

**Health Systems Integration of Sexual and
Reproductive Health Programmes for HIV Discordant
Couples: The Case of Rwanda**

by
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Abstract

A large proportion of new HIV transmissions on the African continent occur between long-term cohabiting HIV discordant couples. These couples have specific sexual and reproductive health (SRH) needs that often go unmet. In some contexts, SRH services are offered through vertical programmes that are not integrated with the primary health care (PHC) system. These vertical programmes, however, can lead to the undermining of health systems as a result of service fragmentation, and the preferential funding from external donors which can draw highly trained staff away from the public health care system. At the 1994 International Conference on Population and Development, there was a call for greater integration of SRH programmes into the PHC system to help ensure access and equity. Despite a history of conflict, Rwanda, through innovative service delivery mechanisms, such as performance-based financing and task shifting, has managed to integrate SRH services for HIV discordant couples into its PHC system. The purpose of this paper is to describe the steps the Rwandan government took to achieve SRH integration and distill the lessons that can be garnered from this achievement that may be valuable for other jurisdictions working towards integrated primary health care initiatives.

Keywords: *Sexual and Reproductive Health; HIV Discordant Couples; Rwanda; Couples Voluntary Counseling and Testing; Primary Health Care; Integration*

Dedication

I would like to dedicate this paper to all my fellow Rwandans. Your resilience and courage in the face of unspeakable tragedy are absolutely astounding. You have risen out of a past rooted in pain and riddled with shame, and against all odds, turned our country into a model for peace, reconciliation and development. I salute you.

*“They tried to bury us, but they didn’t know we were seeds.” - Dinos
Christianopoulos*

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Figure 1 A picture of the sign outside of PSF. June, 2018.

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List of Acronyms

| | |
|----------|---|
| ANC | Antenatal Care |
| ART | Anti-Retroviral Therapy |
| CFSW | Clients of Female Sex Workers |
| FP | Family Planning |
| FSW | Female Sex Workers |
| HIV | Human Immunodeficiency Virus |
| ICPD | International Conference on Population and Development |
| LARC | Long-Acting Reversible Contraceptive |
| MOH | Ministry of Health |
| MSM | Men Who Have Sex With Men |
| PBF | Performance-Based Financing |
| PEPFAR | President's Emergency Plan for AIDS Relief |
| PHC | Primary Health Care |
| PMA | Paquets Minimum d'Activites |
| PMTCT | Prevention of Mother to Child Transmission |
| RPF | Rwandan Patriotic Front |
| SRH | Sexual and Reproductive Health |
| VCT/CVCT | Voluntary Counseling and Testing/Couples Voluntary Counseling and Testing |

Social Location of the Author

This paper will, in part, be a case study on Rwanda. I am a Canadian of Rwanda origin and I acknowledge that this has the potential to create bias. Furthermore, I am the son of a previously high ranking RPF member, and I acknowledge that this does influence my views on certain subjects. Nevertheless, as an immigrant to Canada, my identity and social location in the world has become infinitely more complex. The longer I have lived outside Rwanda, the greater this complexity.

I am Rwandan, I am African, I am Canadian, and I am an immigrant. All these identities, and more have helped shape my world views, and I acknowledge that some of these identities might also shape some of the arguments that might be presented in this paper. My identity over time has become increasingly complex, but just like the art piece below, there is potential beauty and meaning in that complexity.



Figure 2 'Imigongo'- traditional Rwandan art piece

Photo: Pinterest, 2019, <https://i.pinimg.com/originals/60/09/58/600958ef6dd81dd16242c579b9924b37.jpg>

Chapter 1. Introduction

The WHO defines a health system as “all the activities whose primary purpose is to promote, restore, or maintain health” (“Health Systems Strengthening Glossary”, 2011). As one would imagine, this broad definition encompasses a myriad of different factors, and indeed, this definition somewhat reflects the immense complexity of health systems. Due to the highly interconnected and complex nature of the world in which we live, health systems are intimately tied to other sectors such as to the education, transportation, and economic sector(s). Communities operate within health systems, and the health of individuals within said communities is often tied to how well the health system functions as per the principle of the “social determinants of health”. Nevertheless, individuals’ sexual and reproductive health (SRH) is often shaped, and in some part influenced by the health system in which they live.

According to the United Nations Population Fund (UNFPA), good SRH encompasses “a state of complete physical, mental, and social wellbeing in all matters relating to the reproductive system” (“Sexual & reproductive health”, n.d.). While sexual health and reproductive health are distinct, they are also not mutually exclusive. Often, sexual health can have an impact on reproductive health, and vice versa (i.e. untreated chlamydia infection can lead to infertility). SRH is also linked to human rights, and everyone should have the right to a safe sex life and the freedom to decide whether, and when they want to reproduce (“Sexual & reproductive health”, n.d.). Additionally, SRH is intimately tied to HIV. Undeniably, when HIV first emerged in the 80s it radically changed the face of SRH, and in many ways, changed SRH service delivery models across the world.

As a recognition of the immense burden of SRH issues worldwide, in September of 1994, world leaders came together in Cairo at the UN International Conference on Population and Development (ICPD) to come up with solutions for said SRH issues. One of the main resolutions made by delegates at the conference was to provide comprehensive SRH services in their respective nations. To improve access to said services, the delegates determined that SRH programmes should be integrated into the primary health care (PHC) system. They believed this integration into the PHC would not

only ensure access to SRH services for all, but also help facilitate SRH equity by 2015 (“International Conference on Population and Development, 2019”). Following the conference, some countries across the globe adopted the resolutions, and consequently SRH programmes and HIV services have been embedded into health systems, and these services can often be found integrated within the primary health sector.

Despite the resolutions taken at the ICPD, due to cultural and religious factors, SRH programmes in many countries are still rarely offered in the public sector, or within the PHC system. As a response to this, long before the ICPD, and starting as early as the 1920s, groups of individuals began setting up family planning and sexual health organizations separate from mainstream government health services. In North America, many of these organizations would eventually become non-profit organizations affiliated with Planned Parenthood (Ambegaokar & Lush, 2004). This was also the case in Sub-Saharan Africa; and although these non-profit organizations eventually had good working relationships with governments, their services in many countries were never fully integrated into the PHC system (Ambegaokar & Lush, 2004).

1.1. Vertical and Horizontal Programmes

SRH and HIV programmes have often worked in silos, separated within their own specialized sub-systems, separate from the PHC system. This separation of services into independent systems that are separate from the PHC system is what characterizes ‘vertical/categorical’ programmes.

1.1.1. Vertical Health Programmes

Vertical programmes, also known as ‘free-standing, or categorical’, are programmes that are delivered through “single-purpose machinery” (“When do vertical programmes have a place”, 2008). These programmes are usually separate from other mainstream services and are managed through a strict top-down hierarchy (Lush et al., 1999; Ambegaokar & Lush, 2004). Furthermore, these programmes are usually centralized, disease specific, and have very specific objectives to be reached in a specified time frame, which makes them quite successful at disease eradication (Oliveira et al., 2003). Vertical programmes can either be categorized by “the nature of the service provided...by the nature of the population they serve...or by both” (“when do vertical

programmes have a place”, 2008); SRH vertical programmes tend to fall into the first category. These programmes can be delivered through a specialized group within a government, or most likely through an NGO.

