EFFECTIVENESS OF TASK SHIFTING IN ANTIRETROVIRAL TREATMENT SERVICES IN HEALTH CENTRES, GASABO DISTRICT, RWANDA

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Health Workforce Development

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KEYWORDS

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ABBREVIATIONS

AAHIVM	American Academy of HIV Medicine
AIDS	acquired immune deficiency syndrome
ART	antiretroviral therapy
ARV	antiretroviral
ASW	adherence support workers
CDC	Centers for Disease Control and Prevention
DH	District Hospital
DOTS	Directly Observed Treatment Short Course
ECSA-HC	East, Central, and Southern African Health Community
FHI	Family Health International
HC	Health Centre
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HRH	Human Resource for Health
HTC	HIV testing and counselling
IMAI	Integrated Management of Adult and Adolescent Illness
MOH	Ministry of Health
NGO	non- governmental organization
OI	Opportunistic Infection
PMTCT	Preventing Mother-to-child Transmission

LFW	Lost to follow up
PLHIV	Person Living with HIV
RBC	Rwanda Biomedical Centre
SD	Standard deviation
STI	sexually transmitted infections
TB	Tuberculosis
TRAC Plus	Center for Treatment and Research on AIDS, Malaria, Tuberculosis and Other Epidemics
TS	Task shifting
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
UPDC	Decentralization and Integration Unit
WHO	World Health Organization

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ABSTRACT

In the context of human resource crisis in African countries, the World Health Organization has proposed task-shifting as an approach to meet the ever-increasing need for HIV/AIDS care and treatment services. Rwanda started the process of task shifting towards nurse-based care in ART services in June 2010. After one year of implementation, a need to determine whether task shifting program has been implemented as intended and if it achieved its primary goal of increasing accessibility of people living with HIV to ARV therapy and improving nurse capacity in HIV patient care was imperative.

A multi-method program evaluation study design, combining cross sectional, retrospective review and retrospective cohort sub-studies were used to evaluate the implementation, maintenance processes and outcomes of task shifting in 13 Health Centres (HCs) located in the catchment area of Kibagabaga District Hospital, in Rwanda. The study population consisted of HCs providing task shifted care (n=13), nurses working in the ART services of the 13 HCs (n=36), and more than 9,000 patients enrolled in ART care in the 13 HCs since 2006. All 13 HCs and 36 nurses were included in the evaluation. Routine data on patients enrolled in the pre-task shifting period (n=6 876) were compared with the post task shifting period (n=2 159), with a specific focus on data in the 20-months periods prior to and after task shifting. A cohort of patients 15 years and older, initiated onto ART specifically by nurses from June to December 2010 was sampled (n=170) and data extracted from patients medical files.

Data collection was guided by a set of selected indicators. Three different data collection tools were used to extract data related to planning, overall programmatic data and individual data from respectively, the program action plans/reports, HIV central databases and patients medical files.

Descriptive analysis was performed using frequencies, means and standard deviations (SD). The paired and un-paired t-tests were used to compare means, and chi-square test was used to compare categorical variables. To compare and to test statistical difference between two repeated measurements on a single sample but with non-normally distributed data, Wilcoxon signed rank test was used. To judge if current task shifted care is better, similar or worse than non-task shifted care, comparisons were made of program outputs and outcomes from the central database prior to and after the period of task shifting, and also with the cohort of nurse initiated patients.

Results showed that 61% of nurses working in the ART program were fully trained and certificated to provide ART. Seven out of 13 HCs met the target of a minimum of 2 nurses trained in ART service delivery. Supervision and mentorship systems for the 13 HCs were well organized on paper, although no evidence documenting visits by mentors from the local district hospital to clinics was found. In term of accessibility, the mean number of patients newly initiated on ART per month in the HCs increased significantly, from 77.8/month (SD=22.7) to 93.9/month (SD=20.9) (t test (df=38), p=0.025). A small minority of patients was enrolled in late stages of HIV, with only 15% of the patient cohort having CD4 counts of less than 100 cell /μL at initiation on ART. The baseline median CD4 cell count was 267.5 cells /μL in the cohort as a whole. With respect to quality of care, only 8.8% of patients in the cohort had respected all appointments over a mean follow up period of 17.2 months; and although follow up CD4 counts had been performed on the majority of patients (80%), it was done after a mean of 8.5 months (SD=2.7) on ART, and only a quarter (24.7%) had been tested by 6 months (as stipulated by guidelines). From central ART program data, a small but significant increase of patients on 2nd

line drugs was observed after implementation of task shifting (from 1.98% to 3.00%, $\chi 2=13.26$, $p<0.001$), although the meaning of this shift is not entirely clear.

The median weight gain was 1 kg and median CD4 increase was 89.5 cells /μL in the cohort after 6 months of receiving task shifted care and treatment. These increases were statistically significant for both male and female patients (Wilcoxon signed rank test, $p<0.001$). With regard to loss to follow up, only three of the 170 patients in the cohort followed up by nurses had been lost to follow-up after a mean of 17.2 months on treatment. The routine data showed a decrease of patients lost to follow up, from 7.0% in the pre-task shifting period to 2.5% in the post-task shifting period. In general, the mortality rate was slightly lower in the post-task shifting period than in the pre-task shifting (5.5% vs 6.9% respectively), although this was not statistically significant ($\chi^2=2.4$, df=1, $p=0.1209$).

This study indicates that, after over one year of implementation of task shifting, task shifting enabled the transfer of required capacity to a relatively high number of nurses. In an already well established programme, task shifting achieved moderate improvements in uptake (access) to ART, significant reductions in loss to follow up, and good clinical outcomes. However, evaluation of process quality highlighted some concerns with respect to adherence to testing guidelines on the part of providers and follow up visits on the part of patients. Improvements in processes of monitoring and follow up are imperative for optimal mid-term and long-term task shifting in the ART program.

DECLARATION

I hereby declare that*: "Effectiveness of task shifting in antiretroviral treatment services in health centres, Gasabo district, Rwanda",* is my own work, that it has not been submitted, or part of it, for any degree or examination in any other University, and that all the resources I have used or quoted have been indicated and acknowledged by means of complete references

Adeline Kabeja 05th July 2012

To my husband, Tharcisse and to our adorable sons, Armand, Robin, and Miguel, for your love and support, and for giving me strength to achieve my studies,

To my parents, Emérithe and Joseph Robert Kabeja, to you also my brothers and sisters as well as your spouses and children; for your presence in my life and your blessings,

To all HIV patients, for your strength and hope,

This mini-thesis is dedicated.

CHAPTER 1: INTRODUCTION

According to the World Health Organization (WHO) there is a global health workforce deficit of more than four million people (WHO, 2008). In many Sub-Saharan African countries and in parts of Asia and the Americas, the shortages are critical. At the end of 2006, the WHO estimated that there are 57 countries facing critical shortages of health workers, over half (36) of which are in Africa (Zachariah et al., 2008**)**. An additional 2.4 million doctors and nurses are needed to meet the Millennium Development Goals.

These human resource crises are aggravated by the rapidly increasing care needs generated by the HIV/AIDS epidemic in many African countries (Lehmann et al., 2009). In Sub-Saharan Africa, the human resource crisis is driven by emigration of trained health professionals, poor working conditions, poor salaries, low worker motivation, and high burden of infectious diseases (Zachariah et al., 2008).

As one of several possible solutions to these human resource shortages facing the African public health sector, WHO proposed the task-shifting approach (Callaghan et al., 2010). Task shifting is "a process of delegation whereby tasks are moved, where appropriate, to less specialized health workers" (WHO, 2007, p.3).

The delegation of tasks from one cadre to another less specialized is not a new concept **(**Dovlo as cited in Lehmann et al., 2009). It has been used in many countries as a response to emergency needs or as a method to provide adequate care in health system, especially in understaffed health facilities, (Lehmann et al., 2009). It is also common in high-income countries, the most known examples including nurse practitioners in the United States of America and nurse clinicians in

Sweden (Lewin et al. as cited in Philips et al., 2008). In several countries of Sub-Saharan Africa, specific cadres of non-physician health workers have been created to do clinical tasks in places where physicians are scarce, such as in rural areas. Besides these non-physician clinicians, well known examples of the use of lay workers include the community health worker and the community-based volunteer for giving directly observed treatment, short course (DOTS), for tuberculosis (Lewin et al. as cited in Philips et al., 2008). The concept of task shifting is increasingly promoted by WHO as a pragmatic response to health workforce shortages specifically to increase access to HIV services (WHO, 2008), after realizing that the western model of specialist physician management and advanced laboratory monitoring is not feasible in resource-poor settings (Gilks et al., 2006). According to WHO (WHO/PEPFAR/UNAIDS, 2008 as cited by ECSA-HC. 2010:2), the task shifting approach in ART service delivery is summarized in the four following levels:

- **"Task shifting I:** The extension of the scope of practice of non-physician clinical officers to enable them to assume some tasks previously undertaken by more senior cadres (medical doctors or specialists).
- **Task shifting II:** The extension of the scope of practice of nurses and midwives to enable them to assume some tasks previously undertaken by senior cadres (non-physician clinical officers and medical doctors).
- **Task shifting III:** The extension of the scope of practice of community health workers (CHWs), including PLHIV, to enable them to assume some tasks previously undertaken by senior cadres (nurses and midwives, non-physician clinical officers, and medical doctors).

- **Task shifting IV:** Patients, including PLHIV, trained in self-management, to assume some tasks related to their own care that would previously have been undertaken by health workers."

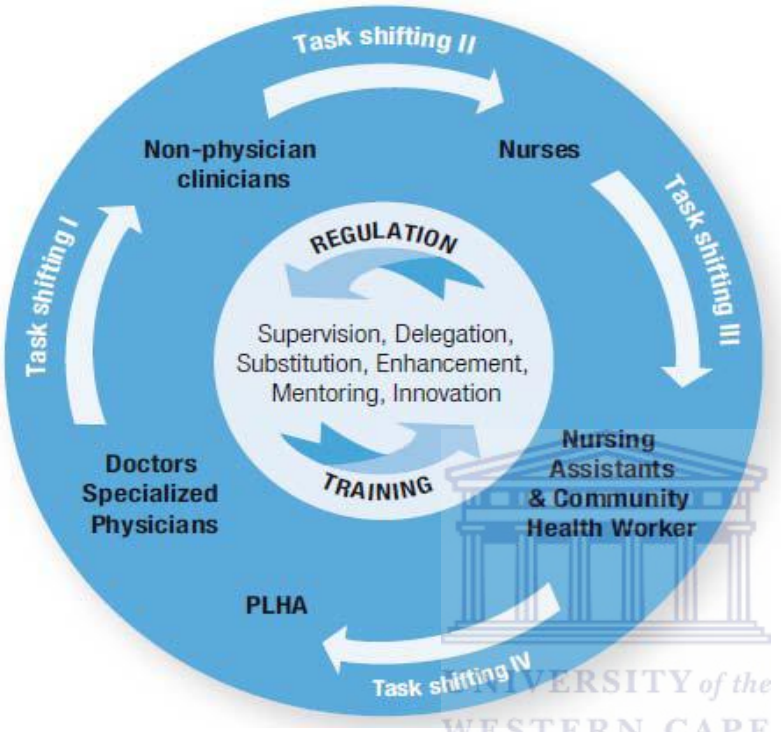

Figure 1: Levels of task shifting approach in ART services delivery (WHO, 2007)

In task shifting approach in ART service delivery, standardized simplified treatment protocols and decentralized service delivery enable lower level health-care workers to deliver HIV care and treatment to large numbers of HIV-positive adults and children (Gilks et al., 2006), while the senior cadres utilize the saved time to do other clinical services and supervise and/or mentor lower health care workers in their new role and responsibility.

In Uganda for example (WHO, 2007), nurses are responsible for a range of tasks that were previously the responsibility of doctors. These include: managing people living with HIV who

have opportunistic infections; diagnosing tuberculosis sputum positive; prescribing medicine to prevent other infections; determining the clinical stage of people living with HIV; deciding whether people living with HIV have medical eligibility for antiretroviral therapy; and managing people on antiretroviral therapy who have minor side effects. In turn, tasks that were formerly the responsibility of nurses have been shifted to trained community health workers. These tasks include: HIV testing; counseling and education on antiretroviral therapy; monitoring and supporting adherence to antiretroviral therapy; filling in registers; triage; clinical follow-up; taking weight and vital signs; and explaining how to store antiretroviral drugs. The same scenario is observed in Rwanda and in most of African countries where the shifting approach was adopted in ART programs. In Rwanda, nurses prescribe first-line of ART regimens, manage ART-naive adult cases, and referral complex cases, while physicians manage complex medical cases, assure training/mentoring and supervise nurse-centered care (Shumbusho et al., 2009).

1.1 DESCRIPTION OF TASK SHIFTING PROGRAM IN ART SERVICES DELIVERY IN RWANDA

Rwanda started the process of task shifting in ART services delivery after a pilot project of decentralizing ART prescription by nurses initiated by Family Health International (FHI) in collaboration with the Rwanda Ministry of Health (MOH) in 2005. This pilot project found that nurses can effectively and safely prescribe ART when given adequate training, mentoring, and support (Shumbusho et al., 2009).

Rwanda has a population of 10,412,820 (National Institute of Statistics of Rwanda, 2009). The national HIV prevalence among adults is 3%, but more than 7% in the urban areas (National Institute of Statistics of Rwanda and ORC Macro, 2006). According to the Rwanda 2010 HIV

and AIDS estimations and projections; 198,620 individuals were HIV infected while 96,040 adults were eligible for ART (Mwumvaneza et al., 2010). By December 2009, 76,726 patients (adult and children) had initiated ART, for a national ART coverage of about 52% (TRAC Plus, 2009 a.). This progress in ART scale-up has been made despite the significant shortages of health care workers. Indeed, the doctor to inhabitant ratio is 1 to 18,000 and that of nurses 1 to 1,690 (Mala, 2011). As the number of people on or needing ART and requiring long-term care has increased, it has become evident that the available pool of physicians cannot respond to the need.

