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Community Based ART Service Delivery: A Solution for Sustainable HIV Treatment Scale-up in Zambia

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Abstract

12.9% of Zambia's population is estimated to be HIV positive (UNAIDS, 2016), with 67.3% of those people living with HIV (PLHIV) aware of their status, 85.4% of those on treatment, and 89.2% with viral suppression (ZAMPHIA, 2016). With these numbers, Zambia is almost within grasp of the World Health Organization's (WHO) 90-90-90 goal, faring better than many other countries in the region. However, there is still much to be done before this can be accomplished.

Zambia's health system faces a number of challenges, from struggling to keep up with the increased demand for antiretroviral (ARV), heavy dependence on foreign aid, health facility congestion, and a severe medical professional human resource crisis. As Zambia scales up distribution of antiretroviral therapy (ART), it must adapt to address these challenges and upkeep both quality and efficiency of patient care.

In this paper, we investigate the viability of community based ART delivery models in Zambia through semi-structured interviews and a relevant literature review. We evaluate other community based ART delivery models that have been implemented in sub-Saharan Africa and their potential to be carried out in Zambia, analyze current service delivery policy, and identify barriers and disconnects that exist among key stakeholders when implementing a nationwide community based ART service delivery model.

Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
ASW	Adherence Support Workers
CAG	Community ART Group
CBART	Community Based ART
CCC	Community Care Coordinators
CDC	Center for Disease Control
CHW	Community Health Workers
CIDRZ	Centre for Infectious Disease Research in Zambia
GHI	Global Health Initiative
GRZ	Government of the Republic of Zambia
HIV	Human Immunodeficiency Virus
JSI	John Snow, Inc.
MOH	Ministry of Health
MSF	Médecins Sans Frontières (Doctors Without Borders)
PA	Patient Advocate
PEPFAR	President's Emergency Plan for AIDS Relief
PLW	People Living With HIV/AIDS
RSA	Republic of South Africa
TALC	Treatment Advocacy and Literacy Campaign
TB	Tuberculosis
USAID	United States Agency for International Development
UTT	Universal Test and Treat
WHO	World Health Organization

Introduction

Zambia is one of the countries hardest hit by the HIV epidemic, with an estimated 12.9% of the population afflicted in 2016 (UNAIDS, 2016). Although this statistic is an improvement from the 19.0% figure from 2003, the virus still results in 20,000 AIDS related deaths and 60,000 new infections every year (UNAIDS, 2016). Following the rollout of universal free antiretroviral therapy (ART) in 2004, the availability of HIV drugs has become widespread, allowing virtually anyone who tests positive for the virus to receive antiretroviral (ARV) medication for free at a regional clinic (WHO, 2005). Despite the relative abundance of ARVs, the Zambian health sector continues to face a human resource crisis, from healthcare facility congestion and healthcare worker overload to a shortage of necessary equipment and supplies (Masiye, 2007). Health facility congestion inevitably results in reduced quality of care and education, greater difficulty in accessing drugs, and reduced supply of health clinic professionals (Van Damme et al., 2008). In addition to facility congestion, there are many issues with adherence to the medical ART regimen prescribed to patients (Rasschaert et al., 2014). Overwhelming medical evidence proves that strict adherence to an ART regimen helps suppress viral load and bolster patients' immune systems, in turn reducing the likelihood that they further transmit the virus (Palella et al., 1998).

In the latest international efforts to reach epidemic control globally, a pilot model has emerged to address the issue of how patients can continue to remain adhered to their medical regimen, while simultaneously reducing health facility congestion. The study was conducted by Médecins Sans Frontières (MSF) in Tete Province, Mozambique, bordering Zambia. The delivery model groups people living with HIV (PLHIV) together, and allows these individuals to take turns traveling to health facilities to retrieve drugs, and periodically meeting to discuss their illness and provide emotional support. This strategy proved to increase adherence to the medical regimen, while simultaneously reducing the workload of health workers at the clinic who saw less patients per month waiting in line to receive their medication (Rasschaert et al., 2014). The prospect of bridging the gap between patients and the health facility as the last mile of service delivery has drawn international attention and prompted some pilot studies across sub-Saharan Africa with the hopes of proving its effectiveness.

Community based ART delivery and its effects on health facility congestion and adherence rates is still understudied, and despite certain ongoing studies there has been no reliable measure of its effect in Zambia. A number of stakeholder organizations operate working on community based ART on a small scale, each with their own nomenclature and variations to the model. All these models, however, are designed to create a support network and help improve access to the life-saving drugs. Specifically, the community based distribution model has the potential to remedy some of the most significant issues that Zambia faces

with its existing HIV treatment, as self-described in its Seventh National Development plan and National Health Policy, while slowly bringing countries almost completely reliant on foreign health aid closer to self-sufficiency (Republic of Zambia Ministry of National Development Planning, 2017).

In this paper, we will examine community based ART delivery already present in Zambia and the region on a qualitative level through literature review and semi-constructed interviews. Additionally, this paper will conduct a policy analysis of the current ART distribution model taking into account key stakeholders, Zambia's political climate in relation to the health sector, and technical barriers that prevent its implementation at the national level.

Literature Review

Barriers to ART Adherence in Zambia

Despite the Zambian Ministry of Health's announcement of the rollout of free ARV drugs in 2005 (WHO, 2005), many Zambians living with HIV/AIDS continue to struggle in not only accessing ART, but also remaining adhered to the regimen over an extended period of time. The World Health Organization (WHO) defines retention in HIV care, or adherence, as the "continuous engagement from diagnosis in a package of prevention, treatment, support and care services" (WHO, 2011). However, it is the treatment, support, and care services that many Zambians living with HIV/AIDS lack, resulting from a plethora of adherence barriers. The WHO identifies five key factors that affect or reduce retention in HIV care: early mortality, self-perceived improvement on ART, stigma, health service delivery issues, and alternative health beliefs (WHO, 2011). During our literature review, we came across various studies that identified additional economic and sociocultural issues that contribute to decreased ART adherence rates in Zambia, overlapping with the reduced retention factors identified by the WHO. Additionally, it is through the community based ART distribution model that these economic and sociocultural non-adherence issues can be mitigated, as a result of the system's convenience of ARV access and the inherent network of social support.

Economic Barriers to ART Adherence

One of the most prevalent barriers to ART adherence in Zambia is the widespread poverty that continues to affect the majority of the country's population, with approximately 54.4% of the total population living below the poverty line and almost 77% of rural areas unable to meet basic food requirements (Republic of Zambia, 2017). These statistics have severe consequences for those individuals on an ART, as a stable food supply is necessary for favorable outcomes when taking some classes of an ARV regimen (U.S. Department of Veteran Affairs, 2011). In Zambia, studies have shown that lack of nutrition and food supply is mentioned by patients and healthcare providers as a significant barrier to ART adherence (Sanjobo et al., 2008). Not only does seasonal food insecurity affect consistency adherence to ART, but most rural households also experienced decreased farming productivity as a result of their compromised health, exacerbating the already unstable food supply necessary for an ART regimen (Chileshe et al., 2010).