Vertical health programmes are often favored by funding organizations because of their specific success driven objectives and goals; indeed, these programmes are known to be “dramatically successful at achieving results” (Ambegaokar & Lush, 2004). Furthermore, donors often prefer these programmes because they are more likely to have highly qualified workers, tight systems of financial accountability, and incorporate M&E mechanisms (Cairncross et al., 1997; Church et al., 2010). Moreover, vertical programmes are often put into place because of the perceived or real weaknesses of some health systems. Perceived or real weaknesses of health systems include lack of trained personnel, proper management, and lack of resources (Oliveira et al., 2003; Ambegaokar & Lush, 2004).

Traditionally, in Sub-Saharan Africa due to weak health systems, HIV services were often delivered by NGOs or the government through vertical programmes, enabled by donors such as PEPFAR (Smit et al., 2012). SRH programmes were also often delivered through a vertical system, often backed by “a strong ideological drive such as population control, and economic development” (Ambegaokar & Lush, 2004). Although these programmes immensely helped decrease HIV mortality across the continent and enabled cutting-edge reproductive services, they also unwittingly undermined the health systems of the countries in which they functioned (Ambegaokar & Lush, 2004).

1.1.2. Weaknesses of Vertical Health Programmes

The very same factors that make vertical health programmes effective, can also work against them. Although these programmes often attain dramatic results, they do so without specifically targeting the social determinants of health implicated in the health outcomes being addressed (“When do vertical programmes have a place”, 2008). The fact that these vertical programs have specific objectives which they must accomplish within a specified timeframe, and the fact that they are externally managed in a top-down fashion, can also lead to a lack of proper engagement with local populations. This, coupled with the lack of local capacity building, and the reliance on external funds to keep the programme running, can undermine community resilience as well as sustainability

(Cairncross et al., 1997; Oliveira et al., 2003; “When do vertical programmes have a place”, 2008). Vertical health programmes might also not consider the nuances of a specific problem in different local contexts as they often adopt a one-model-fits-all approach, which is not always feasible (Oliveira et al., 2003).

Furthermore, the separate nature of vertical programmes can lead to a lack of proper coordination with governments, which contributes to service fragmentation, duplication of services, inefficiencies, and a waste of resources, all of which can undermine the existing efforts of a government (Oliveira et al., 2003; “When do vertical programmes have a place”, 2008; Church et al., 2010; Nsanzimana et al., 2015). Vertical health programmes also often contribute to undermining of the health system by draining the system of workers in what is known as ‘internal *brain drain*’ (this concept will be further explored in a separate section) (Cairncross et al., 1997; Oliveira et al., 2003; Logie et al., 2008).

Vertical health programmes also have the potential to be burdensome to patients who need to navigate and engage with multiple services. For example, in a health system where SRH and HIV services are provided vertically, a person needing both HIV and SRH services would have to go to two different service providers at potentially two different locations. However, since people living with HIV (PLWH) most often need to also engage other general primary care services, the ideal would be to have access to a “full service, including reproductive health” (Lush et al., 1999) in one visit at the PHC level.

1.1.3. Horizontal Health Programmes

As a response to the many challenges that come with the verticalization of health services, a declaration was drafted and signed by many countries at the International Conference on Primary Health Care, held at Alma-Ata in 1978. The Alma-Ata declaration, a major milestone in public health, called for the implementation of PHC in developing countries. According to the declaration, as part of the quest for health equity, PHC would be characterized by the full integration of services. Moreover, in October 2018, 40 years after the monumental Alma-Ata conference, world leaders once again met in Astana, Kazakhstan at the Global Conference on Primary Health Care and signed a new declaration and recommitted their efforts on ensuring comprehensive PHC to all (“Global Conference on PHC”, n.d.).

Horizontal programmes are also often referred to as ‘integrated programmes’ and are the prime characteristic of PHC. Moreover, these programmes are characterized by the merging of different services into one tightly coordinated comprehensive programme (“When do vertical programmes have a place”, 2008). Integration can happen at different levels, including at the governance level or the service delivery level. Integration is also often on a continuum/spectrum and programmes can either deliver their services fully integrated such as PHC or partially integrated with portions of the programme vertically managed. Indeed, there is often no rigid divide between vertical and horizontal systems, but instead, most programmes lie on a spectrum. Often, the level to which a programme is vertically inclined or horizontally integrated depends on a myriad of factors such as “health system capacity, epidemiological trends, and international politics” (Oliveira et al., 2003).

Full integration of any health programme into the PHC is a precursor to health system reform and is a critical part of health system strengthening. Integration aids in health system strengthening since it tends to build local capacity, thereby contributing to the sustainability of programme results. Indeed, horizontal programmes are often also advantageous for long term outcomes, as well as when continual and non-ending contact is required with the program participants (Mills, 1983; Oliveira et al., 2003). Hence, due to the life-course nature of SRH and HIV services, they are best delivered in an integrated manner (Church et al., 2010). Furthermore, integrating HIV and SRH services into the PHC is often the right move, since it can lead to less stigmatization of those needing to access the services (Smit et al., 2012; Wall et al., 2018).

While vertical programmes often cater to the needs of the international donors, horizontal programmes are often nuanced enough and therefore cater to the specific demands of the programme participants and take into consideration local social and political circumstances. Furthermore, integrated programmes are more likely to be cost effective at the service delivery level due to lower unit, administrative, and overhead costs, as a result of economies of scale. These programmes also tend to be greatly efficient (Oliveira et al., 2003; Church et al., 2010; Hope et al., 2014).

1.1.4. Weakness and Barriers of Horizontal Health Programmes

Although horizontal integration of SRH and HIV services into the PHC increases efficiency within the health system, and ensures greater equitable access, there are also some downsides to programme integration. As was previously mentioned, international donors sometimes prefer vertical programmes due to their in-built M&E mechanisms, and indeed, vertical programmes are often much easier to evaluate than integrated programmes. Moreover, integration might often lead to “the blurring of lines of accountability” (Church et al., 2010). Nevertheless, if the PHC system into which a programme is being integrated has poor coordination, weak referral systems, or untrained staff, then the programme is unlikely to succeed. Another downside to integration is the fact that SRH and HIV services often need structures in place for private counseling, but many low resourced countries might lack the basic infrastructure within PHC settings to accommodate this; some settings might be overcrowded, or lack enough private rooms (Church et al., 2010; Gogin et al., 2014). Furthermore, due to a shortage of primary health sector workers, integrating services into the PHC system has the potential to overburden staff by adding more duties to their workload.

A country that managed to tackle the above-mentioned barriers and integrated SRH and HIV services into its PHC system, post the 1994 ICPD, is Rwanda. However, before delving into how the country managed to do this, and the specific populations and outcomes the country has reached through the integration process, this paper will first delve into Rwanda’s historical and cultural background.



Figure 3 Lake Kivu, Rwanda. July, 2018.

Chapter 2. Background on Rwanda

Also known as the land of a thousand hills, Rwanda is a small landlocked nation in the East African great lakes region bordered by Uganda, Tanzania, Burundi, and the DRC (see map below). The country is currently made up of 5 provinces, with 30 districts per province, which are further subdivided into sectors containing 14,953 *imidugudu* (villages), each with 50 to 100 households. This structural organization of the country has indeed helped with integration and decentralization of health services (Nsanzimana et al., 2015); something that will be touched upon later.

From 1885 to 1919, Rwanda was under German colonial rule, and after the First World War, the nation became a Belgian colony under the League of Nations mandate. Since time immemorial, Rwanda has contained three ethnic groups: the Hutu, the Tutsi, and the Twa. Hutus account for about 85% of the population, while Tutsis account for 14% of the population, and the Twa only 1% of the population. Although these groups are considered ethnically different, in ancient Rwanda, they mostly represented different socio-economic classes, and one could, in fact, change their so-called 'ethnic' identity by acquiring or losing cattle (i.e. a Hutu who gained cattle could become a Tutsi). The ancient kingdom was ruled by a Tutsi king known as the '*Mwami*', and order throughout the kingdom of Rwanda was maintained by a series of Tutsi Chiefs and sub-Chiefs. Although the three groups in the kingdom seemed distinct, they, in fact, shared one language and had the same traditions; something that would later prove to be advantageous for health systems integration.