To address this, the MOH instituted task shifting in 2009. At central level, the program was designed by the former Center for Treatment and Research on AIDS, Malaria, Tuberculosis and Other Epidemics (TRAC Plus) through its Unit of HIV/AIDS and STI, and by the Ministry of health's Unit called Decentralization and Integration Unit. At district level, implementation involved Directors of District Hospitals (DH) and physicians, local and international non-governmental organization (NGO) partners operating in clinical HIV programs, and at health centre level, the heads of Health Centres (HC) and nurses as front-line staff.

According to the task shifting implementation plan 2009-2010 (TRAC Plus, 2009 b.), the task shifting program was designed in three phases, namely: 1) determining needs and feasibility, 2) designing the implementation process and 3) evaluation. Among the key planned activities, there was the development of technical documents, a review of the staffing structure at the HC, and provision of training and mentoring. The goal was to increase accessibility of people living with HIV to ARV therapy and to improve nurse capacity in HIV patient care, including treatment with ARV, with all existing ART sites inducted in task shifting.

From February to June 2010, 856 nurses from 40 DH and their 389 health facilities were trained in the expanded scope of services. By June 2011, 705 (82.36%) nurses had been mentored and fully validated by physicians at their facilities and officially authorized to: prescribe the first line of ART; prevent and treat opportunistic infection (OI) and sexually transmitted infections (STI); manage patients with immunological and clinical failure; manage side effects and identify, manage and refer complicated cases (TRAC Plus, 2010).

1.2 PROBLEM STATEMENT

Although findings from pilot intervention of nurse-initiated ART at three rural primary health centres (HC) in Rwanda showed good quality of HIV care outcomes and significant promise to scale up HIV/AIDS care and treatment through task shifting approach (Price and Binagwaho, 2010), we cannot underestimate the contribution of ideal working conditions created during the pilot intervention which may have led to the success of the pilot intervention. The same working conditions are not necessarily met in normal working conditions at HC level. After one year since the process of implementation of the task shifting program in ART service delivery by HCs started, we thus considered that it is time to evaluate the implementation process and maintenance phase of task shifting program, to determine whether the task shifting program in HCs has been implemented and is going as intended. In addition, we anticipate that the evaluation will identify improvements needed to be presented to help policy makers so adjustments could be done accordingly to ensure good quality of health care delivery. Finally, this study will either support or refute the findings of other studies on effectiveness of task shifting in ART services delivery of HCs in Rwanda.

1.3 DESCRIPTION OF STUDY SETTING

This evaluation of the task shifting program was conducted in 13 health facilities located in the catchment area of Kibagabaga District Hospital (DH). Kibagabaga DH is one of the two district hospitals of Kigali City. It is located in Gasabo District, has an area of 43.030 km² (58% of the municipality area of Kigali City) and covers an estimated population of 411,710 inhabitants (Kibagababa DH, 2009). At the end of the year 2009, a total number of 6,431 patients from 16 health facilities (14 public HC and 2 private HC) under responsibility of Kibagabaga DH (427 children and 6,004 adults) had initiated ART treatment (TRAC Plus, 2009 a.).

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

This chapter examines the literature on task shifting approaches in ART services in Rwanda and in other countries. Some promising task shifting models are presented and factors influencing implementation of the task shifting approach to reduce human resource constraints in HIV programs are discussed. The literature search was conducted using key terms used in the study (evaluation/effectiveness of task shifting, nurses prescribing antiretroviral treatment, human resources for health in HIV programs) and different databases, namely Medline, Google Scholar, Human Resources for Health.

2.2. SUCCESS OF TASK SHIFTING IN HIV/AIDS SERVICE DELIVERY AT HEALTH CENTRE LEVEL

Following the growing needs to extend HIV/AIDS care and treatment to more patients in need and in the context of the human resources crisis especially in African countries, several pilot programs on task shifting in ART service delivery have been implemented to see which model of task shifting can be adopted and to test the feasibility of task shifting in HIV/AIDS services delivery at primary health care level.

Among these programs we can cite a comprehensive task-shifting program implemented as part of ART service expansion in Lusaka, Zambia which showed that "over the short term, it is possible to expand ART services in settings of extreme health worker shortage without compromising HIV clinical care quality" (Morris et al., 2009). The feasibility of task shifting in

HIV/AIDS service delivery at primary health care level was also showed by others studies, such as the retrospective evaluation of a pilot program of nurse-centered antiretroviral treatment prescription implemented in three rural primary health centers in Rwanda (Shumbusho et al., 2009), a prospective evaluation of the effectiveness of nurse led primary care based antiretroviral treatment by comparison with usual hospital care in a typical rural setting in Lubombo, Swaziland (Humphreys et al., 2010) and Médecins Sans Frontières' experience of scaling-up antiretroviral treatment in three sub-Saharan African countries (Malawi, South Africa and Lesotho), (Zachariah et al., 2008).

Médecins Sans Frontières' experience concluded that the use of task shifting for HIV/AIDS care at two relatively new levels of the health system (health centres and the community) at Lusisiki in South Africa and Thyolo in Malawi did not affect the quality of care and was significantly associated with better ART outcomes (Zachariah et al., 2008). At Lusisiki, between January 2004 and June 2005, 595 patients were registered at health centres while 430 were registered at hospital. At the end of June 2005, significant differences were observed on some outcomes like patients alive and on ART (81% at health centres compared to 67.2% at hospital); and patients lost to follow-up (2.2% in health centres versus 19.3% in hospital).

A randomized non-inferiority trial study comparing outcomes of nurse versus doctor management of ART care for HIV-infected patients arrived at similar conclusions (Sanne et al., 2010). This trial was conducted at two South African primary-care clinics. Patients were randomly assigned to nurse (n=404) or doctor (n=408) and compared with respect to "treatment, limiting events" (referred to as treatment failure) including mortality, virological failure, treatment-limiting toxic effects, and adherence to visit schedule. The analysis showed that 48%

of patients in the nurse group and 44% in the doctor group reached an endpoint of treatment failure.. After a median follow-up of 120 weeks, deaths were 10 in the doctor group versus 11 in the nurse group, virological failures were 44 against 39 respectively in the doctors and nurses groups , toxicity failures were 68 against 66, and programme losses were70 against 63. All these findings were not significantly different in both groups. Findings from this study tend to support the theory that supports delegating monitoring of ART to appropriately trained nurses.

These pilot interventions and recent publications on task shifting suggest significant promise for using nurses in task shifting to advance universal access to HIV care and treatment (Price and Binagwaho, 2010).

Different models of task shifting have been adopted in HCs to scale up ART without compromising quality of health care. Cohen and her collaborators describe in their article one model of nurse-driven ART for adults and children at primary health care level in Lesotho (Cohen et al., 2009). Here nurses were responsible for providing all primary health care and for integrating a full range of HIV/AIDS services. . With regards to management of HIV and ART, nurses were trained to meet their new responsibilities through intensive in-service theoretical and practical training.. They worked under supervision and mentorship of doctor or an experienced nurse clinician, who visited them on a weekly or bi-weekly basis to provide clinical mentorship on diagnosis and management of complicated cases. Analysis showed that, between 2006 and 2008 80% of people newly initiated on ART were enrolled at primary care level. Annual enrolment more than doubled, with no major external increase in human resources. Patients (adults) outcomes after 12month of treatment and follow up were satisfactory in terms of mortality (11%), loss to follow up (8.8%)and program retention(80%). .

In Rwanda, the evaluation of task shifting to nurse-based ART has been limited to three rural primary health centers (Shumbusho et al., 2009). Analysis at 6 months after initiation on ART showed satisfying outcomes; retention in the system was 93%, deaths was 7% , proportion of patients lost to follow up was 1%, and none had stopped treatment .The mean CD4 cell count gained in the first 6 months after initiation on ART increased between 97 and 128 cells /ml, while the mean weight gained varied between 1.8 kg and 4.3 kg in the first 6 months. These patient outcomes in the Rwandan aforementioned pilot program compared favorably with those from an evaluation of the national ART program in Rwanda (Shumbusho et al., 2009). Indeed, patient retention at the facilities participating in the nurse-based pilot program was slightly higher than the national estimate of 87% for adult patients attending similar size health centers in Rwanda, where care is generally provided by physicians (Lawrence et al., 2009). Although mortality at 12 months was slightly higher in the pilot program (8.5% versus 7%), patients lost to follow up were substantially lower (0.3% versus 1%).

2.3. FACTORS INFLUENCING THE SUCCESS OF IMPLEMENTATION OF TASK SHIFTING IN ART SERVICES DELIVERY

Despite the fact that pilot interventions of task shifting in ART services delivery have been successfully implemented in different African counties, the authors of these programs have also cautioned that offering ART is far more complex than simply dispensing pills. In Rwanda for example, the authors of evaluation of the ART task shifting pilot intervention in three rural health centers say that nurses can prescribe ART and manage ART patients when given adequate training, mentoring, and support (Shumbusho et al., 2009), while in Zambia additional to training, mentoring and continuous quality monitoring, task shifting implementation required the institution of new facility and human resource systems (Morris et al., 2009).

Similarly, the Médecins Sans Frontières' task shifting experience in Thyolo district in Malawi showed that task shifting was accompanied by a number of service delivery supports, process improvements and staff incentives (Philips et al., 2008).

As there are many factors that could influence implementation of task shifting and which could differ according to specific characteristics of countries, this literature review discusses some of those that are applicable to this study context.

2.3.1. Training of staff implementing task shifting

Staff implementing task shifting in ART service delivery cannot automatically be assumed to have mastered the skills that the program was intended to impart (WHO, 2008); it is for this reason that sustainable training plays an important role in the success of task shifting.

According to Morris et al. (2009), in their article on use of task-shifting to rapidly scale-up HIV treatment services, the Zambian Ministry of Health recognized that training focusing on task-shifting was the foundation to scaling up HIV care and treatment. In this Zambian experience, nurses underwent "triage" training which focuses on "(1) patient assessment and management of urgent problems, (2) recognition of toxicities and severe illness, and (3) interpretation of laboratory investigations. Nurses then underwent advanced training on care of the stable HIV patient, similar to the Integrated Management of Adult and Adolescent Illness (IMAI) program." (Morris et al, 2009:3) Peer educators were trained to provide health education, adherence counselling, assess vital signs, record demographic information, and provide guidance to families to disclosing HIV status to their infected children. (Morris et al, 2009:3).

2.3.2. Supervision and clinical mentoring

It is recognized that support for heath workers through supervision, mentoring and teamwork improves the quality of care across the spectrum of heath care (WHO, 2008). There are many documented examples of poor outcomes where health programmes have failed to invest in adequate supervision and support for heath workers (WHO, 2008).

In Zambia, an intensive system of follow-up support by a team of local physicians, clinical officers and nurses was provided on-site on a weekly basis (Morris et al, 2009).

2.3.3. Motivation and retention of staff

In Africa, many facilities face difficulties in motivating and retaining health staff. Migration of health workers includes flows at numerous levels: international, rural-to-urban, from clinical to

administrative jobs, from public to the private or nongovernmental organization (NGO) sectors, or out of the health-care sector (Kinoti and Livesle, 2004). This is driven by a series of "push" and "pull" factors related to remuneration, working and living conditions and training and career prospects (Kinoti and Livesle, 2004). To tackle this threat, WHO recommends that countries carefully consider their packages of financial and/or non-financial incentives (WHO, 2008).

2.3.4. Involvement of the community

The scaling up ART has become highly dependent on recruiting from the pool of other, non-professional HRH (Van Damme, 2006). In Uganda for example, involvement of community members and people living with HIV/AIDS not only in supporting adherence and follow-up but also in advisory structures such as the National Advisory Board of the Drug Access Initiative have been cited as important success factors (Okero et al., 2003).

Other examples of the influence of the community in the success of HIV programs is demonstrated in Zambia where deployment of adherence support workers (ASW) in adherence counseling and treatment retention not only enabled a significant shift in professional workloads, but also improved quality of care with loss to follow-up rates of new clients declining from 15% to 0% (Torpey et al., 2008).

2.3.5. Monitoring of quality of health care

There is a necessity of tracking the quality of care being provided following task shifting. Health authorities must institute a quality assurance framework that includes standardized training, supervision, certification, and regular assessments. The WHO-Commissioned Study on Task

Shifting shows that the need for quality assurance mechanisms is sometimes overlooked in countries that are implementing task shifting (WHO, 2008). The available evidence indicates that investment in a range of quality assurance mechanisms including the definition of roles and competencies, recruitment, training, continuing education, supervision and evaluation, is essential to the success of the task shifting approach (WHO, 2008).

In Lusaka, Morris et al. (2009) reported how a comprehensive continuous quality assurance program focusing on evaluation of clinical care, was established. This program was coordinated by a central team of "quality assurance" nurses and data monitors who on a quarterly basis reviewed the following:

- A laboratory report listing all critical values according to date
- A treatment failure report.
- Site-specific performance reports that included proportion of patients starting ART who had baseline laboratory results documented; proportion of patients on ART who had a repeat CD4 count ordered at the appropriate time; patient retention in care; and proportion of eligible patients receiving prophylaxis of Pneumocystis carinii (jiroveci) pneumonia (Morris et al., 2009).