Aside from food insecurity, the transportation costs associated with health clinic visits often proved to be too expensive for most individuals on ART- especially households situated in rural communities (Sanjobo et al., 2008). In 2014, nearly 46% of rural Zambian households lived outside a 5km radius from a health facility, while only 1% of urban

households did (Nsemukula, 2014). Individuals requiring visits to ART clinics often reported having to sell clothes, personal livestock, and other belongings in order to have enough money for one trip to the clinic- each district hospital or clinic visit costing between \$3 and \$7.50 (Chileshe et al., 2010). For PLHIV who felt as though their health was improving on ART after an extended period of time, they often no longer felt it necessary to continue on the regimen, which subsequently meant no longer making the strenuous trip to the far away clinics (Sanjobo et al., 2008). Thus, the expensive and time-consuming nature of these journeys served as a further disincentive once individuals began feeling healthy (Chileshe et al., 2010).

Socio- cultural Barriers to ART Adherence

The economic barriers to adherence faced by individuals on ART are often further exacerbated by socio- cultural issues, such as gender issues, denial (Chileshe et al., 2010), and stigma, fear of discrimination and often a lack of emotional support necessary to continue adhering to the ART regime (Sanjobo et al., 2008). The gender roles associated with both men and women affected their ability to remain adhered to the ART regimen. With regards to women, their lack of independent cash supplies and therefore subservient positions in the household often meant they held less influence over household finances, such as expenditures necessary for accessing ART (Chileshe et al., 2010). For men, their weakened physical states resulting from their HIV positive status often reduced their productivity in serving as a provider for the household, subsequently reducing income needed to access ART (Chileshe et al., 2010). Issues of stigma, fear of discrimination, and the resulting lack of emotional support experienced by those on an ART regimen were also identified as significant socio- cultural barriers to adherence (Sanjobo et al., 2008). Patients have often reported traumatic experiences of victimization and isolation by their families and communities after disclosing their HIV status and compliance with the necessary medication, which in turn sometimes resulted in non- adherence to the ART regiment (Sanjobo et al., 2008). Additionally, patients on ART would fear non-confidentiality when seeing doctors or picking up ARV drugs from the pharmacy- especially if that individual was a member of a discriminatory community. The lacking emotional support resulting from this type of community hostility also served to discourage the patient's ART adherence (Sanjobo et al., 2008).

Health Facility Congestion and the Human Resource Crisis

While the rollout of free ARVs in 2005 has astonishing potential for lifesaving capacity for those living with HIV/AIDS in Zambia, its capacities are compromised by the issue of health facility congestion and the ongoing human resource crisis that has been plaguing the Zambian health sector since the outbreak of the epidemic. In the 2011 National Human Resources for Health Strategic Plan, the government of the Republic of Zambia (GRZ) recognizes that despite the increase in health staff over the past five years, Zambia

continues to suffer from a severe shortage of staff (Republic of Zambia Ministry of Health, 2011). In fact, the understaffing and low retention rates of health care professionals has been identified as “the single most serious obstacle in implementing the national treatment plan in sub-Saharan Africa” (Van Damme et al., 2008). While the WHO recommends a ratio of 2 medical doctors and 14.3 nurses per a population of 1000, in 2011 Zambia experienced a ratio of less than .2 medical doctors and less than 1 nurse per a population of 1000 (Republic of Zambia Ministry of Health, 2011). The human resource crisis is particularly alarming when considered in relation to the complex nature of ART adherence for those living with HIV/AIDS. Individuals must remain adhered to the medication for the rest of their lives, be prescribed medication and seen regularly by a doctor, be counselled on the importance of adherence by a lay counsellor, and receive drugs periodically by a pharmacist (Hanefeld et al., 2009).

Additionally, when visiting healthcare facilities, patients reported feeling as though healthcare professionals rushed through appointments, and were thus given inadequate treatment. Similarly, health care professionals reported not having enough time to assess patients’ ART concerns (Sanjobo et al., 2008). Therefore, not only does the human resource crisis plaguing the health sector have adverse effects on the quality of patient care (Sanjobo et al., 2008), but a shortage of supply on any level of these healthcare professional positions serves as a significant barrier in adhering to an ART regimen. These issues surrounding facility congestion and the shortage of skilled healthcare workers prompts the necessity for alternate models of care delivery, particularly for those on an ART regimen, to be considered.

Global Health Initiatives’ Implications for the Human Resource Crisis

As a result of Zambia’s ongoing HIV/AIDS epidemic, it has been a recipient of large amounts of international donor funding- namely PEPFAR and Global Fund (Hanefeld et al., 2009). In 2015, PEPFAR and Global Fund contributed 84% of the total funding for HIV in Zambia, with PEPFAR funding 100% of community- based care (PEPFAR, 2016). However, although many of the global health initiatives (GHIs), introduced through PEPFAR and Global Fund, have provided life-saving programs and treatments for thousands of Zambians, they have played roles in exacerbating the health sector human resource crisis through unintended consequences of their actions (Hanefeld et al., 2009). These unintended consequences that have been introduced must be acknowledged when considering future, innovative care delivery models- especially in the realm of ART delivery.

One of the goals of GHIs is to train existing healthcare professionals for the purpose of sustainable and improved medical services. However, upon completing training and expanding their skill capacities, these same health care workers often leave the public health sector to work at private facilities, or are recruited to work at with very organization that implemented the GHI (Hanefeld et al., 2009). As a result, these efforts of GHIs often

have adverse effects on alleviating the shortage of skilled healthcare workers, often resulting in unforeseen consequences in ART care. This human resource turnover is the result of limited resources for career advancement and lacking incentives to remain in the public health sector after receiving such valuable training by external organizations (Hanefeld et al., 2009). In addition to diminishing the pool of newly skilled healthcare professionals, the bureaucratic nature of GHI activities often adds to the workload of managers and staff within health facilities (Hanefeld et al., 2009). This increased workload results from district health facility managers having to submit monthly report (as witnessed in PEPFAR's programs) and the greater human resource efforts that must be undertaken by existing health facility staff to coordinate initiatives with GHI implementers (Hanefeld et al., 2009). Thus, while certain GHIs provide necessary training, materials, and equipment for life- saving treatments, their effects on the human resource crisis have often proven to be negative by contributing to the already significant workload of health facility staff.

Task Sharing to Mitigate Health Professional Workload

To address the expanding problem of health facility congestion, exacerbated by the shortage of necessary human resources plaguing the sub-Saharan African health sector, new mechanisms have been implemented in an attempt to alleviate challenges in delivering quality, and efficient patient care. This has prompted many affected sub-Saharan African nations to adopt various models of task shifting in an attempt to mitigate the human resource crisis. In 2008, the WHO defined task shifting as “the rational redistribution of tasks among health workforce teams. Specific tasks are moved, where appropriate, from highly qualified health workers to health workers with shorter training and few qualifications in order to make more efficient use of the available human resources for health” (WHO, 2008). Due to the recent HIV initiative of free ARV rollouts, many sub-Saharan African nations have adopted “Type III” and “Type IV” of task shifting, which the WHO defines as the shifting of tasks from health professionals to lay community providers/counselors and PLWHA themselves, respectively (WHO, 2008). Although many versions of task shifting models have been adopted in various communities, the overreaching effects have been proven to be beneficial for not only mitigating the human resource crisis, but also for patient ART adherence (WHO, 2008). This is the result of adherence counseling tasks having been shifted from overworked health facility professionals to less qualified, yet nonetheless capable, members of the community and this shift allows for greater quality care and attention to be given to patients- particularly in resource limited settings (Wouters et al., 2012).