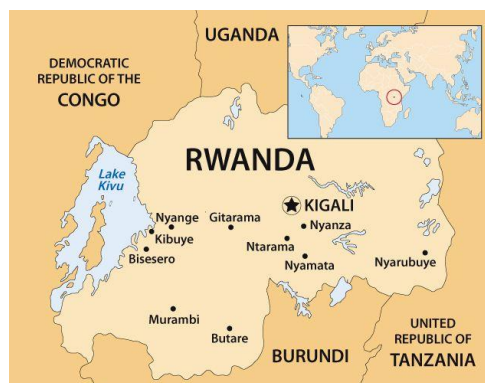


Figure 4 A map of Rwanda
Image: Rwanda: Weaving for Peace, 2016, <http://lisalindblad.com/blog/rwanda-weaving-peace/>

2.1. Colonization to Conflict

During their time, the Belgian colonizers exacerbated and fueled hatred between the groups, creating a rift between an otherwise harmonious people. They did this by favouring the Tutsis because they (colonizers) believed that due to artificial physical characteristics, Tutsis better represented “whiteness”. In the same breath, the colonizers discriminated against the Hutus and did not give them the same rights they gave the Tutsis. The colonizers also introduced identity cards, and all Rwandans were required to have one with their ethnic group prominently mentioned. Nevertheless, after World War II, emboldened by the pan African wave that was sweeping across the continent, the Tutsi elite started to demand independence from the colonizers. Once the Belgian colonial state realized this, they switched their allegiance to the Hutu and began propping up Hutu extremists. The emboldened Hutus, tired of their oppression, revolted and turned their anger towards the Tutsis. In 1959, the Hutu extremists began massacring groups of Tutsis, which led to a massive exodus of Tutsis into neighboring countries, with the majority of them fleeing into Uganda. With a vote, in July of 1962, the country gained independence and a new Hutu government took power.

2.2. Genocide

From 1962 to 1973, Tutsis who had stayed in Rwanda were severely oppressed. In 1973, a new Hutu political party took control of the country, and it was this same regime that was in power when the first HIV case appeared in Rwanda in 1983 (Vogel, 2011). This new government was even more extreme, and Tutsis were killed in spurts. However, the now adult children of the Tutsis that had fled to Uganda, tired of being stateless, decided to form a group called the Rwandan Patriotic Front (RPF). In 1990 the RPF tried to advance into Rwanda from the Ugandan-Rwandan border, and this sparked a conflict that lasted for 3 years. Eventually, the international community stepped in and asked the two sides to sign a peace treaty; both sides seemingly agreed to a cease-fire. Meanwhile, the Rwandan government had started to stock up on machetes, and plans were underway to exterminate Tutsis once and for all. On April 6th, 1994, on his way from Tanzania after signing the final treaty, the Rwandan president’s plane was shot down, killing all aboard. This was the tipping point the Hutu extremists needed, and early on April 7th, the massacres began. In the next 100 days, the world watched silently as nearly 1 million

Tutsi, men, women, and children, as well as moderate Hutus, were systematically slaughtered.

2.3. The Aftermath

In July of 1994, the RPF was finally able to seize the capital city (Kigali) effectively ending the genocide and taking control of the government. The devastation was overwhelming. Neighbour had killed neighbour; friend had turned against friend. Half the population had arisen and tried to exterminate the other half. In the wake of the genocide, those who had survived bore both physical and emotional wounds. Every sector and system in the country was overwhelmed. Prisons and jails were bursting at the seams from overcrowding, the infrastructure was in shambles, and there was no educational system in sight. The health system was entirely unable to function, and there was no health sector to speak of. In fact, nearly “80% of physicians had been killed or fled, and in the year that followed, there were less than 10 pediatricians in the whole country” (Nsanzimana et al., 2015).

During the genocide, rape was used as a weapon of war, and consequently, more than 250,000 women were sexually assaulted. This gravely exacerbated and contributed to the HIV epidemic after the genocide (Nsanzimana et al., 2015). The new Rwandan government (RPF) had the incredibly daunting task of rebuilding an entire country, including the country’s health system.

2.4. Road to Reconciliation

As the new government, RPF’s first order of business was to reconcile the nation. Truth and reconciliation efforts were undertaken, and the country slowly began to heal. However, the health system, particularly the primary health sector, was still weak. Due to this, many Rwandans were dying from preventable diseases, and many more were constantly teetering on the edge of poverty since they had to pay out of pocket for all health services (Lu et al., 2012). There was an incredible strain on the health care system, and Rwanda’s new government post-genocide had to create a solution and implement policies that guaranteed access to care for all their citizens. Consequently, in 1999 the government established a community-based health insurance programme and policy as

a key component of the national health strategy to provide universal coverage accessible at the PHC level; this programme is known as *Mutuelles* (Lu et al., 2012).

2.5. Health Insurance Schemes

Today, it is expected, and is in fact law, that citizens of Rwanda be part of an insurance scheme. Rwandan citizens can acquire health insurance through multiple venues. The first way is through a programme called *RAMA* (Rwandaise d'assurance maladie), which mainly insures public health servants and their dependents. *Military medical insurance*, as the name suggests, covers those in the military and their dependents. The other option is *private insurance*, and there are three major private insurers: SORAS, CORAR, and AAR. The final option is *Mutuelles de Santé*, a community-based health insurance programme (Lu et al., 2012). This latter option was integral to rebuilding of the country's PHC system and would later help facilitate the integration of SRH and HIV services into said system.

2.5.1. Mutuelles de Santé

Mutuelles was first rolled out in 1999 in a few districts, and it mostly covered just the basic services, "especially child and maternal care, to the uninsured" (Lu et al., 2012). However, once the government saw how successful it was in certain districts, the policy was approved in 2004 for wider implementation. In 2006 it was fully implemented across the country, and in 2008 Mutuelles was put into law. Since 2006 all members of Mutuelles are now entitled by law to a minimum service package called the *Paquet Minimum d'Activites* (PMA). The PMA includes promotional activities, preventive activities (vaccinations, VCT, family planning), and curative activities (normal deliveries, management of chronic illnesses, HIV/AIDS treatment, etc.), all delivered at the local PHC center level (Lu et al., 2012).

Rwandans who use Mutuelles often enroll as a household, and each member pays an annual fee of 1,000 RWF (1.12 current USD). This accounts for approximately 50 percent of the programme's funding (Lu et al., 2012). These premiums are collected by community workers who then transfer the money to a district level fund (Saksena et al., 2010). The other half comes from other insurance funds, NGOs, Faith-based/charitable organizations, and the government of Rwanda (Lu et al., 2012). Those that cannot afford

to pay the 1000 RWF are exempt from paying and are subsidized/covered by donors such as the Global Fund (Logie et al., 2008). Each member of Mutuelles is affiliated with a health center (*centre de santé*) within their neighborhood, which is where they would presumably obtain HIV and SRH services, as well as other PHC services. All public sector health workers are paid by Mutuelles (“Health financing systems review”, 2015).