2.4. SUMMARY

The studies described above are similar to the scope of our research. They focus on the overall patient and program outcomes as well as factors influencing the success of implementation of task shifting in sub-Saharan Africa where services for antiretroviral therapy have to scale up rapidly in the face of generalized human resource crises. However, most of information available on effectiveness of task shifting approach to expand ART and the associated factors are from pilot programmes, where participation in a closely monitored pilot project can itself increase

commitment from nurses (Shumbusho et al., 2009). Information on rollout of task shifting in ART services delivery beyond pilot sites is still limited.

CHAPTER 3: METHODOLOGY

3.1. INTRODUCTION

This chapter describes the methods used in this study, including the study design and study sampling. A description of data analysis is provided and finally, the issues of ethical consideration related to the study are described.

3.2. STUDY AIMS AND OBJECTIVES

3.2.1. Aim

The aim of this study was to assess the implementation of task-shifting in ART service delivery in Health Centres (HC) in Gasabo District, Rwanda.

3.2.2. Objectives

Objectives of this evaluation were to:

1. Describe key task shifting activities, including training, and mentorship in the catchment area of Kibagabaga District Hospital.
2. Assess if implementation of task shifting in ART services of HCs is improving accessibility to antiretroviral treatment to patients.
3. Determine the quality of care in ART service delivery of HCs where task shifting was implemented.
4. Assess patient and program outcomes in ART program based on task shifted care.

3.3. STUDY DESIGN

A multi-method program evaluation study design combining cross sectional, retrospective review and retrospective cohort sub-studies was used to evaluate the implementation, maintenance processes and outcomes of task shifting. This combination of study designs methods enabled us to understand the factors that may have led to strengths and/or weaknesses in program outcomes. The first step in designing this evaluation was to construct a logic model based on the Centers for Disease Control (CDC) guide for evaluation of public health program (CDC, 2005). Table 1 shows the logic model of implementation of task shifting in Rwanda, drawn up in order to define appropriate indicators for evaluation.

Table 1: Logic model of task shifting implemented at health centre level in Rwanda

Inputs	**Activities**	**Outputs**	**Short term outcomes**	**Intermediate outcomes**	**Long term outcome**
Funds Adopted ministerial instructions Staff at central level Mentors at central and district hospital levels System of monitoring and	Determine the new structure at HC (number and roles of staff) Delegate and train other health staff and/or lay workers on their new specific tasks Conduct full training of all nurses who have to be involved in task shifting process on HIV management and ART guidelines Ensuring effective referral	Number of HC which have implemented a new structure (number and roles of staff) further to task shifting program Number of job descriptions for health staff and/or lay workers reviewed Number of other health staff and/or lay workers trained on their new specific tasks Number of staff oriented to the expanded role of nurses Number of nurses involved in task	Improved organization of patients follow-up Improved quality of care in ART programs Fruitful referral system Improved patients outcomes Enhanced program retention	Improved nurse capacity in HIV patient care, including treatment with ART. Increased accessibility of people living with HIV to ART therapy	Change in morbidity and mortality of HIV patients Health systems strengthened

evaluation of ART program utilizing a Central Web-Based Database (TRACnet) Nurses at health centre levels Collaboration framework with clinical partners	procedures and mechanisms Design and distribute job aids to be used by Prescribing Nurses Assure mentoring and supervision of nurses prescribing ART (twice a month) or any time needed Ensure immediate technical assistance to ART prescribing nurses if needed. Monitoring and evaluation of indicators for quality of care	shifting process who have been fully trained Type of referral procedures and mechanism established Number of each type of job aids distributed to HC Number of supervisions/mentoring visits conducted in each HC High level provide assistance to ART Prescribing Nurses in case of complex issues as needed Number of patients receiving proper care			

Evaluation was conducted on processes (activities), outputs and outcomes of task shifting in ART services delivery of 13 HCs under supervision of Kibagabaga DH, where the task shifting approach has been implemented since June 2010. It involved a cross sectional assessment of program activities as reported in program reports and documents; review of central program data (referred to as TRACnet) on all patients enrolled (by both doctors and nurses) during the 20 months period prior to and after inception of task shifting, and evaluation of a cohort of patients specifically enrolled by nurses in the 13 HC based on retrospective record review.

To judge if current task shifted care in Kibagabaga DH catchment area was better, similar or worse than non-task shifted care, comparisons were made of program outputs and outcomes from the central database considering 20 months prior to and after the task shifting, and also with the cohort of nurse initiated patients.

3.4. DEFINITIONS OF KEY TERMS

- **Nurse fully trained**: A fully trained nurse is a nurse working in ART services delivery, who was trained on task shifting (theory and practice) and who has a certificate authorizing her to prescribe ART.
- **Clinical mentoring:** WHO defines clinical mentoring as " a system of practical training and consultation that fosters ongoing professional development to yield sustainable high-quality clinical care outcomes" (WHO, 2006)
- **Accessibility to antiretroviral treatment**: the United Nations General Assembly Special session on HIV/AIDS (UNGASS) recommends using "Coverage" as an indicator to measure ART access. The coverage is defined as the number of individuals receiving

ART at a point in time divided by the number of individuals who are eligible to receive treatment at the same point in time (including those who are already receiving ART). This is a cross-sectional measure, a "snapshot" of the cumulative ART enrolment relative to the "backlog" of unmet need, at a point in time (Johnson & Boulle, 2010).

- **Retention**: Refers to patients who are known to be alive and receiving ART at the same clinic where they initiated ART at the end of 6 months follow-up. This means that patients who are documented to have died, been lost to follow-up, stopped treatment, or transferred are considered non-retained.
- **Lost to follow up**: patients initiating ART at the site in the selected time period who were not seen at the clinic, or pharmacy, ≥ 90 days after the date of their last missed appointment or their last missed drug pick-up, and who are not known to have transferred out or to have died (TRAC Plus, 2008).
- **Substitution:** is defined as change from one ART regimen to another by substituting one or more ARVs within a drug class that was already used in the original regimen.
- **Switch:** is defined as a change in an ART regimen after regimen failure. The change involves at least two new drugs; one of which is from a new ARV class.
- **Stop:** is defined as a patient who has stopped ART treatment but is still in ART program.
- **Logic model**: is a systematic and visual way to present and share your understanding of the relationships among the resources you have to operate your program, the activities you plan to do, and the changes or results you hope to achieve.

3.5. STUDY POPULATION

The study population consisted of three sub-populations:

- Health facilities under the supervision of Kibagabaga DH providing nurse-based task shifted care
- Nurses providing antiretroviral treatment
- Patients receiving task-shifted care

3.6. SAMPLING

The thirteen health centres under the supervision of Kibagabaga DH and providing nurse based ART and the 36 nurses working in the ART services of the 13 HC were all included in the study.

Data on all patients who received ART in the 13 HC in the periods December 2006-May 2010 (pre-task shifting) and June 2010-January 2012 (post task shifting) were extracted from the central database. The numbers for the two periods were 6 876 and 2 159 respectively. The sub-set of patients enrolled or receiving care in the 20-month period (October 2008-May 2010) prior to task shifting were compared with the group in the 20-month period (June 2010-January 2012) after task shifting.

Patients, 15 years and older, initiated onto ART by nurses from June to December 2010, constituted a cohort of patients for whom antiretroviral outcomes were assessed after 12 months or more on treatment. These were selected using a stratified random sampling procedure, with each HC constituting a stratum, as the effects of task shifting may be dissimilar in different HC. The proportion of patients to be selected in each stratum was determined by the size of patients

followed at each HC. Patients initiated on ART by physicians and patients who had been transferred from another HC were excluded from the sample. A total of 536 new adult patients were initiated on ART in the 13 health facilities during the period of June-December 2010. Thus, assuming that 70% of these patients received good quality of care with 66% as a worst proportion of patients who could receive good quality of care, a sample size of 214 patients was calculated at a confidence level of 90%, using Epi-Info version 3.5.1.

3.7. DATA COLLECTION METHODS

Data collection method was guided by a set of indicators, demonstrated in table 2, which were selected to orient the assessment of study objectives.

Table 2: List of indicators evaluated, sources of data and method used

Study objective	Indicators	Definition of indicator	Source of data	Method	Population/ samples
To describe the key task shifting activities, including training, and mentorship in catchment area of Kibagabaga DH	Proportion of nurses in ART program who are fully trained	Number of nurses fully trained / total number of nurses working in ART program	- HC administrative documents - Training reports	Cross sectional	Nurses providing antiretroviral treatment
	Proportion of mentorship visit or supervisions conducted according to the action plan of 2010 and 2011	Number of mentorship visits or supervisions conducted in 2010 and 2011 / number of mentorship visits or supervisions planned in 2010 and 2011	- Supervision and mentorship reports - Action plans (TRAC Plus, Decentralization unit, partners and DHs)	Retrospective review	13 Health facilities under supervision of Kibagabaga DH
	Types of task shifting job aids	Availability of all job-aids	Health centres	Cross sectional	13 Health facilities under

	available at HC	at all HC			supervision of Kibagabaga DH
To assess if implementation of task shifting in ART services of HC is improving	Trends over time of number of enrolments in ART program, before and after implementation of task shifting approach	Mean monthly enrolment onto ART per HC pre and post task shifting periods	TRACnet database	Retrospective review	Patients who received ART in the 13 HC in the periods Oct 2008-May 2010 (pre-TS) and Jun 2010-Jan 2012 (post TS)
accessibility to antiretroviral treatment to patients in need	Mean of CD4 cells count at initiation of ART	Mean CD4 cells count at initiation of ART	Patient medical file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
To determine the quality of care in ART service delivery of HC	Percentage of patients on the 2nd line treatment before and after implementation of task shifting	Number of patients on the 2nd line before and after TS / total number of patients on ART before and after TS	TRACnet database	Cross sectional	Patients who received ART in the 13 HC in the periods Oct 2008-May 2010 (pre-TS) and Jun 2010-Jan 2012 (post TS)
where task shifting	Percentage of patients	Patients referred to specialty	Patient medical file	Cohort	Patients, 15 years and older,

was implemented.	referred to specialty medical services	medical services / total number of patients on ART			initiated onto ART by nurses from Jun to Dec 2010
	Proportion of patient who substituted drugs	Patient who substituted drugs/ total number of patients on ART	Patient medical file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Proportion of patient who switched regimen	Patient who switched regimen/ total number of patients on ART	Patient medical file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Proportion of patient who stopped ART	Patient who stopped ART/ total number of patients on ART	Patient medical file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Proportion of patient who respected all appointments provided to them	patient who respected all appointments provided to them/ total number of patients enrolled	Patient medical file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010

	Mean of missed appointments per patient on ART	(Number of appointments not kept per patient/ total number of appointment provided per patient)/months	Patient medical file and appointment book	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Proportion of patients with follow up CD4 counts	Number of patients with CD4 counts at follow up assessment/total patients	Patient medical file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Mean time at the first follow up of CD4 count	Mean of months at the first follow up of CD4 count	Patient medical file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
To assess patient and program outcomes in task shifted care	Mean of CD4/Weight gained after 6 month on ART	Means at 6 months – means at baseline	Medical patient file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Percentage of patients	Number of patients who are	ART register and	Cohort	Patients, 15 years and older,

	retained in the program after +12 months on treatment	alive and known to be receiving ART at the same HC where they initiated ART at follow-up/total number of patient enrolled	Medical patient file		initiated onto ART by nurses from Jun to Dec 2010
	Proportion of ART patients who transferred out	Persons who were transferred out/ total number of patients on ART	ART register	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Percentage of ART patients who died	Patient who died/total new patients enrolled	Medical patient file	Cohort	Patients, 15 years and older, initiated onto ART by nurses from Jun to Dec 2010
	Percentage of ART patients who died before and after TS	patients who died/ total new patients before and after TS	TRACnet database	Cross sectional	Patients who received ART in the 13 HC in the periods Oct 2008-May 2010 (pre-TS) and Jun 2010-Jan 2012 (post TS)

Programmatic data were extracted from databases using a data extraction tool for health centres (appendix 1.2.) while individual data were extracted using a data extraction tool for patients (appendix 1.3).

This was done by a trained fieldworker, with supervision from the author. Patients who met inclusion criteria were identified from the ART register and their respective ID numbers noted; study subjects were selected randomly thereafter, and their medical files extracted. Data collection was done within a period of 17 working days (from February, 16th to March, 07th 2012).

Finally, a data extraction tool for central level, district and partners (appendix 1.1) was used for gathering information related to training and mentorship/supervision planned and conducted from action plans and supervision reports.

3.8. VALIDITY/RELIABILITY

The data collection tools were translated into French in order to facilitate their comprehension. A pre-test of data collection tools was made in one HC located in Kigali that would not be included in the study to see complexity of the data extraction and availability of information in different sources. After the pretest, the tool for health facility was revised to add information related to nurse's responsibilities (appendix 5).

Double data entry was performed in order to minimize data entry errors and therefore ensure a good quality of data. A data entry template was developed in Epi-Info with a built-in check that detected and alerted data entry clerk on any errors or inconsistency on the data set. Before processing and analysis, the two databases were merged to identify any difference. In case of

inconsistency, it was checked for correction. If it was not possible to correct, the sheet with problem was excluded from the analysis.

3.9. METHODS OF DATA ANALYSIS

Data analysis was done using Epi Info version 3.5.1 and SPSS 17.0 software. Descriptive statistics analysis was performed using frequencies, percentages, means, median and standard deviations (SD). The paired and two-sample t-tests were used to compare means. To compare categorical variables, Chi-square test with P-value=0.05 as cut-off point for significance was used; while wilcoxon signed rank test was used to compare and to test statistical difference between two repeated measurements on a single sample but with non-normally distributed data.

