Case for Investment in the Health Workforce to Achieve HIV Goals: Lessons Learned from Uganda

HRH2030: Human Resources for Health in 2030

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Contents

Acronyms

ART	antiretroviral therapy
CCLAD	community client-led ART delivery
CHEW	community health extension worker
CHW	community-based health worker
FY	fiscal year
GoU	Government of Uganda
iHRIS	Open Source Health Workforce Information Solutions
HTS	HIV testing services
HIV	human immunodeficiency virus
HRH	Human Resources for Health
MOF	Ministry of Finance
MOFPED	Ministry of Finance, Planning and Economic Development
MOH	Ministry of Health
MOPS	Ministry of Public Service
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PLHIV	people living with HIV
UNAIDS	Joint United Nations Programme on HIV/AIDS
VMMC	voluntary medical male circumcision
WHO	World Health Organization
WISN	Workload Indicators of Staffing Need

Acknowledgments

Executive Summary

Developing countries, particularly those in sub-Saharan Africa, have made significant progress toward achieving epidemic control of HIV. To build on these gains and achieve global 95-95-95 targets by 2030, strategic investments in the HIV workforce are needed to overcome health workforce shortages and technical capacity gaps, while ensuring quality HIV service delivery.

While Uganda is on track to meet 90-90-90 targets by 2020, the country faces several human resources for health (HRH) and financing constraints to scaling-up HIV services. Some of the health workforce challenges include inadequate skills mix, maldistribution, and a 36 percent vacancy rate in public facilities. Increasing domestic spending on health is constrained because of slowed economic growth, poor tax effort, and other issues; currently, most of HIV financing in the country comes from external funding sources. Although the majority of health workforce funding comes from domestic resources in Uganda, the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) provides significant HRH financial support to fill acute shortages and capacity gaps.

Due to these constraints and the need for greater shared financial responsibility for HIV, the HRH2030 program, funded by the U.S. Agency for International Development (USAID) through PEPFAR, assessed the capacity and willingness of the Government of Uganda (GoU) to make more strategic investments in facility- and community-based HRH for HIV. Specifically, HRH2030 sought to answer the following questions:

1. How much can the GoU increase investment in the overall and HIV-specific health workforce for 2016 to 2020?
2. What are the political and structural barriers and enablers to the government increasing their investment in HRH as a response to the increasing need for HIV?

To answer these questions, HRH2030 conducted an HIV workforce cost, fiscal space, and political economy analysis that included a literature review and interviews with 52 stakeholders. For more information on how to conduct these analyses, see www.hrh2030program.org/investmentcase. The cost analysis estimated how many facility- and community-based health workers (CHWs) are needed and the corresponding salary/stipend costs for reaching national HIV targets, including 90-90-90. We analyzed costs for HIV treatment under two service delivery model scenarios: current (2016) antiretroviral therapy service delivery models versus an efficient model that accounts for a national roll-out of differentiated care models. To account for uncertainty in some inputs - such as average salary costs, by cadre, in the private sector and the amount of time needed to deliver specific HIV services, by cadre – we conducted sensitivity analyses that examined how changes to these inputs affected total costs. The fiscal space analysis estimated the amount of funding that may be available for HIV HRH salaries from the government and PEPFAR from 2016 to 2020 and it considered two scenarios for government funding: constant funding levels from 2015 to 2020 and increased funding in line with the government's HRH recruitment plan.

The cost analysis revealed that an estimated $20.3 million is needed in 2020 for select facility- and community-based HRH salaries to reach the national HIV targets under 2016 HIV treatment models. If current service delivery models continue as is, the HIV HRH funding gap for both facility-based and CHWs could be as high as $6 million in 2020, assuming constant HRH funding

support from the government and PEPFAR. CHWs face some of the largest funding gaps because, currently, donors exclusively fund stipends for CHWs supporting HIV.

If the government met its recruitment targets, the funding gap for facility-based HRH for HIV would decrease, but this funding scenario may not be realistic due to poor short-term macroeconomic projections and limited political will to invest in HRH. For example, findings from the political economy analysis reveal that the government perceives the health workforce as inefficient more than underfunded due to high absenteeism, and their priorities in energy, infrastructure, and other sectors are perceived to have more value for money than the health sector. There is not enough evidence that shows how investment in HRH improves productivity and employment, leading to economic growth.