2.6. HIV in Rwanda

Rwanda’s process of health system strengthening was intimately tied with their response to the HIV epidemic. As previously indicated, the HIV infections in the country greatly rose following the genocide, which further weakened the already fragile PHC system. Hence, as soon as the RPF took power they began the process of rebuilding and strengthening the health system. To begin, the government set up a national commission to fight AIDS, which among other things, implemented prevention strategies targeted at specific high-risk groups, as well as the general Rwandan population (“Rwanda National Strategic Plan”, 2009). However, it should be noted that Rwanda was also one of the first countries to later dissolve their national AIDS commission in favor of a more integrated approach to HIV (Nsanziimana et al., 2015). All the work put into curbing the epidemic by the government and various NGOs has come to fruition, and currently the HIV prevalence in Rwanda is at 3% among adults 15 to 49 (Wall et al., 2018).

2.6.1. Key Populations at Increased Risk

While Rwanda has come far in the fight against HIV/AIDS, there is still a long way to go. Although the epidemic is generalized, there are still populations in Rwanda that are at high risk of acquiring the virus. The four most at-risk populations in Rwanda are female sex workers (FSW), men who have sex with men (MSM), clients of female sex workers (CFSW), and HIV negative partners within HIV discordant relationships (Braunstein et al., 2011; Karita et al., 2016). HIV negative partners at most risk, are those engaged in long-term cohabiting sexual relationships with their HIV positive partners. Although the former three groups are recognized as high-risk groups across the world, the latter group (HIV discordant couples) is often overlooked when it comes to HIV prevention services, when in fact most new HIV infections in Sub-Saharan Africa occur within these couples. Indeed, an estimated “70-90% of new adult HIV infections in sub-Saharan Africa are acquired in

marriage” (Khu et al., 2013). For example, in Zambia, virus sequencing revealed that “9 out of 10 new infections in women come from their spouses” (Karita et al., 2016), and in Rwanda, upwards of 90% of all new infections occur between cohabiting couples (Karita et al., 2016). HIV discordant couples represent a very large high-risk population and integrating services within the PHC system that cater to this demographic would most likely help diminish HIV incidence on the African continent.

2.7. SRH Programmes for HIV Discordant Couples

Like everyone else, HIV discordant couples have sexual and reproductive rights. Chief among these rights is the right to conceive and have healthy children. However, since the risk of transmission is generally high within these couples, safer conception services and pregnancy counseling services are often needed for couples wishing to conceive (Wall et al., 2017; Mason et al., 2017). Primary health care providers working with serodiscordant couples should discuss fertility intentions with the couples on a regular basis to help prevent seroconversions.

HIV discordant couples wishing to conceive and have an HIV negative baby, while also preventing transmission to the negative partner (horizontal transmission), are now able to do so thanks to a myriad of technological and scientific advancements. The most common method used/encouraged is ‘Treatment as Prevention’ (TasP) (“Consolidated guidelines”, 2018). Putting the HIV positive individual on ART ensures an undetectable viral load, and thereby reduces risk of transmission to the HIV negative individual, even with condom-less sex (“Treatment as Prevention”, 2018). Moreover, due to the advent of PrEP, the HIV negative individual can also now take medication before sexual contact with an HIV positive partner to prevent infection (“HIV/AIDS”, 2018).

Nevertheless, there are also other safer conception methods that are non-ART based. These include timed condom-less intercourse at the peak of fertility (which would not necessarily always prevent horizontal transmission), manual self-insemination, and sperm washing (Matthews et al., 2017; Mason et al., 2017). Sperm washing involves separating spermatozoa from surrounding seminal fluid and using only those spermatozoa, which are usually not infected by HIV, in assisting reproduction (Zafer et al., 2015). For heterosexual couples where the male is HIV negative and the female is HIV positive, manual self-insemination is recommended, whereas sperm washing would be

most useful for couples where the male is HIV positive and the female is HIV negative (Matthews et al., 2017).

HIV discordant couples who do not wish to conceive should have access to contraceptives at the PHC level; particularly long-acting reversible contraceptives (LARC), since these are usually more efficacious, cost-effective, and are less user dependent than injectables and oral pills (Khu et al., 2013). Furthermore, it has been shown that HIV discordant couples who use LARC, are also more likely to have high condom use (Wall et al., 2018). This is good since dual method use (combining condoms with another contraception method to prevent horizontal transmission and unwanted pregnancies) is recommended for HIV discordant couples (Khu et al., 2013). For a list of SRH and HIV services currently provided to serodiscordant couples in Rwanda, see table 1 below.

Table 1 SRH and HIV services utilized by HIV discordant couples

| SRH SERVICES | HIV RELATED SERVICES |
|---|--|
| Family planning counseling | Voluntary Counseling and Testing/Couples Voluntary Counseling and Testing |
| Provision of contraceptives (e.g., LARC) Testing & treatment of STIs | Provision of Treatment/ART |
| Assisted reproduction (safer conception) | Prevention services (condoms, PrEP) |

Among countries most badly bruised by the HIV epidemic was Rwanda. Nevertheless, the way Rwanda scaled up HIV services and managed to integrate and link SRH programmes within said services, and embed them into the PHC system, all after one of the worst conflicts of the 20th century, is something to be commended and studied. Using published literature and personal insight, the purpose of the rest of this paper is to delve into *what lessons can be learned from Rwanda's attempts to integrate SRH programmes, specifically for HIV discordant couples, into their national primary health care system.*

Chapter 3. Methods

An intentional literature search was conducted on PubMed, Medline, and the Global health databases; these databases were directly accessed through the SFU library. The following search terms were used: “Sexual and Reproductive Health”, “Health Systems”, “Integration”, “linking”, “Safer Conception Services”, “HIV”, “Sub-Saharan Africa”, and “Rwanda”. Inclusion criteria were: literature published in English on any of the above subject combinations and published between 1980 and 2018. Grey literature on the topic was also found, including policy briefs, WHO reports, and national strategic reports. Google Scholar was also used for a broad search. After the search, 22 journal articles were intentionally selected for the purposes of this paper that met the above-mentioned inclusion criteria; all papers selected had a focus on Sub-Saharan Africa. 9 reports were also used for this paper, and information was also garnered from 5 web pages, including the CDC and the BC-CfE.

I also spent 4 months in Rwanda observing the programme for HIV discordant couples within 8 primary health centres in Kigali. While there, I held informal interviews with stakeholders at both the health centres and at PSF, and compiled field notes from these experiences. The findings and recommendations that are presented in this report were in part influenced by these informal observations as well as the literature pulled from various sources.



Figure 5 A typical Rwandan health centre
Photo: Hope Magazine, 2015, <http://www.hope-mag.com/index.php?com=news&option=read&ca=6&a=2183>

Chapter 4. Findings

To better meet the SRH needs of HIV discordant couples in Rwanda, the government integrated into the Rwandan PHC system a programme that links HIV counseling and fertility counseling. This programme is known as *Couples Voluntary Counselling and Testing (CVCT)* (Karita et al., 2016).

4.1. Couples Voluntary Counseling and Testing

CVCT, an innovative form of VCT pioneered by Projet San Francisco (PSF), has been a profound solution to Rwanda's HIV epidemic, and has helped meet the family planning (FP) needs of HIV discordant couples. VCT is usually an intervention that includes both voluntary pre- and post-test counselling and HIV testing. The expected effect of VCT, is a reduction in high-risk sexual behaviors that contribute to HIV transmission (Fonner et al., 2012). CVCT is essentially like VCT, but instead of individuals couples are jointly tested, given the results together, and counseled together. Also, unlike VCT, with CVCT couples are also advised on FP methods, with an emphasis on LARC. Astonishingly, CVCT has been shown to decrease HIV transmissions by more than 50% among serodiscordant couples (RZHRG, n.d.). The benefits of CVCT have been well studied, and include reduced intimate partner violence, increased uptake of PMTCT, and male circumcision (see Appendix A for more benefits of CVCT).