3.10. ETHICAL CONSIDERATIONS

Permission to conduct the study at HC was requested from the Director of Kibagabaga DH while an informed consent sheet explaining in detail the nature of study, the reason it is being undertaken, and the possible benefit and potential risk of participation of HC in the study was presented to the Heads of HC who signed it before proceeding to data collection. To ensure anonymity, no patient names, patients ID or other unique identifiers were utilized in analysis. Each extraction sheet was given a unique study identification number which was composed by the combination of the code of Health Information Management System (HIMS) of the HC and sequential numbers of subjects randomly selected in each HC.

Although we do not anticipate that all patients included in this study will directly benefit from the results, it is reasonable to assume that the majority of patients included in the study, those

who remain alive and on ART, will indirectly benefit from the study through improvements made in the quality of care. Results of the study will be shared with all HCs involved in study.

CHAPTER 4: RESULTS

4.1. INTRODUCTION

In this chapter, the results are presented according to study objectives. The chapter starts with a descriptive account of the different study populations; thereafter achievements of the program with regards to training, mentorship and supervision of task shifting are presented. The results chapter continues by presenting data on access to ART and findings on a set of selected indicators to measure quality of care. The chapter ends by examining clinical outcomes (CD4 count and weight) after six months on task shifted antiretroviral treatment and ART program outcomes pre and post task shifting.

4.2. BACKGROUND INFORMATION

4.2.1. Participation rate

All 13 HCs and all 36 nurses working in ART services delivery of concerned HCs consented to participate in the study. As shown in Table 3, the number of nurses by HC varied between 2 and 6, with a mean of 3 nurses per health facility.

Of the cohort of patients initiated on ART between June and December 2010, information related to the clinical and medical aspects of 210 patients was extracted from the medical files, but only information of 170 (81%) patients was analysed (Table 3). During the data cleaning procedure, 44 (19%) records were excluded from the database due to missing values on important study variables. When it was not possible to complete at least one missing variable or to correct any inconsistency, the record with the problem was excluded from analysis.

Table 3:Distribution of cohort of patients initiated on ART between Jun-Dec 2010 in 13 HCs, according to population size, sample size, sample analyzed and sample excluded from analysis (n=536)

Health facilities	Distribution of patients newly enrolled	Distribution of study sample size	Distribution of sample analyzed	Distribution of sample excluded from analysis
Gihogwe HC	10	4	3	1
Gikomero HC	12	5	5	0
Jali HC	17	7	7	0
Kabuye HC	31	12	11	1
Kacyiru HC	102	40	31	9
Kagugu HC	30	12	11	1
Kayanga HC	16	6	5	1
Kibagabaga DH	79	31	22	9
Kimironko HC	132	52	42	10
Kinyinya HC	62	24	19	5
Nyacyonga HC	16	6	5	1
Prison	10	4	2	2
Rubungo HC	19	7	7	0
Total	**536**	**210**	**170**	**40**

Data of all ART patients that are reported in the central database were also used. Based on this central data, a cumulative number of 9 035 adult patients had received care in the ART program of the 13 HCs (6 876 in pre-task shifting period and 2 159 in the post-task shifting period). Of these, 7 706 were still on ART at the end of January 2012 (5 845 patients enrolled in pre-task shifting and 1 861 in post-task shifting periods). In the 20-months periods prior to, and after task-shifting, 1 556 and 1 877 new patients were initiated onto ART in the 13 HCs, respectively.

4.2.2. Socio-demographic profile of patients

Of the patients who were on ART before implementation of task shifting in the 13 HC, 63.8% were female and 36.2% were male. This gender profile did not change with implementation of task shifting (63.6% females vs. 36.4% males).

We also observed a similar gender profile among the cohort of patients initiated on ART between June-December 2010, (65.3% females versus 34.7% males), (Table 4). The cohort's mean age was 37 years (standard deviation (SD), 9.4 years) and median age was 36 years (range 22-72).

Table 4: Background characteristics of the patient in cohort of patient initiated on ART between Jun-Dec 2010 (n=170)

Characteristics	Variable	Frequency	%
Gender	Female	111	65.3%
	Male	59	34.7%
Age group	15-24	17	10%
	25-34	52	30.6%
	35-44	67	39.4%
	45-54	27	15.9%
	55-64	4	2.4%
	65+	3	1.8%

4.3. ACCOMPLISHMENT OF KEY TASK SHIFTING ACTIVITIES, INCLUDING TRAINING, AND MENTORSHIP IN CATCHMENT AREA OF KIBAGABAGA DH

4.3.1. Training of nurses working in ART services delivery on task shifting

According to official reports of training for task shifting, nurses working in ART services delivery of HC located in Kibagabaga DH catchment area were trained in early 2010 during the second phase of the national training (Mbituyumuremyi, 2010).

The training curriculum was prepared by TRAC Plus, UPDC, Partners, and district hospitals; and was accompanied by the distribution of task shifting tools such as training modules, validation criteria and ART treatment guides for health providers. Nurses working in HIV services were trained on:

- ART first line prescription and the follow up of HIV infected or HIV exposed patients.
- Early identification of therapeutic failure in patients on ART
- Identification and management of side effects
- Screening STIs and TB using recommended tools
- Use of new patient files and registers

Training was conducted by TRAC Plus in collaboration with partners and UPDC. It was divided into two sessions (5 days of theory and 5 days of practicum). A pre-test and post test were done before and after training and participants were “partially” validated if they obtained a score in the post-test of 70% and above. After the two weeks training, nurses partially validated were admitted into the mentorship phase where physicians from Kibagabaga DH assisted them to

carry out all activities related to task shifting, this intensive period of mentorship was closed by a full validation.

By the end of January 2012, 22 (61%) of the 36 nurses working in the ART programs of 13 HC had been fully trained and validated; three nurses were still undergoing training and 11 (31%) nurses were not yet trained (Figure 2).

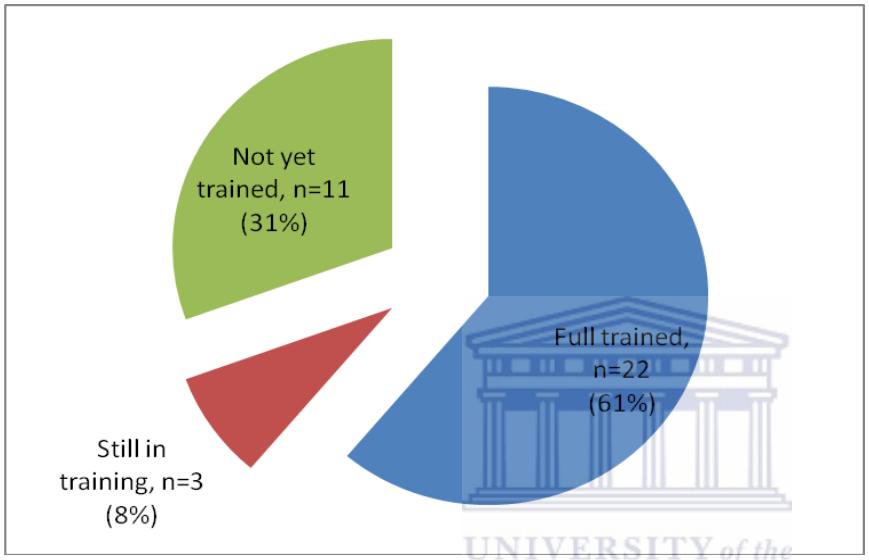

Figure 2: ART training status of nurses working in ART services delivery in 13 HCs located in Kibagabaga catchment area, January 2012, (n=36).

4.3.2. Training of District Hospital Mentors

At the start of the task shifting program, the central level mentors (TRAC Plus clinical mentoring team) underwent training through an internationally certificated program with the American Academy of HIV Medicine (AAHIVM) (TRAC Plus, 2010). Following this, in September-October 2010, mentors from district hospitals were trained in order to allow them to be able to support their health centers. Mentors were trained on following aspects:

- Plan for and conduct mentoring program at health centres
- Mentorship at health center level
- Early identification and better management of side effects
- Early identification and better management of treatment failure and drugs resistance
- New tools and guidelines in PMTCT, ART and STIs areas
- HIV management in adolescents
- TB/HIV integration (One stop services)
- Development of community based treatment program at HC catchment area to support adherence
- Identification and management of complicated cases
- Usage of mentoring /reporting tools
- Plan and conduct onsite refresher trainings for providers at HC

4.3.3. Mentorship and Supervision

Physicians working at Kibagabaga DH are assigned to mentor nurses working in ART services of HC on a weekly basis. They are expected to spend at least one day per week at assigned health centres, in order to support nurses as recommended in the task shifting program. However, no written evidence documenting whether these mentorship visits were done was found except a calendar of mentorship visits planned for every physician found at the DH.

According to the Annual Supervision Report of Rwanda Biomedical Centre (RBC), teams of supervisors from the central level supervised DH and HC every quarter to ensure quality of HIV services (RBC, 2011).

4.3.4. Availability of job aids for providers of HIV care and treatment

In accordance with the last guidelines of the World Health Organization (WHO) published in 2006, the former TRAC Plus (Center for Treatment and Research on AIDS, Malaria, Tuberculosis and Other Epidemics) adapted five guidelines on provision of care and treatment to persons living with HIV/AIDS. The guidelines were distributed to all health facilities to improve the skills of health providers and to maintain quality of treatment and care offered in both public and private health facilities. During this study, all these guidelines were indeed found in the 13 HCs where the study was conducted. Guidelines found included:

- Guideline for the provision of comprehensive care to persons infected by HIV in Rwanda, version 2009
- National standards and guidelines for the clinical prevention of HIV, version 2010
- Norms and procedures for pediatric HIV/AIDS care and treatment in Rwanda, version 2010
- Guideline for the management of opportunistic infections in adults with HIV/AIDS in Rwanda, version 2010
- National guide on the care of sexually transmitted infections: Manual of care provider, version 2010

4.4. ACCESSIBILITY TO ANTIRETROVIRAL TREATMENT TO PATIENTS IN NEED

To analyse the extent to which implementation of task shifted care in ART service delivery at the 13 HCs contributed to the improvement of accessibility of ART to patients in need, the monthly mean of patients initiating ART and mean of CD4 cells count at initiation of ART were analysed.

4.4.1. Mean of patients initiated on ART by month

In the period June-December 2010, the 36 study nurses enrolled a total of 536 patients, representing a mean of 2.6 patients (range 1-8) each per month (Table 5).

Table 5: Distribution of nurses working in ART services (n=36) and mean of patients newly enrolled per nurse across HCs (June 2010-January 2012, n=536)

Health Facility	Nurses working in ART	Mean of patients enrolled per nurse per month (June 2010-January 2012)
Kibagabaga DH	2	5
Kacyiru HC	3	8
Kimironko HC	5	4
Kinyinya HC	6	2
Kagugu HC	2	4
Jali HC	2	1
Gikomero HC	2	1
Rubungo HC	2	2
Kabuye HC	2	3
Nyacyonga HC	2	1
Kayanga HC	2	1
Gihogwe HC	4	1
Prison HC	2	2
Total	36	

In the overall program, the trend of new adult patients initiated on ART shows both a small increase and a more consistent pattern of new enrollment after implementation of the task shifting approach, and this trend appears to continue in 2012 (Figure 3). The comparison of means of patients initiated on ART per months in the 20-months period before adoption of task shifting approach in 13 HCs, (Oct 2008-May 2010), and in the 20-months period after implementation of task shifted care in the same HCs (Jun 2010-Jan 2012), showed a statistically significant increase from 77.8/month (SD=22.7) to 93.9/month (SD=20.9) (t test (df=38), p=0.025).

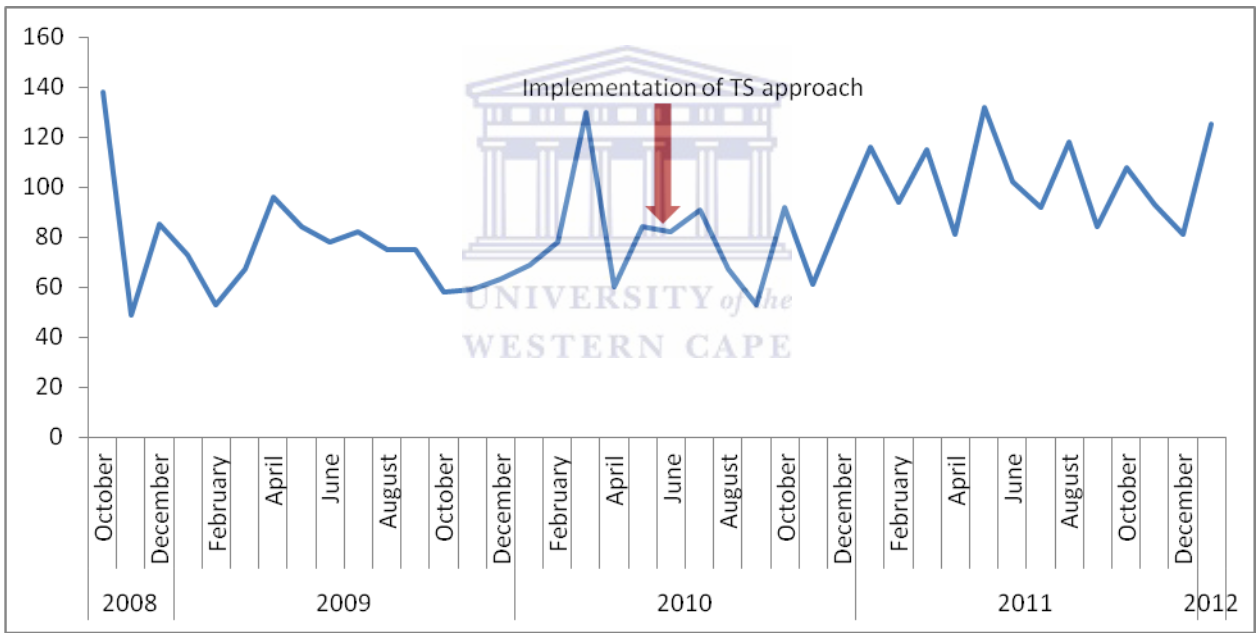

Figure 3: Trend overtime of new adult patients starting ART in 13 HCs under supervision of Kibagabaga DH, (pre-TS care, n=1 556 ; post-TS care, n= 1 877)

When disaggregated by facility level, again comparing mean of patients initiated on ART per month during the 20 months of the pre-task shifting period and the 20 months of the post task shifting period, small increases were observed in 9 of 13 HC (significant increase in one HC –

Kacyiru) and small decreases in enrolment in the remaining 4 facilities (significant in Prison HC) (Table 6).