However, differentiated care models that change the frequency of facility visits and the types of laboratory monitoring conducted by patient groups could save health worker time and funding for HIV. For example, an estimated $1.7 million alone in HIV HRH salary costs could be saved in 2020 if the country rolls out differentiated care models nationally and maximizes efficiency under these models.

Increasing the investment in HRH and improving efficiency in HIV service delivery are essential to reach national HIV goals and to sustain achievements. The analysis suggests there are financial and political constraints to increasing investment in HIV HRH in the short term, but national roll-out of differentiated care models for HIV treatment could improve efficiency, lowering the average HRH cost per patient.

Based on these and other findings, HRH2030 recommends the following:

- Focus on the efficient use of facility-based HRH for HIV within the scale-up of differentiated care models, as outlined in the new antiretroviral therapy (ART) guidelines.
- Explore how the private sector could provide more HIV services to alleviate the burden on HRH in the public sector for providing HIV services.
- Consider how to integrate the community-based HIV workforce into the government HRH structures, including integration with the proposed new community health extension worker (CHEW) cadre to ensure sustainability of contributions for required HIV services.
- Develop and implement a plan for the government to take on the required additional HRH currently being supported by PEPFAR and other donors to maintain HIV services, working with the Ministry of Finance, Planning, and Economic Development; Ministry of Public Service; Ministry of Health; and other stakeholders.

Additional analyses are also needed, including:

- Conduct a feasibility assessment to examine how facilities can maximize the use of existing staff, ensure productivity, and hire additional workers, as needed — including CHW cadres supporting HIV — to realize projected HRH efficiency gains from differentiated models of care.
- Analyze how differentiated care models and introducing CHEWs affects health worker requirements and costs for HIV services.
- Analyze other potential HRH efficiency gains by possibly improving HRH productivity or additional task sharing.

- Estimate the economic and social impacts of investing in facility- and community-based HRH in Uganda, which civil society groups and the Ministry of Health (MOH) can use to advocate for more strategic investment in the health workforce, particularly for HIV service delivery.

The analysis in Uganda has several implications for other countries. Many countries probably face funding gaps for HRH that jeopardize the achievement of national and global HIV targets. Like Uganda, countries have limited fiscal space for health, including for HRH, and ministries of finance may be unwilling to invest in the health workforce given concerns of a rising wage bill. In these cases, an evidence-based HIV workforce investment case will help them better understand the planning requirements and convince key stakeholders to make more strategic investments in HRH for HIV. The type of strategic investment required will vary by country. However, similar to Uganda, other countries may need a multi-pronged approach for more strategic investment in the HIV workforce.

Introduction

Developing countries, particularly those in sub-Saharan Africa, have made significant progress toward achieving epidemic control of HIV. As of June 2017, 20.9 million people accessed antiretroviral therapy (ART), representing a large increase from just 7.7 million in 2010. As the world's most affected region—with more than half of the total number of people living with HIV (PLHIV) globally—eastern and southern Africa has made massive gains toward the Joint United Nations Programme on HIV/AIDS (UNAIDS) 90-90-90 targets for identification, treatment, and viral suppression. The number of people on ART in the region nearly doubled from 2010 to 2016, reaching over 10 million people. Through rapid scale-up of ART, eastern and southern Africa also experienced a 62 percent decline in AIDS-related deaths from 2004 to 2016.[1] Despite these gains, challenges remain to prevent losses along HIV prevention and treatment cascades.

Stagnant funding for HIV is one of the largest challenges for sustaining the HIV response. UNAIDS estimates that $26.2 billion is needed annually to achieve global HIV targets. As of 2016, international and domestic resources for HIV in low- and middle-income countries amounted to $19.1 billion.[2] Although domestic investment for HIV increased by 11 percent per year between 2006 and 2016, the rate of this increase leveled off to 5 percent in 2017 and countries remain reliant on external funding for HIV, which is expected to decline in the coming years.[3]

International donors, such as the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), are working with country programs to ensure the sustainability of the HIV response. They are working in partnership to undertake immediate, near-term, and longer-term critical actions to ensure that the appropriate enabling environment, systems, services, and resources are in place for epidemic control. As part of this effort, countries are attempting to mobilize domestic resources for HIV by increasing government funding of HIV and/or improving efficiency in HIV programs.[4]