4.1.1. Evolution and Integration of CVCT

Projet San Francisco (PSF), an HIV research/non-profit organization, has been in Rwanda since 1986. They created and started CVCT after noticing the astounding number of serodiscordant couples in the country. Prior to 2009, HIV discordant couples in Rwanda who were seeking out SRH services, as well as counseling, had to go to PSF offices. Moreover, in antenatal clinics (ANC), pregnant women were often tested for HIV without their partners. In 2009, at the behest of, and in partnership with PSF, the Rwandan Ministry of Health (MOH) adopted guidelines that stipulated that every pregnant woman in Rwanda needs to be tested for HIV with their partner (Karita et al., 2016). This was the start of the full integration process of SRH services for serodiscordant couples into the health system.

First, PSF staff were tasked with training government staff nationwide on CVCT with the hopes of later integrating this programme into ANC and then PHC services; and by 2013 PSF had trained approximately 2500 health providers across the country. Training modules pertaining to the management of the programme, counseling skills, HIV testing protocols for couples, and Monitoring and Evaluation (M&E), were developed in partnership with the CDC. The material was used by managers, counselors/community health workers (CHWs), lab technicians, and data managers, respectively. The MOH, using performance-based financing (PBF) would pay the clinics (PBF will be explored in a section to come).

In 2010, new guidelines were adapted for quarterly follow-up of HIV discordant couples, and follow-up tools were streamlined across the health sector. As of today, these guidelines have been adopted by hundreds of PHC centers across the country, and there are about 40,000 HIV discordant couples enrolled in the programme, being actively followed-up (Karita et al., 2016). The main success of this programme stems from the fact that it is a “horizontal” programme by nature, fully integrated into the health care system. Decentralizing the programme and incorporating it into PHC centres enabled greater programme engagement, since clients could simply access the service directly from a health centre nearest them.

4.2. Linking of HIV and SRH Services

As previously indicated, HIV and SRH services have historically been vertically delivered separate from other PHC services, in “semi-specialized facilities and units” (Smit et al., 2012). However, rather than scaling up and integrating HIV services into the PHC system separate from SRH programmes, enhanced outcomes may be achieved when the two services are first integrated into each other via ‘vertical integration’. Indeed, linkages between the two services may be more likely to increase cost saving, effectiveness, and efficiency for both sectors, even before integrating them into the PHC system. In recent years, some Sub-Saharan African governments have started to call for greater linkages between these two services for these exact reasons (Smit et al., 2012). Integration of these two services might be beneficial for HIV discordant couples, since linking of SRH programmes to HIV services also contributes to a reduction in vertical HIV transmissions, and encourages PMTCT practices (Kennedy et al., 2010). A study conducted in Rwanda and Zambia found that integration of HIV counseling and testing services with family

planning services resulted in “dual method use and mutual leveraging of heterosexual and perinatal HIV prevention” (Khu et al., 2013).

Integration also supports easier navigation of services for clients since it enables them to access both services at the same time. Moreover, the linking of these two services can either be bidirectional, or unidirectional, and can happen at multiple levels including at the management or service provision level. Bidirectional linking of the programmes would potentially mean SRH programmes would be found in HIV services, and vice versa, whereas unidirectional linking denotes one-sided integration.

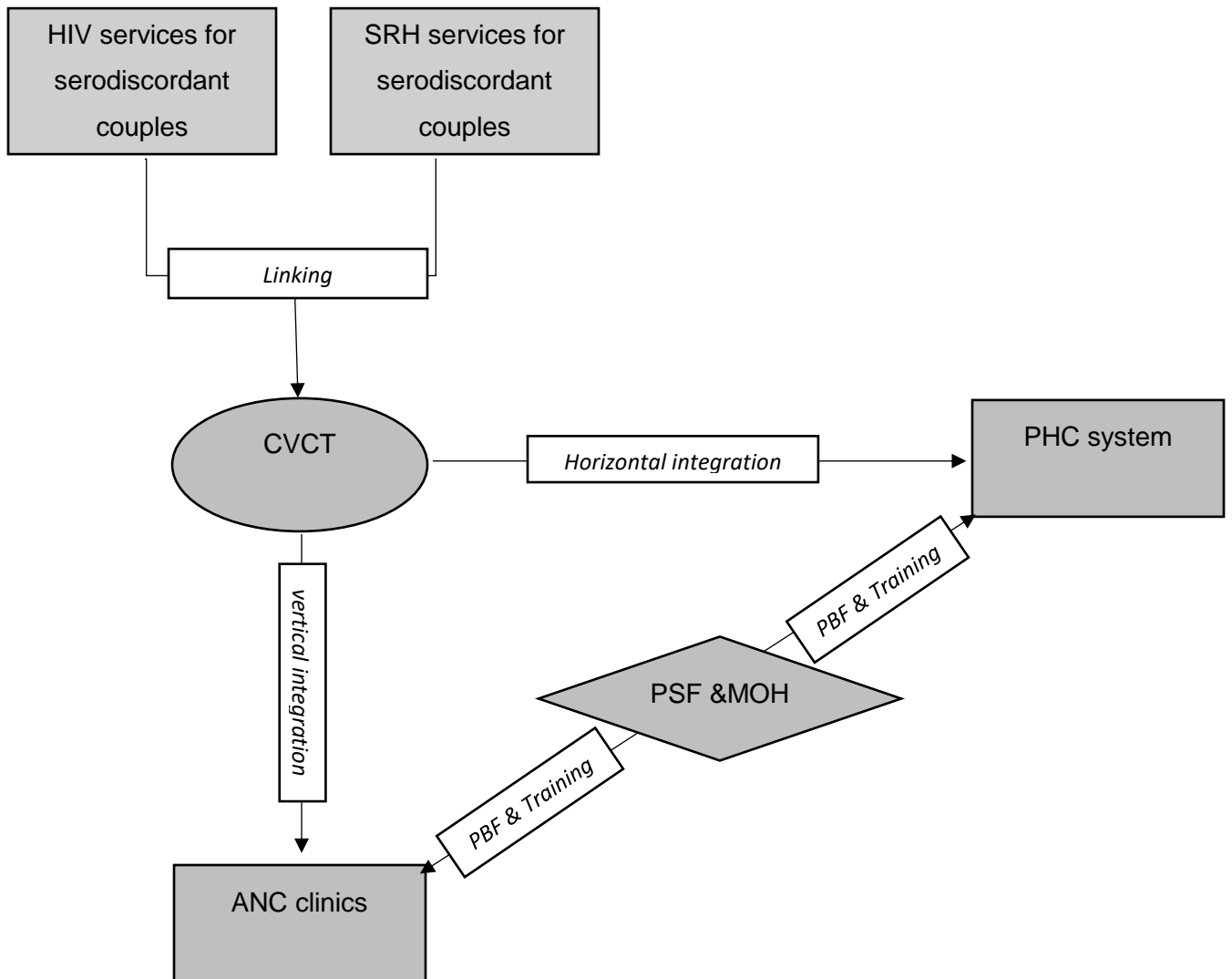
However, for the successful linkage of both services, there needs to either be the training of staff in both the SRH sector and the HIV sector on how to deliver both programmes, or there needs to be a strengthening of referral services. In the Rwandan case, for the benefit of HIV discordant couples, HIV and SRH services for discordant couples were linked via CVCT (bidirectional integration), and training was provided to staff in the SRH sector, and later to staff at the PHC level who usually only provided HIV related services (Karita et al., 2016).