Table 6: Comparison of the means of patients newly enrolled per month across HCs before and after task shifting (before TS, n=1556 and after TS, n=1877)

Health Facility	Mean of Patients enrolled per month before TS (SD)	Mean of Patients enrolled per month after TS(SD)	Mean difference	P-value
Kibagabaga DH	8.6 (4)	9.4 (3.9)	0.8	0.569
Kacyiru HC	14.6 (7.8)	23.1 (8.6)	8.5	0.003
Kimironko HC	14.7 (7.8)	18 (8.1)	3.3	0.193
Kinyinya HC	9.4 (5)	10.8 (4.1)	1.4	0.448
Kagugu HC	5 (2.6)	7.5 (4.7)	2.5	0.068
Jali HC	3 (2.1)	1.6 (1.6)	- 1.4	0.062
Gikomero HC	2.1 (1.9)	1.4 (1)	- 0.7	0.226
Rubungo HC	3.8 (2)	4 (3.3)	0.2	0.843
Kabuye HC	4.1 (2)	5.1 (2.9)	1	0.216
Nyacyonga HC	3.2 (2.6)	1.8 (1.4)	- 1.4	0.079
Kayanga HC	-	2.4 (1.3)	2.4	-
Gihogwe HC	1.1 (2.9)	2.8 (3.1)	1.7	0.122
Prison HC	7.4 (5.2)	3.1 (3)	- 4.3	0.001

4.4.2. Mean of CD4 cells count at initiation of ART

In the cohort of patient initiated on ART between Jun-Dec 2010, the median CD4 cell count was 267.5 at the baseline (range 2 - 836) cells /µL. The CD4 cells count of the majority of patients in cohort (65.9%) fell between 150 cell /µL and 350 cell /µL (Table 7). Only 15% had CD4 counts less than 100 cell/µL. Twenty three patients (13%), fell above national eligibility criteria (CD4 count <350cell/ µL). However, two of these, with baseline CD4 ≥500 cell/µL were pregnant at time of enrolment (PMTCT cases), and therefore eligible for immediate ART initiation (Table 7).

Table 7: Distribution of baseline CD4 counts in the cohort of patients initiated on ART between Jun-Dec 2010 (n=170)

Cell count/cell/µL	Frequency	Percentage	Cumulative percentage
>50 cell/µL	14	8%	8%
50-99 cell/µL	11	6%	15%
100-149 cell/µL	11	6%	21%
150-199 cell/µL	21	12%	34%
200-249 cell/µL	19	11%	45%
250-299 cell/µL	30	18%	62%
300-349 cell/µL	41	24%	86%
350-399 cell/µL	10	6%	92%
400-449 cell/µL	9	5%	98%
450-499 cell/µL	2	1%	99%
≥500 cell/µL	2	1%	100%
Total	170	100%	

4.5. THE QUALITY OF CARE IN ART SERVICE DELIVERY AT 13 HCS LOCATED IN THE CATCHMENT AREA OF KIBAGABAGA DH

To analyze quality of care in 13 HCs under the supervision of Kibagabaga DH, two approaches were used; namely descriptive analysis of quality of care within the cohort of patients initiated on ART between Jun-Dec 2010 and bi-variate analysis of quality of care indicators reported in the overall ART program database.

4.5.1. Quality of care in the cohort of patients initiated on ART between June and December 2010

The mean duration of follow-up for the cohort of patients initiated on ART between Jun-Dec 2010 was 17.2 months by the end of January 2012. During this period of follow-up, only 15 patients (8.8%) respected all appointments provided to them (Table 8). The mean number of appointments missed per patients was 3.6 appointments.

At the time of assessment (February 2012), 80% of patients in the cohort had had a follow –up CD4 count (Table 8). The mean time from initiation of ART and first follow up CD4 count was 8.5 months (SD=2.7). The second CD4 cell count was performed on time (at 6 months) for only 42 (24.7%) of 170 patients. Of the ART patients whose dossiers were reviewed, 3.5% had been referred to other specialty medical services, mostly the TB program, 5.9% substituted drugs, 1.8% switched regime and 0.6% stopped ART (Table 8).

Table 8: Descriptive analysis of quality of care in cohort of patients initiated on ART between Jun - Dec 2010 (n=170)

Indicators	Variables	Freq	%
Patients referred to specialty medical services	Yes	6	3.5%
	No	164	96.5%
Patient who substituted drugs	Yes	10	5.9%
	No	160	94.1%
Patient who switched regimen	Yes	3	1.8%
	No	167	98.2%
Patient who stopped ART	Yes	1	0.6%
	No	169	99.4%
Patients who substituted drugs, switched regimen and stopped ART	Yes	14	8.2%
	No	156	91.8%
Patients with CD4 count at assessment	Yes	137	80.4%
	No	33	19.6%
Patients who respected all appointments	Yes	15	8.8%
	No	155	91.2%

4.5.2. Quality of care in the 20 months period prior to and after task shifted care in overall ART program

One indicator reported in the ART central database was used to assess the quality of care in the 13 HCs located in Kibagabaga DH, namely percentage of ART patients on second line drugs before and after task shifting.

The proportion of patients on the 2nd line treatment was 2% at the onset of task shifting and 3% 20 months after implementation of task shifting. The difference of patients on the 2nd line between the two period was statistically significant (χ^2=13.26, (df=1), p<0.001).

4.6. PATIENT OUTCOMES

In addition to weight and CD4 cell count at baseline and after 6 months, the outcome measures of patients retained, transferred out, lost to follow-up, and died were assessed.

4.6.1. Outcomes for cohort of patients enrolled in ART program between Jun-Dec 2010

Of the 170 patients initiated on ART between Jun-Dec 2010, 163 (95.9%) were still retained in the ART program after a mean of 17 months of follow up. Three patients (1.8%) were lost to follow-up and 1 (0.6%) had died and 2 (1.2%) were transferred out (to other ART sites).

In the whole cohort, the mean CD4 count was 248.9cell/μL at baseline and 365.3 cell /μL at first follow up test of CD4. The mean weight at baseline was 56.4 kg and 58.3 kg at the first follow up of weight. The mean of weight gained was 1.9 kg and the mean of CD4 cells gained was 116.4 cell /μL (Table 10). The median CD4 cell count increased from 267.5 cells /μL to 364.5

cell /µL at follow up. The median weight was 55 kg (range 39 – 94 kg) at baseline and 57 kg (range 40 – 95 kg) at the first follow up.

For both males and females there was a statistical significant increase in the means of CD4 cell count (paired t-test) and weight (Wilcoxon Signed Ranks Test) from baseline to follow up, (P<0.001), (Table 10). The mean of weight gained was 1.8 kg for females and 2.3 kg for males, while CD4 cells gained were 117.9 cell /µL for females and 113.4 cell/µL for males (Table 10).

Table 9: Outcomes by gender in the cohort of patients initiated on ART between June and December 2010 (n=170)

Gender	Outcomes compared (baseline vs. at 6 months)	Mean at baseline indicator (SD)	Mean at 6 months indicator (SD)	Mean value gained after 6 months on ART (SD)	P-value
Weight	Female	55.8 kg (9.8)	57.5 kg (10.1)	1.8 kg (4.7)	P<0.001
	Male	57.5 kg(9.4)	59.8 kg (9.2)	2.3 kg (3.6)	P<0.001
	Cohort	56.4 kg (9.7)	58.3 kg (9.9)	1.9 kg (4.4)	P<0.001
CD4	Female	265 cell/µL (130.8)	383 cell/µL (195.9)	117.9 cell/µL (157)	P<0.001
	Male	218.6 cell/µL (110.7)	332 cell/µL (180.2)	113.4 cell/µL (161.4)	P<0.001
	Cohort	248.9 cell/µL (125.8)	365.3 cell/µL (191.6)	116.4 cell/µL (158.1)	P<0.001

4.6.2. Patient outcomes in overall program

4.6.2.1. Loss to follow up

During the pre-task shifting period (20 months before TS), 444 patients were lost to follow up, representing 7% of all ART patients registered in the 13 HCs during the period. In the 20 months after implementation of task shifting (Jun 2010 - Jan 2012), 194 (2.5%) of patients were lost to follow up. Although the mean monthly loss to follow up was much higher in the pre-TS period (22.9 with SD=40) than in post-TS period (9.7 with SD=13.2), this was not significant on the two-sample t test (p=0.19). However, comparisons of total loss to follow up for the two periods (the 20-months periods pre-TS and post-TS) as a ratio of total patients registered in each of these periods found highly significant differences (χ^2=165.8, df=1, p<0.001).

4.6.2.2. Deaths

In the pre-task shifting period (20 months before TS), 107 deaths were recorded by the 13 HCs; while in the period of 20 months after implementation of task shifting (Jun 2010 - Jan 2012), 104 deaths were recorded. The mean monthly deaths were not statistically different between pre-and post- TS periods (p=0.9); (5.3 deaths per months (SD=5) in all 13 HCs in pre-TS versus 5.2 deaths per months (SD=3) in post-TS). Comparisons of total deaths during the period, and using newly enrolled patients as the denominator (on the assumption that most deaths occur early in treatment), showed slightly higher deaths rates in pre-TS versus post-TS periods (6.88% vs 5.54%), but was not statistically significant on chi-squared test (χ^2=2.4, df=1, p=0.1209).

CHAPTER 5: DISCUSSION

In this chapter main study findings are evaluated against national and WHO guidelines / targets. They are compared to available literature from other similar studies in terms of results and methods used. The relationship between study findings and what was expected is discussed and alternative explanations of results are provided where relevant. Finally, study limitations are highlighted.

5.1. ACCOMPLISHMENT LEVEL OF KEY TASK SHIFTING ACTIVITIES

This study revealed that all guidelines were developed and they are available at HC level as intended. Training was well structured, although not fully conducted. Indeed, 22 nurse (61%) working in ART programs of 13 HCs had been fully trained and validated in the scope of HIV task shifted care and treatment. Six HCs out of 13 had less than 2 nurses trained in their ART service delivery. This finding is comparable to results of a cross sectional survey conducted in Uganda which assessed the national training needs for clinicians working in antiretroviral therapy clinics, which revealed that 62% of nurses who prescribe ART were trained in initiating patients on antiretroviral therapy (Lutalo et al., 2009). However the training approach in the two countries seems to be different. While in Rwanda the task shifting trainings are organized in one package of two weeks including theoretical and practicum for all nurses working in the ART program, in Uganda trainings and the curriculum were not standardized. The task shifting training in Kibagabaga DH catchment area was not conducted by accredited nursing institutions as it is in South Africa, (Dohrn et al., 2009).

The systems of mentorship and mentor training are well developed, but it was not clear how much they were adhered to. In South Africa, nurse mentors receive intensive training in HIV prevention, care, and treatment in order to be able to provide continuous hands-on mentoring to colleagues at the health facility level (Dohrn et al., 2009). Despite the fact that mentorships and mentor training are well organized in Kibagabaga DH, however, no strong evidence documenting that these mentorship visits were done by mentors from the DH was found except a calendar of mentorship visits planned for every physician, which was found at the DH.

5.2. EXTENT TO WHICH TASK SHIFTED CARE CONTRIBUTED TO MAKING ART ACCESSIBLE TO PATIENTS IN NEED

This study shows an increase in new enrollment after implementation of the task shifting approach which is an indicator of greater accessibility to ART. This study finding is similar to results of the task shifting experience of Thyolo District Hospital in Malawi, where shifting ART initiation and follow-up from doctors to clinical officers and medical assistants doubled the number of patients enrolled onto ART treatment from 130 to 250 patients per month in the hospital (Bemelmans et al., 2010). Several other studies have also reported an increase in access to ART through task shifting. In Lusikisiki, South Africa, access to ART was achieved within 2 years with a task-shifted approach in ART program, (Bedelu et al. (2007). Similarly, scale up has been reported in Mozambique where patients on ART increased from 17,343 (32 sites) in October 2005 to 82,587 (209 sites) in October 2007 (Assan et al., 2008).

Task shifting in the 13 HCs of Kibagabaga DH catchment area is built on an already established doctor-based ART service. This possibly accounts for the slightly less pronounced increases in

enrolment with task shifting compared to other studies, and the fact that CD4 count levels were relatively high at enrolment. This is an indication of good program functioning in term of accessibility, meeting the WHO recommendation that advises services start ART earlier with a high level of CD4 cell count so as to avoid death, disease progression and HIV transmission (WHO, 2009).