Strategic investment in the HIV workforce is a large component of the resources required to scale-up high-quality HIV services to achieve the 90-90-90 targets. The rapid expansion in patient volumes over the past decade has resulted in insufficient numbers of skilled health workers in high HIV prevalence areas and within key facilities for HIV services. These HIV workforce constraints are part of broader human resources for health (HRH) constraints in developing countries, including a shortage of skilled health workers, inequitable distribution of HRH, and health workers' poor performance and lack of motivation. Worldwide, the HRH shortage is estimated at over 4 million workers and projected to increase to a deficit of 18

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[1] Joint United Nations Programme on HIV/AIDS (UNAIDS). (2017). *Fact sheet - Latest statistics on the status of the AIDS epidemic.* Available at: http://www.unaids.org/en/resources/fact-sheet.

[2] Kates, J. and Wexler, A. (2017). *Donor Government Funding for HIV in Low- and Middle-Income Countries in 2016.* UNAIDS and The Kaiser Family Foundation. Available at: http://www.unaids.org/en/resources/documents/2017/20170721_Kaiser_donor_funding_HIV_LMIC_2016.

[3] Joint United Nations Programme on HIV/AIDS (UNAIDS). (2017). *Fact sheet - Latest statistics on the status of the AIDS epidemic.* Available at: http://www.unaids.org/en/resources/fact-sheet.

[4] PEPFAR. (2017). *Strategy for Accelerating HIV/AIDS Epidemic Control (2017-2020).* Available at: https://www.pepfar.gov/documents/organization/274400.pdf.

million workers by 2030.[5,6] Sub-Saharan Africa faces some of the most severe HRH constraints; density of skilled health professionals is estimated to be just 12.8 health workers per 10,000 population.[7]

Given these HRH constraints and the need for greater shared financial responsibility for HIV, it is critical to understand government capacity and willingness to increase investments in HRH for HIV. In response to this need, HRH2030 program developed a methodology to analyze investment needs for the HIV workforce and they applied it in Uganda. Through this study, HRH2030 aimed to answer the following research questions:

1. How much can the government of Uganda (GoU) increase investment in the overall and HIV-specific health workforce for 2016 to 2020?
2. What are the political and structural barriers and enablers to the government increasing investment in HRH as a response to the increasing needs for HIV?

For the first research question, HRH2030 conducted a fiscal space and cost analysis to estimate HIV HRH resource requirements and funding available from all sources from 2016 to 2020. For the second research question, HRH2030 conducted a qualitative assessment of the political and structural barriers and enablers to increased government investment in HRH for HIV. More information on the methodological approach is available in a separate methodological manual and in the methods section of this report.

The first section in this report is a background of the current HIV epidemic, health financing, and health workforce situation in Uganda. The second section presents an overview of the methodology applied in Uganda. The third, fourth, and fifth sections describe results from the cost, fiscal space, and political economy analyses, respectively. The sixth section discusses implications of the analytical findings and potential recommendations for financing the HIV workforce in Uganda.

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[5] Joint Learning Initiative. (2004). *Human Resources for Health: Overcoming the Crisis.* Cambridge: Harvard University Press.
[6] Limb, M. (September 22, 2016). "World will lack 18 million health workers by 2030 without adequate investment, warns UN." *BMJ.*
[7] World Health Organization. (2018). *World Health Statistics data visualizations dashboard.* Available at: http://apps.who.int/gho/data/node.sdg.3-c-viz?lang=en.

Background

Uganda, a low-income country in East Africa, has a gross domestic product of $580 per capita (current 2016 U.S. dollars).[8] While Uganda experienced rapid economic growth, averaging about 7 percent annually in the 1990s and early 2000s, economic growth has slowed in recent years because of adverse weather, unrest in neighboring South Sudan, and other issues. As a result, economic growth in fiscal year (FY) 2016/17 was only 3.5 percent.[9] In addition to a slowdown in economic growth, Uganda continues to face challenges in improving health outcomes. Uganda has a high burden of HIV, dependency on donor funding for health, and gaps in the health workforce. However, the country has some positive trends; for example, Uganda is on track to meet 90-90-90 targets by 2020 through the rollout of the new Test and Start guidelines, where all people living with HIV are eligible to initiate ART upon diagnosis.