When it is not feasible to train staff to deliver both services, referral between services becomes necessary. However, referral systems can often be weak due to a variety of factors such as “distance to sites, client transportation costs, and poor communication between the sites” (Smit et al., 2012; Goggin et al., 2014), making it difficult for patients to navigate between services. Moreover, in Sub-Saharan Africa, due to religious reasons, some clinics might not be able to offer SRH programmes thereby making it challenging for patients to access these interventions. To combat both the above-mentioned challenges to linking the two programmes, the Rwandan government created and enforced streamlined referral and reporting services between SRH and HIV programmes. Furthermore, since a large majority of health centers in Rwanda are religiously affiliated and can therefore not provide SRH services, the MOH established health posts near these clinics to provide contraceptives and other SRH services (Wall et al., 2018). Hence, in these religiously affiliated health centers, CVCT still takes place, but clients are then referred to health posts to get contraceptives.

Linking of these two services vertically is important, however, enhanced outcomes would most likely be achieved if the linked HIV and SRH services were to then be

decentralized and integrated into the PHC system (Smit et al., 2012). For a visual representation of the linking process, as well as the integration process of CVCT, see figure 6 below.

Figure 6 The linking and integration process of CVCT



Note: PSF first linked HIV and SRH services for serodiscordant couples via CVCT. After linking the services, CVCT was first integrated into ANC clinics, and later couples could also access the service in primary health centres. The MOH working with PSF provided training to health workers, and remuneration through performance-based financing.

4.3. Scale-up of Integration

Once the linking of SRH services with HIV services for discordant couples has been successful, in the form of CVCT or another programme, the next step is to scale up and integrate this service into the national PHC system. For the successful scale up of such a programme three factors have to be taken into consideration. These factors are governance, financing mechanisms, and service delivery.

4.3.1. Governance & Stakeholders

Good governance is essential for health system strengthening and is therefore vital for the scale-up and proper integration of health services into the PHC system. Political will is also a strong precursor for proper implementation and integration. Certainly, better outcomes might be observed when integration is fully supported at the policy and governmental levels. A study that was conducted in Uganda looking at barriers for the integration of safer conception services, found a lack of clear policies and guidelines from the MOH as one of the biggest hurdles to proper integration (Goggin et al., 2014). Another study conducted in Rwanda revealed the need for “policy guidelines dedicated to integrated services [and] integrated advocacy messages” (Wall et al., 2018). Moreover, both studies revealed the importance of inter-sectoral collaboration and good coordination by the government for the success of health systems integration of programmes for HIV discordant couples.

Stakeholder buy-in is also essential for the successful integration of SRH and HIV services for discordant couples into the PHC system (Cairncross et al., 1997; Church et al., 2010). In Rwanda, a study revealed that stakeholders within the government all understood the need for integration of SRH and HIV services for discordant couples into the health system, and in fact agreed that there was a need for bidirectional integration: FP services within HIV testing programmes, and CVCT within FP services offered at the PHC level. The stakeholders also believed that there was a need for integrated training, policy, and funding guidelines (Wall et al., 2018). This high-level stakeholder buy-in was instrumental for the successful integration of CVCT into the Rwandan health system.

Not only is support from stakeholders within the higher levels of government essential, but support from citizens (service providers and clients alike) is also crucial for

the success of the integration process. One might say that health systems strengthening and service integration (including SRH services) has been successful in Rwanda because these reforms were embedded in communities, and local stakeholder buy-in was very high (Abbott et al., 2017).

However, territorialism as a consequence of some providers preferring to work as sub-specialists is often a barrier for proper integration. If the service providers (physicians, nurses, management) themselves do not understand the need for service integration at the PHC level, then integration will most likely be unsuccessful. A solution, and a happy compromise that would most likely garner support from those stakeholders who prefer that services be offered through sub-specialists, would be to propose team-based approaches whereby integration happens at the “facility level” (Smit et al., 2012). This would potentially mean clients (discordant couples) would still have to be referred to different service providers, but the service providers would be in the same facility.

Another barrier to integration is the fact that service providers might take on more work without necessarily getting compensated for the increased workload. Some financing and service delivery mechanisms to combat these challenges are discussed in the sections that follow.

4.3.2. Financing Mechanisms

Underfunding of SRH programmes, compared to HIV services, is often a barrier for proper integration. Indeed, although HIV funding has gone up throughout the years, funding for SRH programmes has gone down (Hope et al., 2014); one example of this is the current ‘global gag rule’ that was reinstated by the Trump administration. One consequence is that this can lead to stock-outs in contraceptives and drugs for STI treatments (Hope et al., 2014). Nevertheless, donors have noticed this preferred funding of HIV services and have started to align themselves with overall health system strengthening as opposed to disproportionately supporting vertical programmes. For example, the Global Fund has been doing this in Rwanda by supporting “Mutuelles [and] renovations of district laboratories [as well as] improvements of health facilities” (Logie et al., 2008) at both the primary and tertiary level(s).

There is scarce economic research looking at HIV and SRH programme integration for HIV discordant couples into the PHC system. This is mostly due to the dearth of regional data in Sub-Saharan Africa, and because Rwanda is the only country that has effectively scaled up CVCT into its health sector. However, there is some evidence, albeit little, suggesting that integration of SRH and HIV services into the PHC system is, in fact, cost-effective and can lead to “economies of scale at the service delivery level” (Hope et al., 2014).

Performance-Based Financing

To decrease internal *brain-drain*, it is crucial to properly compensate service providers working within integrated PHC systems. Internal brain-drain is the phenomenon whereby well-trained health care workers are drawn away from public services into donor supported vertical programmes, most often for financial reasons. One feasible method a government could adopt to help battle this phenomenon is performance-based financing (PBF). PBF, also known as results-based financing (RBF), is simply “the transfer of money or material goods conditional on doing something, taking a measurable action or achieving a predetermined performance target” (Griffith, 2019). In healthcare, PBF allows health workers to earn more money according to the quality, or sometimes quantity, of their work. In that regard, service providers within the PHC system would have the potential to earn more money if they provide integrated SRH services to HIV discordant couples. Not only can PBF contribute to greater salaries in the workforce, it can also help with motivating the workforce into providing quality services, which can then facilitate integration (“Health financing systems review”, 2015). Moreover, studies have shown that PBF increases the quality of care, as well as overall patient satisfaction (“Evidence Review-OECD”, 2013).

The scale-up of HIV and SRH programmes into the Rwandan national health care system, including CVCT, coincided with the introduction of PBF in the country, and this is thought to be one of the reasons for the successful integration (“Health financing systems review”, 2015; Nsanzimana et al., 2015; Karita et al., 2016). In Rwanda, public sector workers are paid through Mutuelles, however, they can make more money through PBF by providing certain services, including SRH services. Moreover, health centres also get compensated for the services they provide via PBF. PBF then does not only encourage frontline service providers to provide certain services, but it also encourages management

to incorporate certain services in the health centers they oversee, which can facilitate integration.

4.3.3. Service Delivery & the Workforce

A challenge to full service integration is the fact that it can lead to overburdening of health care staff due to additional workload, which can in turn contribute to “staff burnout, sickness, absenteeism, [and] attrition” (Smit et al., 2012). Another major challenge to integration is the lack of trained and competent staff. To overcome these two challenges, any given government, but especially those in low resource areas, can adopt task shifting and wide scale staff training, respectively (Church et al., 2010).