One of the interesting findings of the study was the considerable facility level variation in enrollment rates (Min: 1 patient/month; Max: 23 patients /month). The reasons for this could be the socio-economic profile of Kibagabaga DH catchment area which is composed by a region with predominant urban pattern and another region with a predominant rural pattern, while the Demographic Health Survey in Rwanda conducted in 2012 showed that the HIV prevalence in urban areas is more than three times than in rural areas (7.1% versus 2.3%), (NISR et al., 2010).

5.3. THE QUALITY OF CARE IN ART SERVICE DELIVERY BASED ON TASK SHIFTED CARE.

The analysis of quality of care within the cohort of patients initiated on ART between Jun-Dec 2010 in the 13 HCs located in Kibagabaga DH catchment area showed poor quality of follow up in general. The proportion of patients who attended all clinical appointments was very low. Respect of clinical appointments has been shown to be associated with medication adherence (Choo et al., 1999). This study did not explore reasons for this low level of adherence to follow-up visits or whether this resulted in interrupted supplies of treatment. The literature review suggests several reasons for poor adherence to follow up visits; ranging from low knowledge of benefit, travel outside of patient's place of residence, being busy with other things, forgetting,

employment, confidentiality issues, distance from the health center, economic problems or being too sick and unable to travel (Horizons/Population Council, 2004).

In addition to poor quality of follow up visits, analysis also revealed an inadequate level of follow up CD4 count testing. The national guideline for HIV treatment and care recommends checking every 6 months if CD4 cells are > 500 cell/μL or every 3 months if the CD4 cells are <500 cell/μL, in order to predict on time the risk of opportunistic infection or death and to act on this. Analysis of CD4 follow up was limited by the fact that this study did not explore reasons that could explain the inadequate level of follow up CD4 count testing and did not establish the situation before task shifting; but they are possibly similar to the reasons for low adherence to follow-up visits cited above.

Concerning the proportion of patient in the cohort whose regimen was stopped, switched and substituted, this study found a relatively high proportion (8.2%). WHO recommends maintaining this proportion at close to 0% during the first 12 months after initiation on ART in order to prevent HIV drug resistance (WHO, 2010). However, the proportion of patients who switched regime and those who substituted drugs are similar to findings from a cohort study conducted at Hannan Crusaid Treatment Centre (HCTC), a clinic for Nyanga District in South Africa between Sept 2002 and Sept 2005 (Orrell et al., 2007). The findings also suggest an active role being played by nurses in clinical assessments and adjustment of treatment.

This was also reflected in overall ART program data, showing increased switches to 2nd line drugs after implementation of task shifting. The reasons for this are unclear – they could be a consequence of poor follow-up and therefore low medication adherence and therefore loss of effectiveness of 1st line regimens. Improvements related to compliance with HIV care and

treatment guidelines, respect of clinical appointments, medication adherence and retention, are imperative to prevent HIV drug resistance which can be a public health threat, especially in the context of Rwanda, where in case of failure of these 2 treatment lines, it is not easy to access to the 3rd line treatment which is much expensive.

5.4. PATIENT OUTCOMES

In the cohort of patients initiated on ART between Jun-Dec 2010, analysis revealed a significant change of mean weight and mean CD4 at 1st follow up of weight and CD4 for both female and male. In comparison with findings from the previously conducted evaluation of clinical and immunologic outcomes from the national antiretroviral treatment program in Rwanda, conducted in 2004 – 2005 when only physicians prescribed ART, the study found slight lower median weight change and median CD4 cells change at the first follow up. While the median change was of 3 kg and the median CD4 change was 98 cell /µL in ART program with care and treatment done by physicians (Lawrence et al., 2009), the median weight change was 1 kg and median CD4 change was 89.5 cells /µL for the ART program based on task shifted care and treatment. This slight difference of weight and CD4 changes, were noted despite the similarities observed on socio-demographic characteristics of both study populations. Unfortunately our study did not explore factors associated to CD4 and weigh changes, but alternative explanations could be higher baseline CD4 counts, and a therefore less clinical need in the patient population of task shifted care. Others studies that explored this subject found that the adherence to medication and lifestyle are key factors to positive treatment outcome in the therapy of HIV/AIDS (Osterberg L, Blaschke T., as cited in Kenneth et al., 2009).

Despite poor adherence to follow up visits, a positive finding was the low proportion of patients lost to follow up in the cohort and the apparent decrease in patients lost to follow up in the overall ART program after task shifting. In comparison with the recommended target of WHO to prevent HIV drug resistance (<20%), the proportion of patients lost to follow-up in the 13 HCs located in the catchment area of Kibagabaga DH was good. Task shifted care did not result in any increase in mortality rates.

5.5. LIMITATION OF ANALYSIS:

Following are the main limitations of this study:

- There was no control group in this study and without control groups it was not possible to say whether trends found would have occurred anyway. Ideally, this study should have compared a cohort pre and post task shifting, but due to financial limitations, we didn't do it.

- The fact that some data (e.g. data related to mentor visits) relied on documentary sources, in future such sources can be supplemented by interviews with health facilities when supervision and mentorship training were conducted (e.g. number of mentor visits in last 4 weeks).

- This study did not explore factors associated with low level of adherence to follow-up visits and inadequate CD4 count testing follow up. Interviews with patients would have brought greater clarification, but time and financial aspects limited this.

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1. CONCLUSION

Assessment of the implementation of task-shifting in ART service delivery in 13 health facilities located in the catchment area of Kibagabaga DH in Gasabo District – Rwanda, allowed us to conclude that, key task shifting activities were implemented; guidelines and job-aids were developed and provided to end-users as intended, but there is a need to make improvements especially on training and mentorship activities in order to successfully implement task shifting as planned.

Trainings in scope of task shifting were well structured, although coverage was incomplete, and the systems of mentorship and mentor training are well developed, but it is not clear how much they are adhered to. Strong mentoring and supervision systems are vital to the success of task shifting.

Task shifting increased new enrollment and therefore it assured better accessibility to ART. This positive indication of good program functioning was confirmed by the fact that few people started ART in late stages.

Concerning the quality of care, the study revealed a poor quality of patients follow up especially in terms of follow up of clinical appointments and follow up of CD4 count testing. In addition, a fair proportion of patients switched regimens and substituted drugs, possibly when it was not necessary. However, clinical outcomes were overall satisfactory, and moreover, task shifting

appeared to reduce the proportion of patients lost to follow up and did not result in increased mortality rates.

7.2. RECOMMENDATIONS

Based on the study findings, the following recommendations were formulated to improve nurse capacity in order to continue to make accessible HIV care and treatment and to provide the quality of care required for better patients' outcomes:

- Organize regular trainings targeting new staff appointed in ART program delivery and design refresher courses related to HIV care and treatment according to needs identified during routine data analysis, supervision and mentorship activities.

- Standardize mentorship and supervision by developing a mentorship and supervision tool and reporting format that should document task shifting best practices, challenges and actions engaged to address issues met.

- Innovative initiatives previously adopted in HIV treatment and care program like involvement of the community and performance based financing should be reviewed and reinforced in order to improve the quality of care as well as clinical and medical adherence.

- Optimize the use of virological monitoring to avoid premature or unnecessary switching to expensive 2nd line ART.

- The monitoring of early warning indicators to prevent HIV drug resistance should be reactivated and regularly conducted in ART programs based on task shifted care.

- Review the national HIV monitoring and evaluation system (TRACnet) to integrate missing relevant indicators related to quality of care and HIV patient care and treatment in compliance with national clinical guidelines.

- Analysis of national ART program data routinely collected should be promoted in order to monitor and evaluate continuously the national ART program

- Identify barriers with respect to clinical appointments associated to patients and ways to address them:

    - Provide additional counseling support.
    - Establish a system of 'tracers' or a way to contact patients at home to prevent non-adherence by chronic defaulters.
    - Adapt the service delivery system to overcome systemic barriers—a client friendly clinic, flexible hours, 'one-stop shop' (that is adjusting appointments so that patients could complete all required appointments with physician, counselor, social worker and other medical specialist as required during the same clinical visit).
    - Setting goals to not miss appointments in performance based financing system (PBF).
    - Allow patients to take an extra supply of medications with him/herself when travelling.

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APPENDICES

APPENDIX 1: DATA ABSTRACTION TOOLS (ENGLISH VERSION)

Appendix 1.1.: Data abstraction tool for district hospital, central level and partners

1. Identification

1.1. Name DH/Institution/Partner: _____

1.2. Date of Abstraction: _____/_____/_____ (dd/mm/yyyy)

2. Achievement of key activities of task shifting

2.1. Training

Number of training courses planned				**Number of trainings conducted**			
2010		**2011**		**2010**		**2011**	
Number of trainings	Number of nurses targeted	Number of trainings	Number of nurses targeted	Number of trainings	Number of nurses trained	Number of trainings	Number of nurses trained

2.2. Mentorship/supervision

Number of supervisions/mentorships planned		Number of supervisions/mentorships conducted		Main issues identified	
2010	**2011**	**2010**	**2011**	**2010**	**2011**

Appendix 1.2.: Data abstraction tool for the health centres

1. Identification

1.1. Name HC: _____

1.2. Date of Abstraction: _____/_____/_____ (dd/mm/yyyy)

2. Human Resource

No	Functions	Main responsibility for task shifting program	Training information NB: mark "X" to appropriate case		
			Full trained	Still in training	Not yet trained

3. Availability of job-aids at PHC

Type of Job-aids	**Availability (Yes/No)**
Summary of national eligibility criteria for ART	
WHO staging and basic opportunistic infections (e.g., TB, thrush),	
Steps in initiating a patient on ART	
ART patient monitoring schedules	
Tool for identifying and managing basic side effects of ARV drugs	
Tool for identification of treatment failure	
Criteria for and steps in referring an ART client to physician care	

4. Indicators for ART program

Indicators *Period : at the end of December 2011*	**Females** **>=15 years**	**Females** **<15 years**	**males** **>=15 years**	**males** **<15 years**	**Total**
Number of persons in pre- ART					
Number of patients enrolled and medically eligible for ART but not yet on ART					
Number of patients lost to follow-up before start of ART					
Number of patients dead before start of ART					
Number of patients transferred out before start of ART					
Cumulative number of patients ever enrolled in HIV care					
Number of new patients on ART in the last month					
Number of patients currently on the first- line regime					

Number of patients currently on the second-line regime					
Cumulative number of patients on ART					
Number of ART patients lost to follow-up					
Number of ART patients dead					
Number of ART patients who transferred out					

Appendix 1.3.: data abstraction tool for patient

1. **Identification**

1.1. Name of Primary Health Centre (PHC):_____

1.2. HIMS code of PHC: _____

1.3. Patient number: _____

1.4. Patients ID :_____(HIMS code + Patients number)

1.5. Date of Abstraction: _____/_____/_____ (dd/mm/yyyy)

NB: patient ID is composed by HIMS Code of the PHC and sequential numbers of randomly selected subjects.

1.6. Date of birth: _____/_____/_____ (dd/mm/yyyy)

1.7. Sex: (male/female):_____

2. **Treatment information**

2.1. Date of initiation on ART: _____/_____/_____ (dd/mm/yyyy)

2.2. How many appointments have not been respected since initiation on ART? _____

2.3. Was the patients ever referred to specialty medical services (Yes/No):_____ if yes, where?_____

3. **Patients outcomes**

Indicators	**Baseline**		**After 6 months of treatment on ART**	
	Measure	**Date**	**Measure**	**Date**
Weigh (Kg)				
CD4 (mm^3)				

4. **Side effect, opportunistic infection and other health problems identified after initiation on ART**

Date of consultation	**Side effect identified**	**Opportunistic infection identified**	**Other health problems identified**

5. **Outcomes**

According to the medical record, has the patient	**Yes**	**No**	**If yes, occurring date of event**	**If yes, reason**
Been lost to follow-up				
Died				
Substituted drugs				
Switched regimen				
Stopped ART Completely				
Transferred out				

APPENDIX 2 : OUTIL DE COLLECTE DES DONNEES (VERSION FRANÇAISE)

Appendix 2.1 : Outil de collecte des donnees pour l' hopital de district, le niveau central et les partenaires

1. Identification

1.1. HD/Institution/Partnaire: _____

1.2. Data: _____/_____/_____ (jj/mm/aaaa)

2. Réalisation des activités clés liée au transfert des tâches relatives aux soins du VIH vers les infirmiers dans les services d'ARVs)

2.1. Formation

Nombre de formations planifiées				**Nombre de formations réalisées**			
2010		**2011**		**2010**		**2011**	
Nombre de formations	Nombre d'infirmiers ciblés	Nombre de formations	Nombre d'infirmiers ciblés	Nombre de formations	Nombre d'infirmiers formés	Nombre de formations	Nombre d'infirmiers formés

2.2. Mentorship/supervision

Nombre de supervisions/motorships planifiés		Nombre de supervisions/motorships réalisés		Principaux problem identifiés	
2010	**2011**	**2010**	**2011**	**2010**	**2011**

APPENDIX 2.2 : OUTIL DE COLLECTE DES DONNEES POUR LES CENTRES DE SANTE

1. Identification

1.1. Nom du centre de santé (CS): _____

1.2. Date de collecte des données: _____/_____/_____ (jj/mm/aaaa)

2. Resource Humaine

No	Functions	Principal responsabilité par rapport au programme de transfert des tâches relatives aux soins du VIH vers les infirmiers	Information sur les formations NB: mettez "X" a la case appropriée		
			a reçu une formation complète	est encore en formation	n'est pas encore formé

3. disponibilité des documents ou outils de travails aux CS

Type d'outils ou document de travail	**Disponible (Oui/Non)**
Sommaire des critères d'éligibilité aux ARVs	
Stades de l'OMS et les infections opportunistes	
Etapes d'initiation du patient aux ARVs	
Carnet de rendez-vous pour le suivi des patients sous ARVs	
Outil d'identification et de gestion des principaux effets secondaires dus au traitement aux ARVs	
Outils d'identification de l'échec du traitement aux ARVs	
Critères et étapes pour référer un patients sous ARVs chez le médecin	

4. Indicateur pour le programme de prise en charge et traitement aux ARVs

Indicateurs *Période : fin Décembre 2011*	**Femmes** **>=15 ans**	**Females** **<15 ans**	**Hommes** **>=15 ans**	**Hommes** **<15 ans**	**Total**
Nombre des personnes enrôlées dans le pre- ARVs					
Nombre de patients enrôlés et éligibles aux ARVs mais qui ne sont pas initiés aux ARVs					
Nombre de patients perdus de vue avant qu'ils commencent les ARVs					
Nombre de patients mort avant qu'ils commencent les ARVs					
Nombre de patients transférés ailleurs avant qu'ils commencent les ARVs					
Nombre cumulatif des patients qui sont enrôlés dans le programme de traitement du VIH					
Nombre des nouveaux patients initiés aux ARVs au cours du dernier mois					
Nombre de patients actuellement traités sous le régime de première-ligne					
Nombre de patients actuellement traités sous le régime de seconde-ligne					
Nombre cumulative des patients sous ARVs					

Nombre des patients perdus de vue					
Nombre de patients morts					
Nombre de patients transférés ailleurs					

Appendix 2.3. Outil de collecte des donnees pour le patient

1. **Identification**

1.1. Nom du centre de santé (CS):_____

1.2. Code SIS (Système d'Information Sanitaire) du CS: _____

1.3. Numéro du patient : _____

1.4. Le code du patient: _____ (code SIS+Numero du patient)

1.5. Date de collecte des données: _____/_____/_____ (jj/mm/aaaa)

NB: Le code du patient est compose du code SIS du CS et du numéro séquentiel des sujets sélectionnés pour l'étude.