Progress Toward Epidemic Control

Uganda's HIV prevalence rate is 6.2 percent. The HIV epidemic varies geographically in the country, with the Central, Mid-North, and Southwestern regions the worst affected. Adult HIV prevalence rates in these regions exceeds 7 percent.[10] The particularly high HIV prevalence rate among key and priority populations includes female sex workers (33 to 37 percent prevalence rate), men who have sex with men (13.7 percent), fisher folk (14 to 20 percent), prisoners (12 percent), and uniformed police (10 percent).[11]

With support from PEPFAR; the Global Fund to Fight AIDS, Tuberculosis and Malaria; and other donors, Uganda has increased the availability of HIV prevention, outreach, and treatment services, and made significant progress toward epidemic control. Following 2016 World Health Organization (WHO) guidelines, which recommends initiation of ART for all people identified as living with HIV, the GoU developed new ART guidelines in October 2016 and is currently rolling out Test and Start. By the end of 2016, an estimated 74 percent of PLHIV knew their HIV status and 67 percent of PLHIV (940,000 individuals) were receiving ART.[12] A high percentage of those on ART in Uganda are virally suppressed; according to the Uganda Population-Based HIV Impact Assessment (PHIA) estimates, nearly 60 percent of all PLHIV are virally suppressed.[13] Given this success in Uganda, PEPFAR shifted focus to the highest-burden and highest-yield districts, beginning with their Country Operational Plan for 2016.[14]

Aligned with the government's new ART guidelines, PEPFAR supports new and innovative service delivery models that provide differentiated care to HIV patients, such as multi-month scripting, and community-based management of stable ART patients (see Exhibit 1). These differentiated care models vary the frequency of clinical assessments, drug refill visits, and viral

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[8] World Bank. (2016). DataBank. Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD.
[9] World Bank. (2017). *World Bank in Uganda: Overview.* Available at: http://www.worldbank.org/en/country/uganda/overview.
[10] Ibid.
[11] PEPFAR. (2016). *Uganda Country Operational Plan 2016: Strategic Direction Summary. January 2017.* Washington, DC: PEPFAR.
[12] UNAIDS. (2017). AIDS info Database. Available at: http://aidsinfo.unaids.org/.
[13] The PHIA Project. (2017). Uganda Population-Based HIV Impact Assessment: Summary Sheet: Preliminary Findings. Available at: http://w9ww.afro.who.int/sites/default/files/2017-08/UPHIA%20Uganda%20factsheet.pdf.
[14] PEPFAR. (January 2017). Uganda Country/Regional Operational Plan 2016: Strategic Direction Summary. Washington, DC: PEPFAR.

load monitoring, based on different categories of patients. ART differentiated care models aim to improve outcomes, such as retention in care, while maximizing the efficient use of human and financial resources. For instance, by managing stable patients at the community level and having fewer visits to facilities, health workers may be able to focus their attention on severely ill patients and clients that are newly initiated on ART.

Exhibit 1. Differentiated ART Models in Uganda

Frequency of...	Stable Patients*	Complex or New Patients	Children	Pregnant and Breastfeeding Women
Facility-based clients				
Clinical assessments	Every 6 months	Monthly for the first 3 months, then at 6, 9, and 12 months	Every 3 months	4 antenatal care visits (bi-monthly), 8 post-natal care visits
Drug refills	Every 3 months	Monthly for the first 3 months, then at 6, 9, and 12 months	Every 3 months	At every clinic visit
Viral load testing	Annual	One month after enhanced adherence counseling	Every 6 months	Annual and at antenatal care 1, irrespective of when last viral load test was done
Community-based clients				
Clinical assessments	Every 6 months	N/A	N/A	N/A
Drug refills	*Community drug distribution point:* Every 3 months *Community client-led ART delivery (CCLAD):* Monthly, rotated visits among 6 members of group	N/A	N/A	N/A
Viral load testing	Annual	N/A	N/A	N/A

*Uganda defines stable patients as adults on ART for more than 12 months, who are virally suppressed with no concurrent illness or co-morbidity, and have demonstrated good adherence.