Community Models of Care in HIV

In the late 2000's, as ARV drugs became more widely available in AIDS afflicted countries, governments and public health organizations began to confront the challenge of how to

sustainably scale up drug delivery to achieve maximum effectiveness. With the scale-up of delivery services, the human resource crisis was compounded, and the international public health community called for the development of various alternative models of delivery. The nature of community models of care vary from place to place, and country to country, with some varieties stressing psychosocial support, and others helping to incorporate community structures into the supply chain itself. All of these methods, however, have the common goal of allowing the community of people affected by a disease to have more power and flexibility in their treatment, ultimately giving them greater control of the disease (Wouters et al., 2012).

Community ART Groups

One particular model was piloted in Mozambique in 2008 by Medicins Sans Frontiers (MSF), who launched an out-of-clinic strategy for combating some of the issues of medical regimen adherence and lack of health worker human resources in the region (Decroo et al., 2011). In this model, HIV positive individuals formed Community ART Groups (CAGs) of up to 6 people, and implemented a rotation system in which members would take turns collecting the ARV drugs from the nearest health facility on behalf of everyone in the group. Additionally, a group leader was elected to facilitate communication among members, and encourage the maintenance of adherence through social accountability systems, such as group pill counting. Through this model, a CAG member would be tasked with commuting to the health facility to collect drugs only twice a year, for example, as opposed to every month allowing the individual to save both time and money in addition to being provided with a network of support.

A 97.7% ART adherence rate was observed at 12 months on treatment with this MSF model, compared to a 59.2% rate over 12 months in some Zambian studies of adherence, which did not utilize the CAG model (Decroo et al., 2014, Birbeck et al. 2009). Although the circumstances surrounding the two studies were not identical, it is clear that the Mozambique study showed that, with proper oversight, CAGs can successfully improve adherence through a more convenient ART delivery and accountability system, while also significantly reducing health facility congestion and health professional workload (Decroo et al., 2014). Following the encouraging results of the pilot study in Mozambique, multiple sub-saharan African countries have taken an interest in the model, with the Mozambique government fully adopting it, and Lesotho doing the same in 2014. While the CAG model was originally implemented in the rural Tete Province of Mozambique, the efficiency of its design, coupled with addressing some of the pressure points of modern HIV care, makes it a considerable model for communities throughout all of sub-Saharan Africa.

In Zambia, the model has yet to be adopted by the government, but certain international grant partners and NGOs have begun to roll out small scale pilot CAGs in partnership with the government over the last two years in order to test its potential in the country. None of the findings have been released to date, and PEPFAR warns that the studies are too small scale to produce proof of concept in the country, especially in terms of health facility congestion (PEPFAR, 2016).

Home Delivery Model

Another model that has surfaced to combat ART access is the home delivery model. This model uses existing healthcare infrastructure or the training of new workers or volunteers to deliver drugs to the residences of people living with HIV in order to ensure ease of access to their medical regimen. In Uganda, community health workers and volunteers were trained to deliver ARVs to people's homes using the existing health clinic infrastructure and drug supply chain. In the study with trained community health workers on payroll delivering the drugs, the result showed an 8.7% attrition of adherence rate as opposed to 22.4% seen in a parallel facility-based distribution control group (Mpiima et al., 2012). These were extremely promising results, and they were compounded by similar results in an additional study following the same model but using volunteers in place of community health workers (Kipp et al., 2012). In Kenya, CHWs were recruited among people living with HIV and named Community Care Coordinators (CCCs). These CCCs provided ART service home delivery, as well as counseling and peer support, resulting in a reduction of health facility visits and a decrease in reports of stigma, further demonstrating the potential of the model but still calling for larger scale analysis (Selke et al., 2010).

The home delivery model demonstrates promising results, and the governments of Kenya and Uganda have recognized the effectiveness of the model in their respective countries. In Zambia, preliminary findings from a large-scale Home based testing and counseling study that took place in Zambia and South Africa were recently published, indicating promising results in HIV education and treatment (Hayes et al., 2017). The study, however, was primarily designed to test the viability of Universal Test and Treat (UTT) systems rather than act as a community based delivery model, of which there is existing data.

Adherence Groups and Community Adherence Support Workers

The most well-established type of community based care in HIV is the application of adherence groups in order to increase accountability and retention in HIV treatment. Rather than addressing the issue of ART delivery access, adherence groups are designed to positively impact psychosocial aspects of treating the disease. As a result of well documented issues of stigma, coupled with high drop-out and lost to follow rates, adherence systems have been rolled out in relatively large scale across sub-Saharan Africa.

A version of adherence support and the task shifting strategy has been adopted in South Africa, through the implementation of an innovative community based adherence system (CBAS) that makes use of “patient advocates” (PAs). These PAs are essentially community health workers that have taken on the responsibility of carrying out ART adherence support/counseling, through the assessing of each patient's' unique challenges to adherence, in addition to conducting home visits and supervising the taking of medication through activities such as pill counts (Fatti et al., 2012). The effects of this system have proven extremely beneficial, by reducing the workload for health facility professionals in the realm of counseling responsibilities, in addition to exhibiting improved outcomes for “treatment fatigue”, knowledge of HIV/AIDs, and overall psychosocial support for adhering to the regimen (Fatti et al., 2012). While task sharing is not necessarily a care delivery system, its community based nature and subsequent effects on health facility congestion and improved patient ART adherence outcomes aligns with similar effects to the CAG model.

In Zambia, a study was conducted in 2007 in which adherence support workers (ASWs) were trained to provide counseling and emotional support to people living with HIV in rural areas. The study was more limited in its scope and resources than the Fatti et al. 2012 study, but produced qualitative results that indicated increased quality in patient counseling, as well as decreases in health worker workload (Torpey et al., 2008). It is important to note that the adherence group model is not a delivery model, and only addresses issues of social support rather than actually overcoming the distinct physical and economic barriers that patients face on a daily basis.

Methods

To collect background information on existing community based ART delivery models in sub-Saharan Africa that have been implemented, we conducted a literature review of relevant journal articles and public health data. We reviewed the detailed nature and results of community based delivery model pilots that have been implemented both internationally, primarily focusing on those that have been carried out within Zambia and the region of Southern Africa. During the course of the literature review, we considered what models implemented in other sub-Saharan African nations, would be most viable in Zambia, based off of various country characteristics and development indicators.

Additionally, we conducted semi-structured interviews with key stakeholders to the community based ART delivery implementation process. The stakeholders interviewed included both the director and community program manager of the Treatment Advocacy and Literacy Campaign (TALC), country director of the USAID JSI AIDS Free project, the director and various officials from the USAID Discover-Health project, Ministry of Health officials including the central MoH TB/HIV program manager and Chongwe district medical officer, and an official from the Center for Disease Control (CDC). Questions for interviews were selected based on the stakeholders' particular area of expertise surrounding the CAG implementation. The prepared interview questions were left open-ended to allow for flexible discussion and for the stakeholder to expand the conversation in ways that may have not been foreseen. When granted permission, interviewees were recorded using a smartphone. The information gathered from the interviewed stakeholders was used to identify both technical barriers to nationwide CAG implementation in Zambia and disconnects that exist among implementing stakeholders on a policy level. This study was qualitative in nature and was conducted during June and July 2017 in Lusaka, Zambia.

