban</td>
<td>234 (40.3)</td>
<td>0.57 (0.45 - 0.72) 0.000 0.86 (0.65 - 1.12) 0.256</td>
<td></td>
</tr>
<tr>
<td>Category of Patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others*</td>
<td>57 (47.5)</td>
<td>1</td>
<td>- - 1 - -</td>
</tr>
<tr>
<td>New</td>
<td>467 (47.0)</td>
<td>0.98 (0.67 - 1.43) 0.915 0.77 (0.51 - 1.17) 0.223</td>
<td></td>
</tr>
<tr>
<td>EBPTB</td>
<td>74 (42.3)</td>
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<td>- - 1 - -</td>
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<tr>
<td>SNPTB</td>
<td>145 (42.9)</td>
<td>1.03 (0.71 - 1.48) 0.894 0.83 (0.65 - 1.12) 0.256</td>
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</tr>
<tr>
<td>SPPTB</td>
<td>305 (50.7)</td>
<td>1.41 (1.00 - 1.98) 0.049 0.83 (0.56 - 1.23) 0.350</td>
<td></td>
</tr>
</tbody>
</table>

a: crude odds ratio  
b: 95% confidence interval  
c: adjusted odds ratio  
d: significant values are highlighted  
*Others - Includes treatment failure, treatment default, transferred in from another facility and relapse cases  
# Denominator is the total number of HIV-positive patients with CPT records available (1114)
completeness of the data and underestimated the rates. Documentation of CD4-count results was not routinely performed and made it problematic to correctly assess ART eligibility. It is difficult therefore to assess if the 50% ART enrolment observed was due to inaccessibility to CD4-counts or because of a low proportion of TB patients being eligible for ART. Besides, ART uptake is time dependent and our model did not take this into account; this might have also affected our results. Moreover, the predictors in our model were patient-based and did not take into consideration the health sector factors like supply-oriented issues that might have affected uptake of these services. Our study assessed uptake of HIV services in TB patients shortly after implementation of collaborative activities; carrying out the study during this period might potentially have distorted the findings as operational challenges during the implementation phase may well have improved over time. Finally, it is unknown if the high uptake of PITC was influenced or based on voluntary and informed choices. A qualitative study to explore the counselling services would shed more light on this.

Conclusions
Our study demonstrated that PITC services are apparently well integrated into the TB programme in the region as evidenced by the high uptake of testing. This high uptake should translate into improved access to ART and CPT and ensure concomitant treatment with anti-TB drugs in those eligible for ART. Another challenge is ensuring the free availability to all TB patients of CD4 tests, other pre-therapeutic investigations associated with HIV care, and medical consultations; such availability will increase ART eligibility and ensure sustainability of the scale-up of HIV services. As collaborative activities are strengthened nationwide, staff capacity building in ART treatment and the importance of managing HIV opportunistic infections including the provision of CPT should be a priority. Finally, while stressing the need for an efficient documentation of programme activities in treatment centres, the use of EMR will, despite its challenges, inevitably improve HIV/TB treatment, as well as the reporting and monitoring of programme activities.

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Authors’ contributions
All authors contributed to the paper: NBN, AKH and MSS conceptualized and designed the study; NBN and PMT were responsible for the organization and collection of data; NBN performed the analysis which was interpreted by NBN, MSS and AKH; NBN drafted the manuscript with substantial revisions from all the authors. All authors read and approved the final version of the manuscript.

Competing interests
The authors declare that they have no competing interests.

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