Health Workforce Gaps for HIV

Several workforce assessments have revealed maldistribution of health worker cadres and HRH shortages in Uganda. The 2015 HRH audit estimated a 36 percent net vacancy rate nationally, with gaps ranging from 0 to 71 percent (see Exhibit 2).[15] Evidence from a national Workload Indicators of Staffing Need (WISN) assessment in 2012 highlighted inadequacies of the existing staffing norms in public sector facilities, particularly in health centers III and IV.[16] All three types

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[15] Uganda Ministry of Health. (2015). *Human Resources for Health Audit Report*. Published by the USAID Strengthening Human Resources for Health Project. Kampala, Uganda: IntraHealth.

[16] Namaganda, G., Oketcho, V., Maniple, E., and Viadro, C. (2015). "Making the transition to workload-based staffing: using the Workload Indicators of Staffing Need method in Uganda." *Human resources for health*. Aug 31 2015;13:89.

of health centers had nurse and midwife shortages, whereas all facilities were overstaffed with nursing assistants. General hospitals and health center IVs had significantly fewer doctors than needed, but more than adequate staffing of clinical officers. Workload pressure was highest in health centers III and IV.[17]

Exhibit 2. Percentage of Vacant HRH Posts
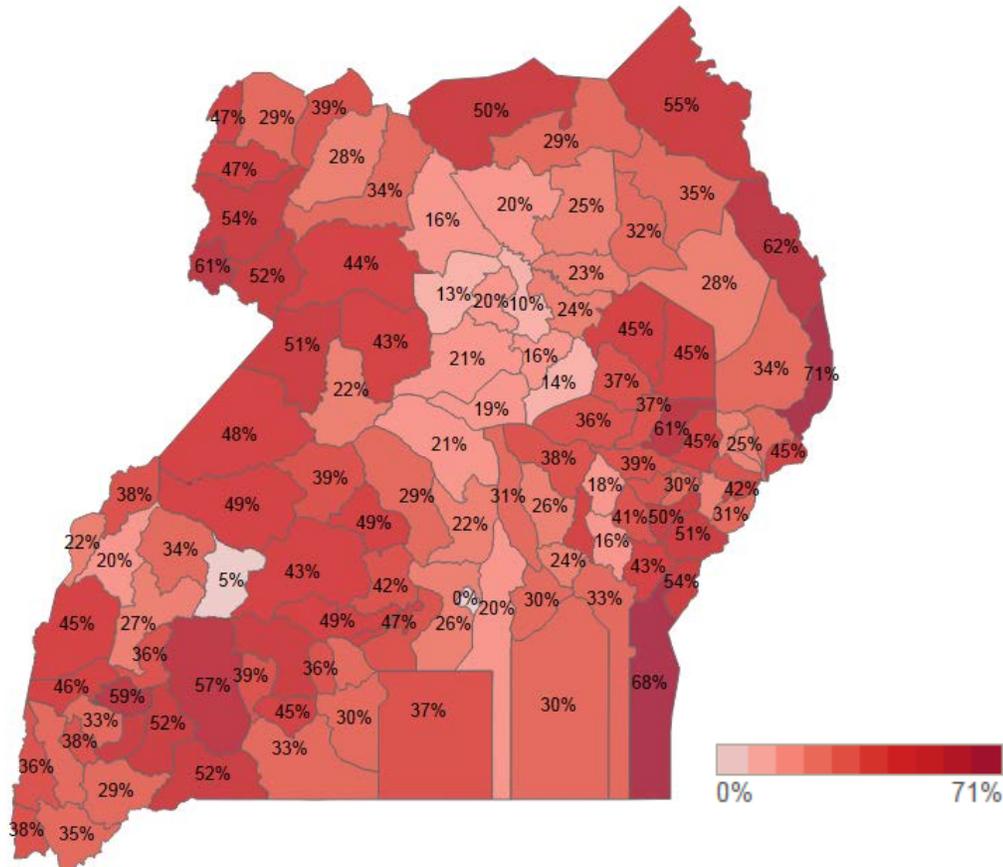
PEPFAR supported another WISN assessment in late 2016 to determine staffing needs to reach HIV targets. Health centers III and IV had the largest shortages of critical cadres needed for HIV care, including nurses, dispensers, and laboratory technologists; whereas, general hospitals had adequate staffing to deliver HIV services. Certain cadres needed for HIV care were unevenly distributed. Doctors were adequately staffed or overstaffed in general hospitals, however, for HIV services, they were understaffed in health centers III and IV.[18]