Results

Ongoing Community Based ART Delivery Pilots in Zambia

In the Zambian national health policy, there are measures in place to allow differentiated models of ART delivery. In December 2015, the Ministry of Health (MoH) allowed ART to be distributed in quantities larger than for only one month at a time following pressure from research organizations and donors.¹ This allowed for the first pilot methods of community based models of care to begin to take place in Zambia, and the model slowly began to take hold in some communities.²

Grassroots Zambian Community Initiatives

Throughout Zambia, as with throughout sub-Saharan Africa, there are a number of both foreign and local organizations that group people into various types of ART adherence clubs. These organizations range from international NGOs to simple communities or groups of friends who support one another in virtually all aspects of treatment of their disease, from psychosocial support to appointment and medication reminders and pill counting. The data on the quality and effectiveness of these initiatives in Zambia, however, is either not collected or not available, leaving little indication of how the models fare in the country specifically. One organization that we spoke to, the Treatment Advocacy and Literacy Campaign (TALC), is a grassroots organization based in Lusaka that serves as a voice of advocacy for PLHIV in Zambia. The organization is membership based, and, working in all provinces of Zambia, helps serve as a bridge between the community and the health facilities, providing education and advocating for the rights of PLHIV.³

In terms of community based differentiated care delivery, TALC was one of the pioneers of the model in Zambia, basing their community groups off of those in Mozambique. The groups, however, are community specific, taking on different names for different areas, with everything from a simple Treatment Adherence Club (TAC) to Self-Motherhood Adherence Group, those specifically geared pregnant women with HIV. The groups differ in their strategy, with some having more intensive structure than others. One method involves group elected leaders distributing drugs as well as taking blood pressure and temperature within the communities so PLHIV do not have to travel to the clinic, with

¹ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

² Personal Communication with Director TALC

³ibid

others without any delivery aspect but just to talk about the disease and provide emotional support.

Although TALC has not collected or made available any large-scale data on their community models of care, they have seen the success of the model in patients who are stable on ART and are treatment fatigued, asserting that the model is working for them and making a large difference in the lives of their members.⁴

CAG Pilot Models

Community based ART delivery closely based off the Mozambique MSF model is still in the pilot phase in Zambia, and there is no concrete data on its effectiveness or quality. The Center for Infectious Disease Research in Zambia (CIDRZ) has rolled out the largest form of a CAG model in Zambia to date, with plans to enroll 3600 participants to investigate the model's feasibility in the country moving forward. The research looks to group various PLHIV into models specific to their needs, distinguishing 'Community Adherence Groups' from 'Urban Adherence Groups'.⁵ The model closely mirrors the MSF model, however there are some minor alterations to nomenclature and customization of groups to specific needs and schedules.

The anecdotal preliminary results indicate that the model is popular with patients as well as very effective in terms of improving adherence rates, and are encouraging for future large scale implementation. The programmatic evidence has inspired confidence in both the administrators of the study, treatment fatigued people living with the disease long term, and certain members of the Zambian Ministry of Health.⁶

Technical Barriers to National Implementation of a CBART Delivery Model

Pushback from Health Workers

When past GHIs have been implemented, the changes in culture prompted by the implementation of new policy have proven to be a challenge with health worker staff. Lack of funding and shortages of health facility staff time have been barriers to complete the necessary education and technical training. Additionally, with every new skill and technique that health workers learn and must apply to their daily schedule, their workload is augmented, compounding the already dire human resource in the health sector of sub-Saharan Africa⁴. In this sense, there are concerns that health workers may present some opposition or pushback if required to retrain in order to accommodate the roll of 'expert patients' in the supply chain.

⁴ Personal Communication with Director TALC

⁵ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

⁶ *ibid*

The country director of JSI AIDS free project, also voiced concerns that the roll out of a community based delivery model might face opposition from the health workers by requiring them to relinquish their authority to individuals who they potentially perceive as under qualified to perform certain tasks. In the initial rollout of widespread HIV testing in Zambia, the Ministry of Health 'Biomedical Scientists,' who are health worker personnel trained to collect blood and test viral load and CD4 count, heavily pushed back against the distribution of self-testing mechanisms such as finger prick tests. The director proposed that the health facility work staff may have similar hesitations on the level of ARV distribution, as delegating the responsibility of distributing drugs to persons not staffed by the Ministry of Health brings about concerns of job security. These concerns could be further exacerbated by the difficult history between the government and the health workers, as there have been issues with oversight in the payroll and compensating individuals for their work.⁷ In addition to concerns of job security and authority, health workers may push back to the implementation of community based delivery models due to concerns of reduction in the quality of care. Hesitations to delegate the ARV distribution to under qualified personnel may create some resistance from clinical workers, as they might harbor concerns about the ability of these new 'expert patients' to perform their duties correctly.

Despite concerns voiced by the country director of JSI AIDS free project, multiple interviews with stakeholders of the community based delivery model in Zambia felt that the concern of health facility worker pushback was not a significant barrier. When talking with TB/HIV Program manager at the MoH, she referenced how this type of model would not be met with the same resistance as others because the infrastructure of the community workers already exists. She asserted that she doesn't "*anticipate any pushback on a worker level because they are already using the community health workers in the facilities to do some of these jobs.*"⁸ Additionally, a CDC official who works with partners trial running the CAG model pilot in Zambia asserted "*I haven't heard of that specifically... I can't really imagine why they would push back because they are lessening the burden at the facility level.*" She said she doesn't "*See it as a burden per say... I don't see it as a very big problem.*" Nevertheless, she did acknowledge that, as with any GHI, there would be some level of adaption to change for the health facility workers, as "*they do have the additional need to supervise the community workers and also these expert patients that are leading [the groups],*" but did not see this as a major impediment to its implementation.⁹

⁷ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

⁸ Personal Communication with HIV/TB Program Manager Zambia Ministry of Health

⁹ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

In addition to stakeholders with direct CAG implementation experience not regarding this issue as a barrier, the forthcoming introduction of a community health strategy in the new National Health Strategic Plan for 2017-2021 would bolster the infrastructure surrounding community health workers and make it an even more feasible strategy. Previously, the government relied on a number of community volunteers as a source of labor, counseling, and support at the health centre and health post level. These workers, however, were not on the pay roll, but there has recently been a movement towards changing the policy surrounding how the government views them and compensates them. Although the specifics of the plan have not been released yet, the director of USAID Discover- Health project asserted *"I think there's a very clear understanding, even in the MoH, that it's unfair to expect individuals to just work and not compensate them, and that's why this community health strategy is coming on board."*¹⁰ When asked about how the rollout of the forthcoming CHS would affect CAG model rollout, a CDC official said *"It would definitely take us steps forward, we would scale up a lot faster."*¹¹

With major stakeholders often dismissing concerns of health facility worker pushback, we did not find it to be a significant barrier to implementation, as the nature of the model reduces workload rather than compounds it, and the existing network of CHWs would require only marginal changes in existing duties.