Task Shifting

Task shifting involves “delegation whereby tasks are moved, where appropriate, to less specialized health workers” (“First Global Conference on Task Shifting”, 2011). This can be particularly beneficial for health system integration of HIV and SRH services because it not only gives specialized health care workers the opportunity to have more time with programme participants, but it can also increase programme access (Smit et al., 2012). In Rwanda, task shifting has led to the recruitment of more than 45,000 *Animateurs de Santé*, otherwise known community health workers (CHWs), and this has contributed to participant/patient retention in programmes/primary care (Nsanziimana et al., 2015).

CHWs in Rwanda are elected volunteers trained by the government to provide basic PHC services, including preventive, curative, and promotion services; every village in Rwanda elects 3 CHWs. They act as a bridge between the health care system and patients/participants since they provide these preventive and curative services right where the community is, in individuals’ homes, their churches, and their meeting halls. Preventive services include health education and community mobilization, whereas curative services include community case management of diseases such as Malaria and provision of family planning methods; promotion services include nutrition education and growth monitoring among children under 5 years of age (Abbott et al., 2017). CHWs are now integral to Rwandan society and are highly respected members of the country. Certainly, it can be argued that one of the main reasons Rwanda has achieved the millennium development goals for health, is because of this task-shifting strategy that helped strengthen the PHC system (Abbott et al., 2017).

Task shifting has undoubtedly contributed to the success of SRH and HIV services integration for HIV discordant couples in Rwanda since nurses within the PHC system have the ability/authority to provide counseling, HIV testing, LARC methods, and to a certain degree, safer conception services. This has led to greater reach and access of said services since Mutuelles holders (most Rwandan citizens) only have access to local health centres, which are exclusively staffed with nurses (Drobac et al., 2013).

It should be noted that although CHWs provide VCT, they are not formally trained to offer CVCT. However, the author's personal communications with many serodiscordant couples revealed that they wished CVCT was held within their own homes with CHWs as opposed to holding it in health centres; this would most likely help, among other things, with programme participant retention. CHWs going into discordant couples' homes to provide CVCT is something PSF is currently studying/exploring. PSF is also exploring how to fully integrate safer conception services into CVCT, since currently nurses/counselors do not provide full service in that area.

Staff Training

Proper training of staff is essential for the success of integration. Studies have shown that a lack of training is, in fact, one of the biggest challenges to SRH and HIV service integration into the health system (Church et al., 2010; Goggin et al., 2014; Wall et al., 2018). To achieve full integration of SRH services for discordant couples into the PHC system, wide-scale training of primary care providers in both SRH services and HIV services would be essential. However, if both programmes are still delivered vertically, and the integration occurs vertically, then training would have to be bidirectional. In that case, FP providers would need to be trained on HIV counseling and testing services, while staff in the HIV sector would need training on contraception and safer conception services. This training can be provided by NGOs in partnership with the government (Church et al., 2010). CVCT's successful integration into Rwanda's health system can certainly be attributed to the massive training effort that was undertaken by PSF in partnership with the MOH (Karita et al., 2016).

Chapter 5. Summary of Lessons Learned

Rwanda's success in integrating SRH programmes into the PHC system is commendable. The country's success in this regard can be attributed to the nation's cultural makeup, and historical background. Moreover, the country's success in integrating services also stems from its health service delivery system.

5.1. Culture and History as Enablers for Integration

Rwanda is an example of how a country can take advantage of its cultural makeup, and utilize its history, no matter how marred, to provide equitable health solutions to all its citizens, including those at increased risk (HIV discordant couples). As previously mentioned, since time immemorial, Rwandans have spoken one language and practiced one culture. This is in direct contrast to surrounding countries that are all heterogeneous and contain multiple different languages and tribes. The country's homogeneity has facilitated quick uptake and scale-up of programmes, due to fewer worries of context, culture, and belief. The government of Rwanda is aware of this fact and continues to encourage all Rwandan citizens to think of themselves as one people; not as Hutus, Tutsis, or Twas, but as Rwandans. Moreover, the history of the country, which is marred by conflict, has also been an impetus for unification and has been a contributing factor for community action/buy-in for health programmes (including integration of SRH services). Undeniably, "Rwandans are good at behaving as one people, with local action following the lines of national plans and conceptions" (Abbott et al., 2017).

5.2. Health Service Delivery Model as an Enabler for Integration

It can also be argued that Rwanda's health service delivery model has contributed to the success of the integration of SRH programmes for HIV discordant couples (CVCT) into the PHC system. Creating a community-based health insurance programme (Mutuelles) that enables access for all, helped strengthen the Rwandan health system, and thereby indirectly aided with integration. Nevertheless, implementing financing mechanisms, such as PBF, also greatly helped with Rwanda's integration of SRH services into the PHC.

As previously mentioned, the structural organization of the country greatly enabled with decentralization of services. At the service delivery level, Rwanda's investment in CHWs who can directly provide some SRH services in villages across the country has led to greater programme reach and has even led to Rwanda achieving the MDGs for health. Although CVCT at the primary care level is only offered in health centres, it is highly possible that soon CHWs will also be able to undertake CVCT with couples directly in their homes.

Table 2 Summary of lessons

| | |
|---|--|
| Health insurance for all | <ul style="list-style-type: none"> • Mutuelles facilitated overall health system strengthening and enables access to SRH services (CVCT) for all HIV discordant couples. |
| Link SRH and HIV programmes for HIV discordant couples into one cohesive programme | <ul style="list-style-type: none"> • Before integrating SRH programmes for HIV discordant couples into the PHC, Rwanda first facilitated linkage between SRH and HIV services for this population via CVCT. |
| Governance | <ul style="list-style-type: none"> • Political will is/was essential for proper integration. • Stakeholder buy-in, at all levels, is/was important for a smooth integration process. |
| The service delivery model | <ul style="list-style-type: none"> • Task shifting facilitates integration, while PBF will most likely improve the quality of the integrated services. |

Chapter 6. Conclusions and Recommendations

Long term success and sustainability of any programme requires monitoring and evaluation (M&E) mechanisms embedded within the said programme. However, as was previously mentioned, a weakness of horizontal health programmes is that they often do not have M&E mechanisms. Therefore, to ensure the sustainability of SRH programmes for high-risk groups (discordant couples) within any given primary health sector, proper evaluation mechanisms need to be put in place. Factors such as the effectiveness of the programme, how well the programme has been adopted into the system, how well it is being implemented, and how well it is being maintained, need to be evaluated. In the case of Rwanda, M&E mechanisms have in fact been incorporated into the CVCT programme. Outcomes that could, for example, be evaluated include whether intimate partner violence between discordant couples has indeed decreased and whether LARC uptake has increased among programme participants since the programme was integrated into the PHC system.

Rwanda's integration of CVCT is an anomaly. Indeed, PSF has tried to push for the integration of the programme in other countries, including Zambia, but previous attempts at scale-up of the programme have been unsuccessful. It has been theorized that this is because Zambia is a much larger, heterogenous country compared to Rwanda. Moreover, it was also found that the knowledge of sero-discordancy is much lower in Zambia than in Rwanda (Karita et al., 2016). Whatever the case, more research is needed to understand the specific mechanisms that allowed for the relative ease of integrating such a programme into the PHC system of Rwanda. Qualitative research could be undertaken with key stakeholders within the Rwandan government and members of society to better understand what it is about Rwandan society that allowed for uptake of such a programme. Programmes for serodiscordant couples would also further benefit from research that differentiates discordant couples. Indeed, different types of couples might need nuanced services; for example, it might stand to reason that heterosexual discordant couples where the male is living with HIV and the female is HIV negative, would have different power dynamics than in a couple where the serostatus is switched. Finally, more qualitative research with CHWs might be beneficial to understanding the overall health system strengthening of Rwanda, and how such a mechanism (task-shifting) could be improved or transferred to other settings.