1.6. Date de naissance : _____/_____/_____ (jj/mm/aaaa)

1.7. Sexe: (masculin/féminin):_____

2. **Information sur le traitement**

2.1. Date d'initiation aux ARVs: _____/_____/_____ (jj/mm/aaaa)

2.2. Combien de rendez-vous ratés depuis l'initiation aux ARVs? ___

2.3. Est que le patient n'a jamais été transféré dans un autre service médical spécialisé ?

(Oui/Non):_____ si oui, lequel ? _____

3. Résultats du traitement sur le patient

Indicateur	Baseline		Après 6 mois de traitement aux ARVs	
	Mesure	**Date**	**Mesure**	**Date**
Poids (Kg)				
CD4 (mm^3)				

4. Effets secondaires, infections opportunistes et autres problème de santé identifiés après initiation aux ARVs

Date de consultation	**Effets secondaires identifiés**	**infections opportunistes identifiés**	**autres problème de santé identifiés**

5. Aboutissements

Selon le dossier médical du malade, est-ce que :	**Oui**	**Non**	**Si oui, la date à laquelle cela est arrivé**	**Si oui, donnez la raison**
le patient est perdu de vue				
le patient est mort				
ses médicaments ont été remplacés				

le patient a été mis sous un autre régime d'ARVs				
le patient a arrêté complètement le traitement aux ARVs				
le patient a été transféré ailleurs				

APPENDIX 3: PARTICIPANT INFORMATION SHEET (ENGLISH VERSION)

UNIVERSITY OF THE WESTERN CAPE

School of Public Health

Private Bag X17 ● **BELLVILLE** ● 7535 ● South Africa

Tel: 021- 959 2809, Fax: 021- 959 2872

Appendix 3.1. Confidentiality agreement

Effectiveness of task shifting in antiretroviral treatment services in primary health care centres in Gasabo district, Rwanda.

I, _____ (print name), agree to abide by the following rules and restrictions on the use of data from the study entitled "Effectiveness of task shifting in antiretroviral treatment services in primary health care centres in Gasabo district, Rwanda."

1. I **WILL NOT** remove study participants records with direct identifiers (such as participants names or addresses), whether in paper or electronic format, from the study site without the explicit and written permission of the Study Coordinator.
2. I **WILL NOT** divulge study participants information to other persons other than the study personnel. The release of this information will only be done with full consent of the study participants.
3. I **WILL** protect all electronic study participants' records using password of at least 8 characters. This protection includes the participants' records that constitute the study dataset.
4. I **WILL NOT** delete/shred/destroy any study paper or electronic records unless with specific written instructions from the Study Coordinator.
5. I **WILL NOT** give the access password(s) to any persons other than those who have signed the data use agreement.
6. I **WILL** treat all data at my desk/site confidentially and maintain paper records that could directly or indirectly identify any individual in a designated locked file cabinet.
7. I **WILL** keep all hard copies of preliminary data locked in a file cabinet when not in use and will shred them when they are no longer necessary to my analysis.
8. I **WILL NOT** produce a back-up data tape of the study datasets except as required for the maintenance of the system. I WILL ensure that that the back-up datasets are also stored according to the full confidentiality guidelines mentioned above.
9. I **WILL NOT** remove paper or electronic files, records or databases from the worksites.
10. I **WILL NOT** remove hard copies of study participants records or confidential communications, containing sensitive data and information from the worksites.

11. I **WILL NOT** remove from the work site tabulations or data in any format that could directly or indirectly identify any individual. I WILL NOT divulge any information on tabulations and other data formats to non-study personnel.

I have read and understood this document on the use of data from the Study.

Signature: _____ Date: _____

Name: _____

Role in the study _____

Study Coordinator_____

Signature_____ Date: _____

Appendix 3.2.: Participant information sheet

Study Title: Effectiveness of task shifting in antiretroviral treatment services in primary health care centres in Gasabo district, Rwanda.

Principal Investigator: Adeline Kabeja

Research purpose: I am a final year MPH student at the SOPH, University of the Western Cape and I am required to do a Mini-thesis. My research project focuses on assessment of effectiveness of task shifting in ART services in 16 primary health centres under located in Gasabo district The purpose of the study is to evaluate the task shifting program, to determine whether it has been implemented and is going as intended and to propose improvements needed to readjust the task shifting program so it can reach its primary goal to increase accessibility of people living with HIV to ARV therapy and to improve nurse capacity in HIV patient care. Findings will be used to improve and readjust task shifting program for a better success of task shifting in Rwanda

Information on research: We are inviting you to allow us to evaluate what is done in the primary health center under your responsibility. We will explain to you the purpose of the evaluation, the procedures to be used, and the possible benefits and risks of participation. We are requesting your participation in this study because nurses working here have been trained and authorized to prescribe ART and follow HIV patients in need. If you agree, the facility under your responsibility will participate in the evaluation which will be done today. The evaluation will take no more than a few hours to complete. During the evaluation we will check information related to budget used in HIV care and treatment program, nurses involved in HIV care and treatment, ART program data and patients outcomes.

Risks: There is a slight risk of loss of privacy by participating in this study but procedures have been put into place to minimize this risk. The research records will be confidential, as the law requires. If a request for any of the information makes you uncomfortable, you can skip this item or stop the evaluation.

Benefits: There is no direct benefit to health facility in participating in this study. The information gathered, however, will help our health policy makers to improve programs and policies for quality health care provided by nurse in ART services delivery.

Confidentiality: name of participants will not appear on the data abstraction tools. Patients and nurses will be assigned a code. Information collected during data abstraction will not be shared directly with your supervisors. The information gathered will be kept in a locked and secure place for up to five years and during that time only the study team staff will have access to this information. Additionally, members of the Rwandan National Ethics Committee and UWC Ethics Committee may look at the research records. After five years, the hard copies of the study files will be destroyed. All study staff will be required to sign confidentiality agreements.

Voluntary participation: You are being invited to allow participation of the facility under your responsibility in this study. Your consent is completely voluntary and you have the right to stop the evaluation at any time. You do not have to provide information on any questions that you do not want to answer. Your decision allowing participation of health facility or not will in no way affect work climate or working conditions at this health facility.

For additional information: If you would like to have more information about the study, you may contact:

Adeline Kabeja,

Principal Investigator, Rwanda Biomedical centre/EID Division

P. O Box 2717,

Boulevard de la Révolution,

Kigali, Rwanda

Tel: +250 0788462552

E -mail: adelinekabeja@yahoo.fr or adelinekabeja@gmail.com

Prof. Helen Schneider

School of Public Health

University of Western Cape

Private Bag X17, Bellville, 7535,

Tel: +27 21 959 2809

Fax: +27 21 959 2872

Email: hschneider@uwc.ac.za

Appendix 3.3: Informed consent form

Title of Research Project Effectiveness of task shifting in antiretroviral treatment services in primary health care centres in Gasabo district, Rwanda.

The study has been described to me in language that I understand well. Thus, I freely and voluntarily agree to engage participation of the primary health center (s) under my responsibility. All my questions about the study have been answered. I understand that identity of patients and nurses will not be disclosed and that I may withdraw the facility under my responsibility from the study without giving a reason at any time and this will not affect my job in any way at this facility or any other facility in Rwanda.

Signed by data collector:

Signed by head of primary health centre:

Date_____ Place_____

If you have any questions, please do not hesitate to ask anyone of the study team or contact:

Adeline Kabeja,

Principal Investigator, Rwanda Biomedical centre/EID Division

P. O Box 2717,

Boulevard de la Révolution, Kigali- Rwanda

Tel: +250 0788462552

E -mail: adelinekabeja@yahoo.fr or adelinekabeja@gmail.com

Study ID Number : 2974499

APPENDIX 4: FICHE D'INFORMATION AUX PARTICIPANTS (VERSION FRANÇAISE)

UNIVERSITY OF THE WESTERN CAPE

School of Public Health

Private Bag X17 ● **BELLVILLE** ● 7535 ● South Africa

Tel: 021- 959 2809, Fax: 021- 959 2872

Appendix 4.1 : Accord de confidentialite

Efficacité du transfert des tâches relatives aux soins du VIH vers les infirmiers au sein des services de traitements antirétroviraux des les centres de santé dans le district de Gasabo, au Rwanda.

Moi, _____ (Nom), j'accepte de me conformer aux règles et restriction suivants, relatives à l'utilisation des données de l'étude intitulée: « Efficacité du transfert des tâches relatives aux soins du VIH vers les infirmiers au sein des services de traitements antirétroviraux des les centres de santé dans le district de Gasabo, au Rwanda».

1. JE ne collecterai les informations d'étude avec les marques directes (telles que des noms ou des adresses de participants), soit sur un papier ou en format électronique sans permission

explicite et écrite du coordonnatrice d'étude.

2. JE ne divulguerai pas les informations des participants d'étude à d'autres personnes, outres que le personnel d'étude. La publication des informations sera seulement faite avec le plein consentement des participants d'étude.
3. JE protégerai tous les données électroniques de participants de l'étude, en utilisant le mot de passe d'au moins 8 caractères.
4. JE ne supprimerai /déchiquèterai/détruirai n'importe quelle information d'étude, qu'elle soit sur papier ou électronique à moins d'avoir des instructions spécifiques écrites du coordonnatrice d'étude
5. JE ne donnerai à personne le mot de passe sauf s'il a signé l'accord d'utilisation de données.
6. JE traiterai confidentiellement toutes les données à mon bureau et maintiendrai les questionnaires qui pourraient directement ou indirectement identifier l'individu dans un coffret de dossier verrouillé.
7. JE maintiendrai enfermer à clef dans un coffret de dossier, tous les imprimés des données préliminaires quand ils ne seront pas en utilisation et les déchiquetterai quand ils ne sont plus nécessaires à l'analyse.
8. JE ne faire pas une bande de sauvegarde (back up) de l'ensemble des données d'étude, excepté s'il est demandé de le faire pour maintenir le system. JE m'assurerai que les bandes de sauvegarde des données sont également stockés selon les directives de confidentialité mentionnées ci-dessus.
9. JE n'enlèverai pas les questionnaires ou les données électroniques du milieu de travail.
10. JE n'enlèverai pas du milieu de travail, les imprimés des questionnaires des participants de

l'étude ou les communications confidentielles, contenant des données d'information sensibles.

11. JE n'enlèverai pas du milieu de travail les tabulations ou des données de n'importe quel format qui pourrait directement ou indirectement identifier l'individu. JE ne divulguerai aucune information sur des tabulations et d'autres formats de données aux personnes non impliquées dans l'étude

J'ai lu et ai compris ce document sur l'utilisation des données de l'étude.

Signature: _____Date: _____

Nom: _____

Role: _____

Coordinatrice de l'etude _____

Signature: _____ Date: _____

Appendix 4.2 : Fiche d'information aux participants

Sujet d'étude: Efficacité du transfert des tâches relatives aux soins du VIH vers les infirmiers au sein des services de traitements antirétroviraux des les centres de santé dans le district de Gasabo, au Rwanda.

Principal investigateur: Adeline Kabeja

But de la recherche: Je suis étudiante de dernière année de l'Ecole de Santé Publique à l'Université de Western Cape et je fais mon mémoire de Maitrise. Mon projet de recherche se base sur l'évaluation de l'efficacité du transfert des tâches relatives aux soins du VIH vers les infirmiers au sein des services de traitements antirétroviraux (ARV) des 16 centres de santé situés dans le district de Gasabo, au Rwanda. L'objet de mon étude est d'évaluer ce programme de transfert des tâches relatives aux soins du VIH vers les infirmiers, de déterminer s'il a été mis en place et conduit comme prévu et de proposer les améliorations nécessaires à son réajustement. Ainsi ce programme peut atteindre son objectif principal d'amélioration de l'accessibilité aux traitements antirétroviraux et d'augmenter les capacités des soignants (infirmiers) dans la prise en charge des patients du VIH. Les conclusions serviront à l'amélioration et à la réadaptation de ce programme de transfert des tâches relatives aux soins du VIH vers les infirmiers en vue de sa réussite.