Pushback from the Community

In our talks with representatives from the Ministry of Health, officials have expressed concerns of potential pushback from PLHIV in the community with regards to the differentiated care delivery models. In our meetings with the central MoH in the capitol, the HIV/TB program manager spoke of how Zambians *"are a people who believe in going to the health facility,"* and that various measures that would require a change in the culture would be met with resistance. An MoH official expressed concerns of how the model would affect quality of care, and that patients would be skeptical about not physically visiting the facility routinely.¹² We also discovered skepticism surrounding the community's attitude towards the model at a more local level, as a MoH District Medical Officer we spoke with identified issues of community privacy, and that patients might be resistant to a community based delivery model due to fears of increased exposure of their HIV positive status.¹³

Despite concerns from the central MoH about community pushback, we not only encountered no similar skepticism from all the largest community based delivery implementing stakeholders we spoke to, but often we even experienced vehement

¹⁰ Personal Communication with USAID Discover-Health project director

¹¹ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

¹² Personal Communication with HIV/TB Program Manager Zambia Ministry of Health

¹³ Personal Communication with a MoH District Medical Officer

objections to the notion of community pushback as a barrier to implementation. Organizations such as TALC have asserted that *“the community themselves are very happy if these services are being provided,”* and that the only resistance they have met comes from other sources.¹⁴ CDC representatives raved about the acceptance of the CIDRZ pilot CAG model, saying *“I have visited the sites where CAGs have been implemented, and if you speak to the patients, everybody just wants to get in.”*¹⁵ USAID discover-health project representatives were adamant that they have met no community resistance from their community health initiative, saying *“we have found no pushback whatsoever, communities want services closer to where they are, why would you push back to that?”* Addressing outside skepticism, she asserted *“if you have not implemented a model how can you say there is pushback?”*¹⁶ In the application of the model in other countries, there has also been nothing but positive feedback from patients and community members, and from our talks with individuals working on these types of models on the ground in Zambia, the country is no different from the rest.

Supply Chain and Leakage

The most common type of skepticism we encountered in our research was concern of how the model would affect the existing ARV drug supply chain in Zambia. Zambia has a relatively stable supply of ARVs, and the country has not experienced a shortage in recent years, however a change in health delivery policy would undeniably necessitate a reevaluation of current processes in place.

On the topic of community based delivery, officials at many levels have expressed concerns about leakage in Zambia. More specifically, logistical supply chain stakeholders asserted that implementing the model would certainly leave the ARV supply chain more vulnerable to theft of drugs. In our interview with the USAID Delivery project country director, a major stakeholder in the Zambian ARV supply chain, she elaborated that Zambia has faced with theft of ARVs at many levels and as a result, it is a hot topic within the MoH. She also spoke of international ARV leakage as well, and how many of Zambia’s neighbors, such as the Democratic Republic of the Congo, Zimbabwe, and Angola have very weak health systems so the demand for black market ARVs is very high. This demand further incentivizes the use of ‘ghost patients’ and exposes leakage and theft vulnerabilities in the supply chain system.¹⁷

Director of USAID Discover Health project echoed these concerns, adding that *“the issue is with the countries that have been at war for some time that are in close proximities... you*

¹⁴ Personal Communication with Director TALC

¹⁵ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

¹⁶ Personal Communication with USAID Discover-Health project director

¹⁷ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

have Zimbabwe on this side the DRC on the other side... and getting ARVs is not the easiest thing in some of these places... so there is a huge demand for ART, so some people may be tempted to supply across the border to these people."¹⁸ In addition to issues of supply chain leakage, officials have also voiced concerns about altering the supply chain in order to allow for the distribution of larger quantities of drugs at a time. Due to the logistical nature of community based ART delivery models, facilities must be able to distribute doses of drugs for three to six month periods, as opposed to one month, which would require a greater stock of drugs at the facilities. In our interview, USAID representatives expressed the need to change the health delivery infrastructure in order to accommodate for such a 'buffer' in the supply chain.¹⁹

Thus, we discovered that essentially all stakeholders agree that Zambia faces significant challenges in regulating its supply chain of ARVs. More specifically, further accountability and oversight measures must be put in place in order to mitigate the threat of theft and leakage. However, the magnitude of the problem is virtually impossible to quantify. Leakage often happens through the registration of fake or 'ghost patients,' and is thus difficult to track or monitor. A JSI official reflected on her experience surrounding the issue, noting *"In all honesty the majority of the theft that is happening, there is some at the central level, but there has also been a lot of things in the papers that it's the pharmacists themselves that are bringing it into their personal pharmacies, a lot of it is there... so people don't want to talk about that, but there's plenty of documentation to back that up."*²⁰ Furthermore, the issue of leakage has only become a high profile topic through police reports being leaked to the media- not statistical data- calling into question the reliability of such evidence. Even the director of USAID Deliver project, perhaps the most important supply chain player in Zambia's ARVs, is not privy to the police report information of the reported thefts.²¹

Even if we had access to the numbers and leakage was proven to significantly burden the ARV supply chain, we found that the problem should not prevent the rollout of community based delivery. The director of research and communications at USAID Discover Health project asserted that the problem is not specific to community based health, but is a systemic one, saying *"the leakage is not just CAGs, it's the whole health system,"* with the director adding *"it's not a barrier, it's an issue you just need to be cognizant of, I don't think it should stop us but we need to be aware of it and put in place measures to mitigate it."*²² An official of the CDC reported that within the context of their CAG pilot study *"I don't think there is enough information at the supply chain [level]...Its very difficult to quantify and say*

¹⁸ Personal Communication with USAID Discover-Health project director

¹⁹ Personal Communication with USAID Discover-Health project director

²⁰ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

²¹ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

²² Personal Communication with USAID Discover-Health project director

*that it's a big problem, I highly doubt that it's a big problem... the problem is really around having the storage capacity at the facility that is enough to store the medication."*²³

Therefore, with no concrete data on leakages within the context of community delivery, it is difficult to pinpoint at which level the thefts are occurring and the best way to address it.

Regardless of the impact of leakage on the feasibility of community based delivery, the necessity for a reliable oversight and accountability system has been universally recommended, from the original MSF study in Mozambique to each stakeholder we interviewed. A USAID official explained *"in countries where this has worked, there is a big supply chain component that is linked to the medical stores and clinicians, making sure that when you say the client will receive their package of ARVs, they receive their ARVs... so that system needs to be airtight, strong, because if people in the CAGs don't receive their ARVs in time, you have a problem in your epidemic control."*²⁴ The director of the JSI AIDS free project added *"I'm a supply chain person, it's all about a system, If you have a system of accountability and supervision that goes with it... a system is only as good as the monitoring of it... if there is monitoring and there is theft, you'll find it fast and you make an example of one person, that won't happen again."*²⁵

Noting the necessity for an oversight and monitoring system, we found that those being employed in pilot CAG models in Zambia have been successful, and could provide a template for larger scale rollout. A CDC official elaborated on their oversight system of the CAGs, noting that *"It is very formal, every single model is supervised by the nurse at the facility, within the government structure ART clinic those groups are formed, and there is some sort of sign off. We developed check lists so that we know they have a timeline and a schedule... every facility has community workers so we know that this week these 3 people should meet and they know to expect reports from whoever was the lead"*²⁶ Provided that a system of monitoring CAGs already exists on the ground in Zambia and has yielded positive results thus far, the issue of oversight is one that can be addressed with an informed approach. Additionally, this system has the potential to be scaled up so the model can function efficiently without the consequences of leakage.