In response to these health worker shortages, facilities informally employ task shifting and sharing among certain cadres, with shortages of clinical staff driving task shifting to community-based health workers (CHWs). These CHWs for HIV include linkage facilitators, expert clients, volunteers, mentor mothers, and village health teams. Nearly half of the HIV tasks are allocated

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[17] Ibid.
[18] U.S. President's Emergency Plan for AIDS Relief (PEPFAR). (December 2016). *PEPFAR Rapid Site-Level Health Workforce Assessment Protocol. Unpublished.* Washington, DC: PEPFAR.

to these workers because of task shifting.[19] These tasks include triage, client registration, tuberculosis screening, ARV dispensing services, and adherence counseling. The GoU has identified community HIV testing services (HTS) and mobilization of village health teams to improve uptake and linkage to care and treatment services as opportunities to engage the community health workforce further in HIV service delivery.[20]

In addition to health worker shortages, other HRH challenges in Uganda include attrition, absenteeism, low staff morale, and poor productivity. Staff attrition is a significant issue in facilities and most facilities are not recruiting replacements effectively: of the facilities that reported they had lost a staff member in the last six months, 59 percent of those positions had not been filled.[21] Assessments on HIV provider productivity and efficiency revealed highly variable provider productivity and unexplained provider absences.[22] To address increasing patient volumes, providers must maintain a high level of productivity. Many health workers are unmotivated and are not engaged in their work, which may be caused by increased workloads due to staff shortages and ineffective staff recognition and reward systems.[23]

As Uganda rolls out Test and Start and rapidly expands access to HIV services, the government needs to address health workforce challenges that may hinder the rapid scale-up in HIV service delivery toward the 90-90-90 targets. While Uganda improved the reach of HIV service delivery by expanding and decentralizing care and treatment services to health centers II and III levels, significant percentages of staff at health center II and III are not adequately trained in HIV and these facilities do not have the capacity to handle the increasing patient volumes.[24] For example, a Service Availability and Readiness Assessment, conducted in 2013, highlighted limited capacity for HIV services in health centers II and III. Nearly all national and general hospitals and health centers IV were able to offer HIV care and support, whereas only 71 percent of health centers III and only 33 percent of health centers II could offer these services.[25]

Health Financing Landscape

Approximately 10.2 percent of GoU spending is for health, which falls short of the Abuja Declaration target of allocating 15 percent of the government budget to health. Further, government health spending represents just 23.9 percent of total health expenditure. Most of health expenditures are out-of-pocket payments (64.8 percent); external financing sources account for 28.6 percent of total health expenditure.[26]

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[19] Ibid.
[20] Uganda AIDS Commission. (2015). *National HIV and AIDS Strategic Plan 2015/2016-2019/2020.* Kampala: Uganda AIDS Commission.
[21] U.S. President's Emergency Plan for AIDS Relief (PEPFAR). (December 2016). PEPFAR Rapid Site-Level Health Workforce Assessment Protocol. *Unpublished.* Washington, DC: PEPFAR.
[22] Wittcoff, A., Furth, R., Nabwire, J., and Crigler, L. (2010). *Baseline Assessment of HIV Service Provider Productivity and Efficiency in Uganda. Technical Report.* Published by the USAID Health Care Improvement Project. Bethesda, DC: University Research Co., LLC (URC).
[23] Ibid.
[24] Uganda AIDS Commission. (2015). *National HIV and AIDS Strategic Plan 2015/2016-2019/2020.* Kampala: Uganda AIDS Commission.
[25] World Health Organization (WHO). (2013). *Uganda Services Availability and Readiness Assessment 2013.* Geneva: WHO.
[26] African Strategies for Health. (2016). *Health Financing Profile: Ugand*a. Available at: http://www.africanstrategies4health.org/uploads/1/3/5/3/13538666/country_profile_uganda_-_us_letter.pdf.