Informations de recherche: Nous vous invitons à nous autoriser à évaluer le travail au sein du Centre de Santé dont vous avez la responsabilité. Nous allons vous expliquer le but de cette évaluation, les procédures à utiliser, les avantages et risques de participation. Nous vous demandons à participer à cette étude parce que les infirmiers de ce centre de sante ont été formés

et autorisés à prescrire les antirétroviraux et faire le suivi des patients du VIH dans le besoin. Si vous acceptez, votre centre de sante participera à l'évaluation d'aujourd'hui. Cette évaluation ne va durer que pas plus que quelques heures. Pendant l'évaluation nous allons analyser l'information relative au budget dépensé dans le programme de prise en charge et traitement par les ARVs, les infirmiers qui y sont impliqués, les données du programme ARV ainsi que les résultats du traitement sur les patients.

Risques: Par la participation à cette étude, il ya un faible risque de manquement à la vie privée mais des procédures ont été mises en place pour minimiser ce risque et les données de cette recherche seront confidentielles comme la loi l'exige. Si une demande d'information vous met mal à l'aise, vous pouvez l'éluder ou mette fin à cette évaluation.

Avantages: Il n'y a aucun avantage direct découlant de la participation de votre centre de sante à cette étude. Mais les informations recueillies aideront les planificateurs à améliorer les programmes et les politiques de santé pour une qualité des soins de santé assurés par les infirmiers dans les services de prise en charge ARV

Confidentialité: les noms des participants ne vont pas figurés aux formulaires de collecte de données. Un code sera attribué aux patients et aux infirmiers. Les informations recueillies durant la collecte des données ne seront pas partagées avec vos superviseurs. Les informations collectées seront gardées dans un endroit sécurisé pendant cinq ans et durant cette période, seuls les membres du groupe de recherche y accéderont. En outre, les membres du Comité Nationale d'Ethique Rwandaise et du Comité d'Ethique de l'UWC pourront consulter les notes de recherche. Après cinq ans, les copies imprimées des fichiers de cette recherche seront détruites. Tous les membres de l'équipe de recherche devront signer des accords de confidentialité.

La participation est volontaire : Vous êtes invité à autoriser la participation de votre centre de sante à cette recherche. Votre consentement est totalement volontaire et vous avez le droit de stopper l'évaluation à n'importe quel moment. Vous n'avez pas à répondre à une question pour laquelle vous ne voulez pas répondre. Votre décision permettant ou non la participation du centre de sante dans cette étude n'affectera en rien le climat et les conditions de travail au sein de cette formation sanitaire.pas le climat et les conditions de travail dans cette formation sanitaire

Informations complémentaires: Si vous voulez avoir plus d'informations concernant cette étude, vous pouvez contacter :

Adeline Kabeja,

Investigateur Principal, Rwanda Biomedical centre/EID Division

P. O Box 2717, Boulevard de la Révolution,

Kigali, Rwanda

Tel: +250 0788462552

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Appendix 4.4: Accord de consentement

Titre du projet de recherche : Efficacité du transfert des tâches relatives aux soins du VIH vers les infirmiers au sein des services de traitements antirétroviraux des les centres de santé dans le district de Gasabo, au Rwanda.

L'étude m'a été décrite de façon très compréhensive. Ainsi, librement et volontairement je donne mon accord de participation du Centre de Santé sous ma responsabilité. Toutes les questions relatives à cette étude m'ont été répondues. Je comprends que l'identité des patients et des infirmiers ne seront pas divulgués et que je pourrais retirer ma formation sanitaire de cette étude sans être obligé d'en donner la raison et à n'importe quel moment et que cela n'affectera en rien mon emploi au sein de cette formation sanitaire et dans toute autre formation sanitaire du Rwanda.

Signature de l'enquêteur _____

Signature du titulaire du centre de sante:_____

Date_____

Si vous avez une question, n'hésitez pas a contacte le chef de l'équipe de recherche

Adeline Kabeja,

Investigateur Principale, Rwanda Biomedical centre/EID Division

P. O Box 2717, Boulevard de la Révolution,

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E -mail: adelinekabeja@yahoo.fr or adelinekabeja@gmail.com

ID Number: 2974499

APPENDIX 5: ADDENDUM OF DATA ABSTRACTION TOOL FOR THE HEALTH CENTRE

1. **Health centre: _____**

2. **Fonction**

Fonction	**Réponse (X)**
Nurse (A0, A1, A2)	
Social worker (A1, A2)	
Psychologist	
Nurse assistant	

3. **Training :**

Full trained	Still in training	Not yet trained

4. **Tasks : Put (X) to task under your responsability**

Phase du traitemener	**HIV clinical tasks performed by nurses**	**Réponse**	
		Yes	**No**
Pre-ARV	Initial physical exam/staging		
	Ordering CD4 count		
	Assessment of ART eligibility		
	Follow-up of noneligible patients		
	Cotrimoxazole refill		

Preparation for ART	Explain goal, benefit and risks of ART		
	Counsel patient on the importance of adherence and explore optionsto maintain long-term adherence		
	Prepare the individual patient and/or patient's caregiver to initiate ART		
	Establish readiness of the patient to start ART		
	Explain food/other diet restrictions where needed		
Eligibility for ART	Establish medical eligibility for ART in a naive patient		
	Request laboratory test relevant to specific ARV drug initiation (pregnancy test if efavirenz or haemoglobin if zidovudine)		
Initiation of ART	Recommend first-line ARV regimen for ART-naive patient		
	Recommend first-line ARV regimen with TB coinfection		
	Recommend first-line ARV regimen in a pregnant woman (no PMTCT)		
	Decide on when to start ART in eligible patients who have an active OI (taking into account if stabilization of OI is needed and possible)		
Prescription of ART	Prescribe first-line ART		
Clinical Monitoring	Take weight		
	Take vital signs		
	Determine functional status		

	Monitor and support adherence		
	Request CD4 test		
Respond to New Signs and Symptoms and Possible Side-Effects	Recognize/manage self-limiting ARV drug side-effects and encourage/assist consultation or clinic visit when necessary		
	Manage headache and fever 2 weeks after initiation of d4T/3TC/NVP (malaria test negative)		
	Manage a patient on d4T/3TC/NVP since 3 weeks who develops a generalized dry skin rash without other symptoms		
	Manage a patient on AZT/3TC/NVP since 2 weeks with nausea without other symptoms		
	Manage herpes zoster 4 weeks after ART initiation		
	Manage oral thrush 8 weeks after ART initiation (patient at WHO clinical stage 4 at initiation)		
	Recognize treatment failure from clinical symptoms		
Manage TB Coinfection	Initiate INH prophylaxis		
Dispensing and Arranging Follow-Up	Dispense ARV and other drugs		
	Arrange follow-up visit		
Clinical Monitoring	Monitor and support ART adherence		
	Take weight		
	Take vital sings		

	Determine functional status		
	Request CD4 test		
	Recognize/manage self-limiting ARV side-effects		
	Manage headache and fever 10 months after initiation of d4T/3TC/NVP		
	Treat a patient on d4T/3TC/NVP with tingling in fingers and toes since 2 weeks		
	Manage oral thrush 24 months after ART initiation (WHO clinical stage 4 at initiation)		
	Identify symptoms such as chronic cough and/or chronic fever and/ or weight loss as a TB suspect		
	Request sputum exam (Ziehl-Neelsen) for TB suspects		
	Request additional exams (such as X-ray) to establish the diagnosis of TB in TB suspects with negative sputum results		
	Initiate TB/ART co-treatment with a first episode of pulmonary TB with positive sputum results		
	After decision for initiation of TB treatment, provide TB treatment to sputum-positive pulmonary TB patients with HIV		
	After decision for initiation of TB treatment, provide TB treatment to patients other than sputum-positive pulmonary TB patients		
	Monitor TB treatment response		

	Recognize side-effects of TB and/or HIV medications and encourage/ assist consultation or clinic visit when necessary		
	Provide combined TB/ART DOT if necessary in a patient who is on ART > 3 months		
Dispensing and Arranging Follow-Up Visits	Dispense ARV and other drugs		
	Arrange follow-up visits		

Addendum of data abstraction tool for the health centres

Titre de l'etude: Efficacité du transfert des tâches relatives aux soins du VIH vers les infirmiers au sein des services de traitements antirétroviraux des les centres de santé dans le district de Gasabo, au Rwanda.

5. **Nom du Centre de Sante: _____**

6. **Mettez une digne de croix (X) devant la fonction qui vous correspond**

Fonction	**Réponse (X)**
Infirmière (A0, A1, A2)	
Social (A1, A2)	
Psychologue	
Auxiliaire	

7. **Formation**

a reçu une formation complète	est encore en formation	n'est pas encore formé

8. mettez une Signe de croix (X) devant les taches que vous faites

Phase du traitemener	**Taches faites dans le cadre du « Task Shifting » dans le service ARV**	**Réponse**	
PRE-ARV		**Oui**	**Non**
	Examen initiale et classification du stade de l'OMS		
	Demande d'examen de CD4		
	Sélection des patients éligibles aux ARVs		
	Suivie des patients pas encore eligibles aux ARV		
	Approvisionner les contrimoxazole		
ART CARE		**Oui**	**Non**
Preparation for ART	Expliquer l'importance de la prise des ARVs aux patients		
	Expliquer aux patients l'importance d'une bonne adhérence		
	Déterminer si le patient est prêt pour commencer les ART		
	Expliquer le régime alimentaire et les restrictions nécessaires aux patients sous ARVs		
Eligibility for ART	Déterminer l'éligibilité médicale chez le patient qui n'a jamais pris les ARV		
	Demander les examens de labo nécessaire pour spécifier les types de médicaments à prescrire		
Initiation of ART	Recommander la première ligne des ARVs aux patients qui n'ont jamais pris les ARV et aux patients avec une coïnfection de la tuberculose et		

	Pour les patients éligibles qui on une infection opportuniste active, décider quand commencer les ARVs en tenant en compte de la possibilité et de la necessite de stabiliser les IO		
Prescription of ART	Prescrire la première ligne des ARVs		
EARLY FOLLOW-UP (UP TO 3 MONTHS FROM STARTING ART)		**Oui**	**Non**
Clinical Monitoring	Prise de poids		
	Prise des signes vitaux		
	Monitorage et soutient de l'adhérence		
	Demande du test de CD4		
Respond to New Signs and Symptoms and Possible Side-Effects	Reconnaissance et prise en charge du début des effets secondaires aux ARVs et encourager/assister une consultation clinique si nécessaire		
	Gérer des céphalées et fièvre qui surviennent après 2 semaines d'initiation au D4T/3TC/NVP si le test de malaria est négatif		
	Gérer des patients mis sous D4T/3TC/NVP qui développe une éruption cutanée généralisée sans autre signe		
	Gérer des patients mis sous depuis 2 semaines AZT/3TC/NVP qui ont des nausées sans autres signe		
	Gérer de l'herpes zoonotique après 4 semaines d'initiation aux ARV		

	Gérer de la candidose buccale 8 semaines après initiation aux ARVs chez les patients qui étaient au stade 4 de l'OMS au moment de l'initiation aux ARVs		
	Reconnaitre l'échec du traitement à partir des symptômes cliniques		
Manage TB Coinfection	Identifier comme cas suspect de la tuberculose les patients VIH+ qui ont les symptômes comme toux chronique ou fièvre ou perte de poids et les aider/orienter a faire une consultation clinique		
	Demander l'examen de crachat (Ziehl-Neelsen) aux cas suspect de la TB		
	Décider n'initier le traitement de TB et donner le traitement de la TB		
	Suivre la réponse au traitement de la TB		
	Initier al prophylaxie a l'isoniazid		
	Initier la prophylaxie a l'INH		
	Traiter les démangeaisons dues à l'éruption cutanée (rash) chez les patients sous la prophylaxie au co-trimoxazole		
Dispensing and Arranging Follow-Up	Donner les ARVs et autres médicaments		
	Donner les RV pour les visites de suivie		

LONG-TERM FOLLOW-UP (3 MONTHS AFTER INITIATION OF ART)		Oui	Non
Clinical Monitoring	Monitorage et soutient de l'adhérence		
	Prise de poids		
	Prise des signes vitaux		
	Demande du test de CD4		
	Reconnaissance et prise en charge du début des effets secondaires aux ARVs		
	Prise en charge des céphalées et fièvre 10 mois après initiation au D4T/3TC/NVP		
	Traiter les patients mis sous D4T/3TC/NVP qui ont des picotements dans les doigts et les orteils depuis 2 semaines		
	Gerer la candidose buccale 24 mois après initiation aux ARVs (classification au stade 4 OMS a l'initiation aux ARV)		
	Identifier comme cas suspect de la tuberculose les patients VIH+ qui ont les symptômes comme toux chronique ou fièvre ou perte de poids		
	Demander l'examen de crachat (Ziehl-Neelsen) aux cas suspect de la TB		
	Initier le co-traitement TB/ARVs a l'identification du premier épisode de TB pulmonaire		
	Assure le suivi de la reponse au traitement de TB		

	Reconnaitre les effets secondaires dus aux medicaments contre la Tuberculose et le VIH et assister le patient pour avoir une consultation clinique si besoin		
Dispensing and Arranging	Distribution des medicaments		
Follow-Up Visits	Donner les RV pour le suivie du patient		