When reviewing the challenges, the supply chain faces in the rollout of community health delivery, the issue of changing health facility stocking protocol presents itself as the most formidable barrier- as current policy does not allow for health facilities to stock the increased amount of drugs necessary. Creating this 'buffer' in the supply chain would be a

²³ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

²⁴ Personal Communication with USAID Discover-Health project director

²⁵ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

²⁶ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

logistical necessity to achieve nationwide implementation of a community based ART service delivery.

Policy Barriers: Disconnects at Implementing Stakeholder Levels

Throughout the course of conducting interviews with key stakeholders that play a crucial role in implementing community based ART delivery models throughout Zambia, it became prevalent that severe disconnects exist, at all stakeholder levels, with regards to the perceived barriers to implementation that must be overcome. Not only did perceived challenges and barriers to implementation vary depending on which stakeholder we spoke to, but often stakeholders would contradict one another- asserting that a barrier identified at one stakeholder level was not actually an issue and should not be paid attention to. Instead of being united on tackling commonly identified challenges to nationwide implementation of CAG model and putting forth strong, aligned efforts- which are desperately needed when putting such drastically different health service delivery changes into operation- key stakeholders proved themselves to be on completely different pages and disconnected in their efforts.

We believe that these disconnects exist for several reasons, stemming primarily from an absence of coordinated policy activities. These include a lack of communication among the government and key domestic implementing partners, a lack of alignment between international grant partner activities and domestic, grassroots and government activities, and a lack of correspondence when tracking the results of various community based health care delivery pilots in Zambia. Thus, we found that these disconnects stemming from a lack of coordinated policy serves as a barrier to CAG implementation and demonstrates a lack of alignment among stakeholders. Additionally, this issue undermines their abilities to identify actual challenges surrounding the implementation of community based ART delivery models and tackling them as a united front.

Perceived Lack of Political Will

During the course of our interviews, the issue of political will as an impediment to implementing a CAG model in Zambia arose as a hot topic and as a source of disconnect. Grassroot organizations such as the Treatment Advocacy and Literacy Campaign (TALC) and international grant partners such as USAID Discover- Health and the JSI AIDS Free project believe there is a lack of political will to implement community based ART delivery models, which are reflected in the lack of financial prioritization and government investment in the health sector budget. JSI AIDS Free project country director cites the \$25 million dollars' worth of ARV orders having been cancelled by the government²⁷ and director of USAID Discover- Health asserted that about 80% of funding for HIV treatment

²⁷ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

comes from donors, because *“they (the government) makes commitments (increasing funding for the health budget) that they do not follow through on.”*²⁸

These concerns surrounding lack of political will to adopt new innovative health delivery models are echoed by the TALC director, who identifies political will as potentially the biggest obstacle to implementing a CAG model because *“if there is no political will you cannot do anything”*. Additionally, the director attributes *“lacking prioritization and improper planning”* as the major culprits of lacking political will, because *“you find that most of the resources are not going into these sectors (health) then there is a problem... because there is no political will to ensure the sectors are well resourced.”*²⁹

On the other hand, organizations that work very closely with the MOH, namely the Center for Disease Control (CDC), deny any shortage of political will. Chief of the prevention, care and treatment Branch asserted that *“the political will is there and the funding is there... from the government level there is full support...”*³⁰ Nevertheless, this sentiment was directly contradicted by the MOH TB/HIV program manager, who expressed concerns surrounding the political nature of carrying out such a drastic public health policy change and the potential consequences if such a model were to fail on a nationwide scale. She explicitly mentioned the consequences of *“if the communities start seeing more people dying”* because of such a model and the ministry being blamed for *“pushing people out of the health facilities.”*³¹

Perceived Roles of International Grant Partners and Impacts of Rapid Domestic Leadership Turnover

The question of who must advocate for the implementation of a community based ART delivery model and the role that international grant partners, such as PEPFAR and Global Fund, play in the process also proved to be a point of contention and disconnect for stakeholders at all levels. The MoH TB/HIV Program manager denied any roles that international donors may play in implementing community based models, stating *“I don’t think it has so much to do with the international grant partners, I think it would have to be on a basis that the community accepts such a model... so it doesn’t have to do with money or grants...”*³² Alternatively, projects such as JSI AIDS Free and USAID Discover both identify international grant partners as crucial in pushing for such a model to be implemented because of the nature of the Zambian government’s relationship with donors being worrisome. JSI AIDS free country director explicitly attributed the power of international

²⁸ Personal Communication with USAID Discover-Health project director

²⁹ Personal Communication with Director of the Treatment Advocacy and Literacy Campaign (TALC)

³⁰ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

³¹ Personal Communication with HIV/TB Program Manager, Central Ministry of Health Lusaka

³² *ibid*

donors in pushing agendas and influencing policy to simply *“having the money for it”*³³ and USAID Discover-Health project director attributed the MOH’s denial of the roles that international grant partners play in implementing health initiatives as being *“from a national pride angle... sometimes you don’t want to own up that you are receiving a lot of help from others and that you are not totally in control”*³⁴

Additionally, these same stakeholders also expressed concerns regarding the effects of rapid leadership turnover on the “rank and file” in the Ministry of Health, citing that *“whenever leadership changes, people come in with different visions...”*³⁵ USAID Discover-Health also asserted the importance of the attitudes at “top leadership” regarding community based health initiatives, *“as it trickles down and has a huge effect on things that are actually done”*³⁶ This concern was echoed by the JSI AIDS Free country director, who agreed that in countries where leadership is more stable, the government has more control over domestic initiatives and international grant partners have less influence over policy and less power in pushing agendas.³⁷ However, a CDC official asserted that changes in top leadership really do not impede the implementation of CAGs or other community based health initiatives, because implementation processes are at a lower level, so changes in leadership do not affect functionality.³⁸

This disconnect surrounding the perceived impacts of rapid leadership administration turnover and its effects on the roles that international grant partners play in employing a community based ART model serves as a significant barrier to implementation, since stakeholders are looking to opposite sources of support and thus cannot be united in effort.

Perceived Success of the CAG Model in Zambia

Yet another point of significant disconnect among stakeholders is the perceived success of the CAG model in Zambia. Success, being defined in terms of efficient systems of accountability and supervision, improved ART adherence rates, suppressed viral loads, and other concrete indicators of an improved HIV situation in Zambia. Organizations that interact directly with communities in implementing various forms of CAG models, such as TALC, USAID Discover- Health Project, and various CDC implementing partners have not only found direct acceptance of these models from community members themselves as previously discussed, but they have witnessed increased ART adherence rates, implemented formal systems of CAG accountability to mitigate issues of supervision, and found ways to tailor CAG models to fit unique patient needs. For example, a CDC

³³ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

³⁴ Personal Communication with USAID Discover-Health project director

³⁵ Personal Communication with a representative from USAID Discover- Health Project

³⁶ Personal Communication with USAID Discover-Health project director

³⁷ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

³⁸ Personal Communication with CDC Branch Chief Treatment, Care and Prevention

representative reported “...we have seen that it is successful in improving retention... our program numbers are showing that 98% of people in CAGs are staying on treatment...” and she reported that CDC partners have implemented systems of CAG accountability “that are very formal, every single model is supervised by the nurses in the facilities... there is a sign off and a checklist, so they know if they are expecting a patient this week”³⁹ Moreover, in our discussions with the CDC, who works closely with the Centre for Infectious Disease Research in Zambia (CIDRZ), they mentioned that opportunities in CAG policy exist to tailor the model to fit the needs of various patients- specifically citing that CIDRZ has implemented systems that are prime to fit families, teenagers, and those that are mobile (such as truck drivers).⁴⁰

On the other hand, despite the success that the aforementioned organizations have experienced in implementing CAG models in communities, the MOH continues to express hesitancy and concerns about implementing CAG models on a nationwide scale because of a perceived lack of demonstrated concrete success. It became clear during our interviews, regarding CAG success, that a disconnect exists because many of the concerns that the MOH expressed are aspects of the CAG model that organizations with direct implementation experiences have found to be successful. For example, the MOH expressed concerns regarding supervision of the CAG model, particularly the “*routine monitoring of patients in CAGs.*” She also questioned “...how can we be sure we do not lose people (in reference to ART retention) under the community model?”⁴¹ While these are valid policy concerns, under the systems that the CDC has implemented formal systems of accountability are feasible and already exist, and have the potential to mitigate these concerns of supervision.