Only 25 years after a brutal genocide, Rwanda currently has in place a health service delivery model that ensures comprehensive health care (that includes SRH services) to all its citizens, including those most vulnerable, and those most at risk of acquiring disease (negative partners in serodiscordant couples). Rwanda, which is one of the poorest countries in the world, has also against all odds managed to attain the MDGs for health. This was made possible, in part, by the unique history, and culture of the country. However, Rwanda's success in integrating SRH programmes for discordant couples into the PHC system is not and should not be a special non-replicable case. Indeed, although the specific programme and the steps for integration might not be completely replicable, the principles behind the programme are what should be replicated and adapted. These principles are *equity* and *access*. The purpose of this paper was to describe the steps that Rwandan government in partnership with PSF took to achieve integration of a specific health programme, but hopefully the lessons that have been documented may be valuable to other jurisdictions working towards integrated primary health care initiatives.

Chapter 7. Reflection

Working on this capstone project renewed my appreciation for the complexity of health systems, and how this complexity can often be a barrier for proper integration of health services. The process of writing this report has also opened my eyes to the fact that a country's resources are not always a determinant for how well a health system functions, but instead a country's vision and political will are much more important factors. Writing a paper on my country of origin also opened my eyes to my own biases, but also filled me with immense pride. The complexity of my identity, and the fact that I am the son of parents who were actively involved in rebuilding the country after the genocide, might influence my views on the development of the country. However, as I was writing this report, I attempted to hold in my consciousness these potential biases.

My journey through the MPH programme at SFU has been incredibly rewarding, not only because of the knowledge I gained, but because of the people I have met, and the life long connections I know I have made. I also particularly feel that the social justice lens through which many of the courses were taught, has ignited within me a desire to come up with equitable and sustainable solutions to any problems I might come across, in whatever career I will find myself in.

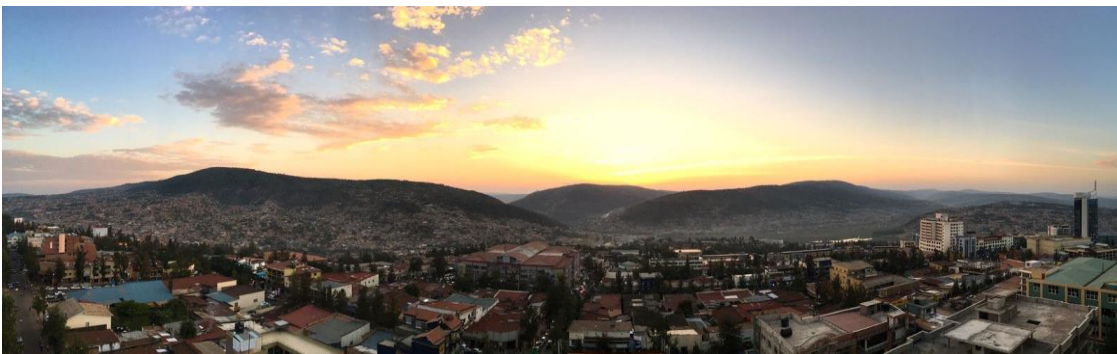


Figure 7 A neighborhood in Kigali, Rwanda. July, 2018.

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Appendix A.

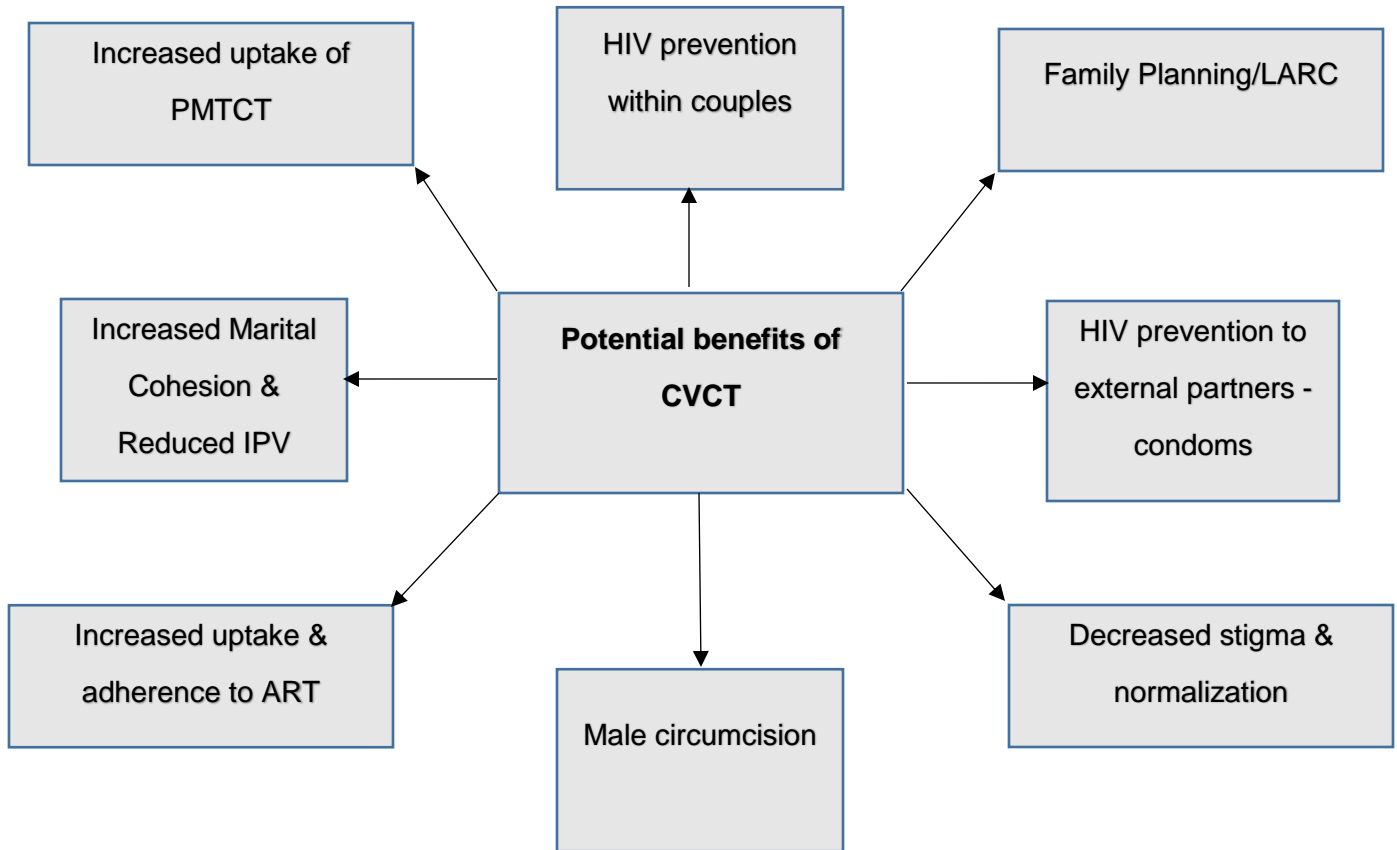


Figure A1. Chart of potential CVCT benefits.

Source: Guidance on couples HIV testing and counseling – including antiretroviral therapy for treatment and prevention in serodiscordant couples. (2014, April 01). Retrieved from <http://www.who.int>