Perceived Necessity for Further Research

Finally, disjointed opinions surrounding the necessity for further research on community based ART delivery models can also potentially play a role in impeding successful implementation. While a CDC representative rejected any necessity for further research on viable CAG models, stating “...we already have a lot of information that shows positive results...”⁴² other stakeholders, that have just as much direct experience with carrying out a CAG model, expressed different sentiments. For example, the director of TALC agreed that undertaking further research surrounding community based delivery services are paramount in furthering the implementation of community based health⁴³, and JSI AIDS Free Country Director even asserted that when the ongoing CIDRZ study is published “it will change the government’s opinion a lot, and if it’s shown to be effective, then that will be

³⁹ *ibid*

⁴⁰ *ibid*

⁴¹ Personal Communication with HIV/TB Program Manager, Central Ministry of Health Lusaka

⁴² Personal Communication with CDC Branch Chief Treatment, Care and Prevention

⁴³ Personal Communication with Director of the Treatment Advocacy and Literacy Campaign (TALC)

the proof that's needed." Additionally, she pointed out that when proposing such a drastic public health policy change in the past, *"Zambia has said 'test it here first'... Zambia is a unique country and there are some differences... so they want to make sure that those challenges are tested."*⁴⁴ Even TB/HIV program manager of the MOH asserted a need to see successful results, in terms of retention levels, viral load suppressions, and consistencies in *"how often they (patients) actually come"* and that if all these checklist items are met, then less resistance will be met from a government standpoint.⁴⁵ If stakeholders are not on the same page regarding the necessity for further research, then either the necessary research that the government and MOH needs to see will not be carried out, or valuable resources will be wasted as stakeholders undertake overlapping quantitative studies. Nevertheless, both possibilities will serve as barriers when implementing a successful CAG model.

Recommendations

After assessing our results, we suggest several recommendations that will serve key stakeholders, at all levels, during the process of implementing a community based ART model on a nationwide scale. More specifically, these recommendations will suggest mechanisms through which barriers and disconnects at implementing partner levels can be mitigated. Additionally, we will address how current and future challenges facing the Zambian health sector can be alleviated and how means of greater self- sufficiency can be attained.

Government Recommendations

The GRZ undoubtedly plays a large role in carrying out a successful implementation of a community based ART delivery model, and is a key stakeholder in ensuring the adopted model's long-term sustainability. In terms of government recommendations, we felt it would be most appropriate to separate recommendations that would apply more relevantly to the MoH, and recommendations that are more appropriate for the executive branch level of the government. These recommendations seek to mitigate the disconnects that were previously explored, and suggest the necessary ways in which these gaps in policy and understandings can be bridged.

Ministry of Health Recommendations

As previously discussed, severe disconnects exist surrounding perceptions of the CAG model and what exactly is required for its nationwide implementation in Zambia. These

⁴⁴ Personal Communication with Country Director JSI AIDS free Project, USAID Deliver Project

⁴⁵ Personal Communication with HIV/TB Program Manager, Central Ministry of Health Lusaka

disconnects have impeded necessary policy formation at the MoH level, and must be mitigated. Thus, we recommend that there be increased dialogue between the ministry and key stakeholders, including international grant partners and grassroots community based organizations. Additionally, increased dialogue among key stakeholders needs to be facilitated by the ministry in order to bridge the disconnects that exist. More specifically, this dialogue should allow parties to collectively track the details, progress, and results of varying community based ART delivery pilots, and should facilitate conversation regarding the experiences of stakeholders when implementing the projects at a community level. This dialogue should be facilitated in a systematic way in order to ensure that all stakeholders are on the same page and united in their perceptions of the CAG model, and what is necessary to further its implementation- which does not currently exist.

Additionally, the country director of USAID Discover- Health brought forth valid concerns regarding the consistency of attitudes toward community based health initiatives of the “rank and file” within the MoH- since implementation of community based health initiatives requires restructuring, to a certain extent, of the health sector layout. Thus, top leadership at the MoH must ensure that all “rank and file” persons receive education and training regarding what a community based health delivery models implicates and the benefits that can be reaped from its implementation. This education should be facilitated with the goal that disconnects within the ministry do not arise and that the “rank and file” can fully embrace such a model so it is put into practice as efficiently as possible.

Further, because of the sustainable, community based nature of the model we recommend that the MoH support research that explores ways that this model can be adopted to fit treatment deliveries for other prevalent, communicable diseases such as malaria and TB. Since these diseases also serve to weaken one’s physical ability to reach a health facility, which is especially challenging for those living in rural communities, models that employ the community as a resource in distributing treatment could potentially reap similar benefits in terms of overall, individual health improvements. * maybe switch section? “Sustainable Chronic disease care”?

Executive Branch Recommendations

While the Ministry of Health plays an integral role in the successful implementation of the CAG model, adjustments must also be made at top levels of the leadership’s administration. First, in terms of the national budget, we recommend that the health sector be prioritized. In 2001 under The Abuja Declaration, the heads of state of African union countries pledged to set a target of allocating at least 15% of the total annual budget towards health sector improvements (The Abuja Declaration, 2001). However, in 2014, health expenditure was only 4.987% of GDP (WHO, 2014) and overall social sector spending as a percent of the total national budget (which includes health sector spending) has decreased in recent years

(UNICEF, 2016). Additionally, the GRZ has cancelled \$25 million in ARV orders⁴⁶ and up to 80% of HIV treatment funding stems from foreign donors,⁴⁷ most of which comes from the American government- namely PEPFAR, which is the largest contributor to Zambia's HIV response (PEPFAR, 2017). This makes Zambia particularly vulnerable to pullouts of foreign aid, especially from the U.S. government, given the precarious nature of current leadership administration and the increasingly widespread sentiment of "America First". In fact, this concern was voiced by TALC director, who has considered the consequences of potential USG health investment pullouts- since these funds flow directly into the supply chain and procure most of the ARV orders in Zambia.⁴⁸

Therefore, it becomes imperative for the GRZ to consider ways in which health initiatives can be sustainable and dependent of foreign aid- requiring a level of investment from top executive leadership. Thus, we recommend that the health sector must be prioritized, in terms of as a percentage of the total national budget. Additionally, the GRZ must invest in community based health initiatives, such as proposed CAG models- which will ultimately allow for health focused asset based community development to take place, further reducing the influence that international aid partners possess. That said, once investments in community based health delivery models occur, systems of government accountability must be put in place to not only ensure that these activities are put into operation, but also so that they are not eventually dominated by international grant partners.

Recommendations for Civil Society

Due to the tremendous role that foreign aid organizations play in the health sector in Zambia, particularly in HIV, it is imperative that the funding is strategically allocated in order to most efficiently produce results. We recommend that civil society and foreign aid organizations support community based care models and innovations, as these types of projects are imperative to achieve self-sufficiency in the health sector. In our research, we also discovered that pressure on the government from donor sources is vital in order to get policy implemented, and we recommend that civil society engage the relevant parties and apply pressure to strongly consider these kinds of community based models. Moreover, we recommend that civil society supports the study of cost-effectiveness of community based delivery models, as it is extremely understudied and any data produced would tremendously aid both governments and foreign aid organisations in how to best allocate their funding.

⁴⁶ Personal communication with USAID JSI AIDS Free Project, Country Director

⁴⁷ Personal communication with USAID Discover- Health, Director

⁴⁸ Personal communication with Treatment Advocacy and Literacy Campaign (TALC), Director

Implementing Recommendations

In order to ensure the success of community based HIV service delivery in Zambia, health policy must be carefully crafted in order to take into account the plethora of factors the impact PLHIV. Due to the understudied nature of community models of care, its initial large-scale rollout will have a tremendous impact on the future of HIV epidemic control in sub-Saharan Africa and has the potential to shift the nature in which the issue is approached globally. Additionally, it is important to consider that the fine print of any health policy enacted has the potential in itself to determine the success of the model. In this section, we recommend methods we came across in our research that could help mitigate some of the challenges that Zambia faces in the on the ground implementation process of community based ART service delivery.

Quality of Care

Since community based ART delivery reduces the number of individual routine health checkups, it is vital that health policy ensures that quality of care is not compromised in the process. Throughout our time in Zambia, we came across certain officials who expressed this concern, particularly within the MoH.⁴⁹ Although this is a valid concern and quality of care must be considered paramount, the MSF community based ART delivery model and even those currently being piloted in Zambia are designed to avoid such consequences. It is important to note that community based care delivery only alters the required time intervals of picking up drugs, and does not prevent individuals from visiting the health center if they experience symptoms of illness related to their immunocompromised state. When crafting policy, the doubts about “pushing individuals out of the health centers” must be addressed up front, and we recommend that policy stipulate that individuals cannot not be turned away from care simply due to changes in their ARV collection schedule.

Another issue that must be addressed is eligibility criteria when taking part in a CAG. In our talks with stakeholders, it was universally recommended that individuals must be ‘stable on ART’ to take part, but the categorization of ‘stable on ART’ was quite vague and often stakeholders would contradict each other in their definitions of “stable on ART”- anywhere from 6 months of viral suppression to 5-10 years being suggested. The original Mozambique MSF model and other pilot models of community based ART delivery that we came across stipulated that the requirement should be 6 months, and patients must have demonstrated considerable success within that timeframe. It is our recommendation that the model rolled out nationwide in Zambia require a patient to have demonstrated 6-12 months of viral suppression in order to join. This timeframe would prevent patients that are either new to treatment, or unstable, from missing out on frequent clinical visits and

⁴⁹ Personal Communication with official in the Ministry of Health

the process of early education they vitally need. Additionally, this timeframe would allow for a large enough PLHIV population to participate in the program so that health worker facility workload can be effectively reduced. Thus, we emphasize that the goal of CAGs should be to alleviate ‘treatment fatigue,’ without compromising necessary education and quality of patient care.

Systems of Accountability and Supervision

As previously discussed, a method of accountability and oversight is vital to the success of community based ART delivery models. Not only are these systems necessary to prevent theft and ensure consistent treatment, but they are also required for any concrete policy to be effectively proposed and approved by international grant partners and the GRZ. The logistical details of these accountability systems are still being discussed, however anecdotal evidence from CIDRZ indicates that their usage of checklists and nurse supervisions are proving effective. Once the study has been released, we will have access to more data and will be able to make a more informed decision.

However, there are also a number of developments in the Zambian health sector that could provide a strong platform through which nationwide systems of accountability for community based health delivery could be scaled up. Among these developments is the future release of the 2017 E-Health strategy, created by the MoH. The E-Health strategy outlines a system for keeping electronic patient records, ensuring supply chain strength through technology, and other ways that technology can be integrated within service delivery strategies (Republic of Zambia Ministry of Health, 2017). All of this new infrastructure could be expanded and applied to the community delivery model, which would enhance the abilities of community health workers to monitor ‘expert patients’ while reducing the monitoring workload. A very similar E-health platform has been used to monitor community health strategies in South Africa. These efforts have been very successful, and can potentially serve as an example when implementing these systems in Zambia.⁵⁰

In addition to the E-Health strategy, the forthcoming community health strategy could serve as additional infrastructure to create a robust platform for community based ART service delivery. The systematic pay rolling of CHWs, outlined in the community health strategy, will result in more stable and consistent patient care at the health facility level. Although the specifics of the community health strategy have not been released officially, it will undoubtedly create greater predictability in service delivery and make a national rollout of community based service delivery even more feasible. Throughout the course of discussions with various stakeholders who work with the CAG model in Zambia, we have

⁵⁰ Personal communication with USAID Discover- Health, Director

discovered that the forthcoming health policy will create an environment that is extremely conducive to implementing a CAG model on a nationwide scale. Thus, we recommend that stakeholders in the country recognize this development and proactively put the policy to work for community based models of care.

The Future of the HIV Epidemic in Zambia

Zambia's reaction to the staggering scale of the HIV epidemic in their country has been relatively successful. The coordinated efforts among the Ministry of Health, international aid community, and the people of Zambia have proven to be effective on multiple fronts and have undoubtedly saved millions of lives. The state of the epidemic must change, however, from a reactionary basis to a more sustained, long term approach that will carry the country into the next decade free of the burden of having to achieve epidemic control. Considering the changing geopolitical global health climate, the inevitable exacerbation of the health worker human resource crisis due to UTT, and the increasingly large demand of ARVs for PLHIV, Zambia is an ideal candidate for the large-scale rollout of community based ART service delivery. The country cannot sustain its current approach, nor can the international aid community. It is our recommendation that the Ministry of Health, in cooperation with implementing partners in the Zambia HIV technical working group take action to nationally roll out a community based ART service delivery model. We assert that this rollout will aid Zambia in realizing its goal of achieving epidemic control, in a sustainable manner, and ending the scourge of HIV/AIDS in sub-Saharan Africa.

Limitations

Although we were able to assess the viability of community based ART delivery models in Zambia, evaluate barriers to implementation and identify prevalent disconnects at implementing stakeholder levels, our research did face limitations which restricted the extent of our findings. First, due to timing constraints, the majority of our interviews were based in Lusaka, the capital city of Zambia. If we were in Zambia just a few more months, we would have been able to visit a rural community where a CAG model had been implemented. Since this was not feasible, we were unable to gather information relating to the direct experiences, both positive and negative, of individuals that are participating members of CAGs. Additionally, we were unable to personally interview health facility staff in rural clinics that participate in carrying out and supervising CAGs. Furthermore, due to resource constraints we were unable to carry out any qualitative data collection in order to directly assess the concrete viability of a CAG model in Zambia and were thus restricted to quantitative methods of research.

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