The public health sector is facing large funding gaps. In the FY 2017/18 Health Sector Ministerial Policy Statement, funding for health is expected to decrease in absolute amounts and as a percentage of government spending from FY 2016/17 levels. However, much of the decrease is because several development projects were completed. The local government budget is expected to increase from FY 2016/17 to 2017/18, with most of the increase for wages.[27]

Donors fund most of the HIV response in Uganda. Between 2007 and 2013, an estimated 90 percent of funding for Uganda's HIV response came from development partners, with PEPFAR providing the largest contributions.[28] Uganda's National HIV and AIDS Strategic Plan for 2015/16 through 2019/20 is estimated to require $3,786 million to implement across all five years, with HIV care and treatment accounting for 55 percent of the total costs. The GoU has committed to finance 26 percent of the projected National Strategic Plan costs and PEPFAR commitments are 43 percent of the total cost. This leaves an estimated funding gap of $918 million.[29]

While most of the health workforce is funded through domestic sources in Uganda, PEPFAR provides significant HRH financial support to Uganda to fill acute shortages and capacity gaps in the public and private not-for-profit sectors. This includes funding for pre-service education, in-service training, direct salary support, top-up payments, allowances, and other HRH costs.

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[27] Civil Society Budget Advocacy Group (CSBGAG). (2017). CSOs Position Paper on the Health Sector Ministerial Policy Statement FY 2017/18. Available at: http://csbag.org/wp-content/uploads/2017/04/CSOs-Position-Paper-on-the-Health-Sector-Ministerial-Policy-Statement-FY-2017-18.pdf.
[28] PEPFAR. (January 2017). Uganda Country/Regional Operational Plan 2016: Strategic Direction Summary. Washington, DC: PEPFAR.
[29] Uganda AIDS Commission. (2015). National HIV and AIDS Strategic Plan 2015/2016-2019/2020. Kampala: Uganda AIDS Commission.

Methods

To assess the GoU's capacity and willingness to strategically invest in the health workforce to achieve national HIV targets, the HRH2030 program conducted a mixed-method analysis to generate evidence on financing of the HIV workforce. The analysis involved three main components:

- **Cost analysis:** What are the health workforce salary costs to scale-up HIV services to meet national HIV targets from 2016 to 2020? What are the potential cost savings, if any, if changes are made to HIV service delivery models?

- **Fiscal space analysis:** How much is currently being spent on HIV workforce salaries, and how much funding may be available for HIV HRH salaries from 2016 to 2020? Is this sufficient to meet national HIV targets?

- **Political economy analysis:** What are some of the political and structural barriers and enablers to the GoU increasing funding for HIV HRH?

HRH2030 carried out the analysis in Uganda from October 2016 to October 2017. The methodology used in Uganda can be applied in other countries. For more information on how to adapt the methodology to another country context, please refer to this methodological manual.

Cost Analysis

The HIV workforce cost analysis included estimating the number of health workers, by cadre, needed to deliver HIV services from 2016 to 2020 and the related total salary and stipend costs. The analysis considered the costs of both facility-based and CHWs involved in the direct service delivery of HTS, voluntary medical male circumcision (VMMC), prevention of mother-to-child transmission (PMTCT), and ART (see box). We did not include management and support staff in our analysis.

The cost analysis estimated the salary and stipend costs for the HIV workforce in the public, private not-for-profit, and private for-profit sectors. The analysis also disaggregated cost estimates for PEPFAR-supported HRH in the public and private not-for-profit sectors.

Facility-based HIV workforce costs were estimated by first calculating the number of minutes needed to deliver HIV services to one person, per year, by cadre and intervention (see Exhibit 3). Based on these estimates and the quantity of services to be delivered each year, HRH2030 estimated the number of full-time equivalent (FTE) health workers needed for HIV annually. Weighted average salary and stipend costs, by cadre, were then used to estimate total HRH salary and stipend costs.

> **HEALTH WORKER CADRES IN COST ANALYSIS**
>
> **Facility-based cadres**
>
> - Medical officers (all grades)
> - Clinical officers (all grades)
> - Nursing officers
> - Enrolled nurses and midwives
> - Nursing assistants
> - Lab technologists
> - Lab technicians
> - Lab assistants
> - Pharmacists
> - Dispensers
>
> **Community-based cadres**
>
> - Expert clients
> - Leaders of community client-led ART delivery groups
> - Mentor mothers
> - Linkage facilitators
> - Drama member

Exhibit 3. Formula for Calculating Direct, Facility-based HRH Labor Costs
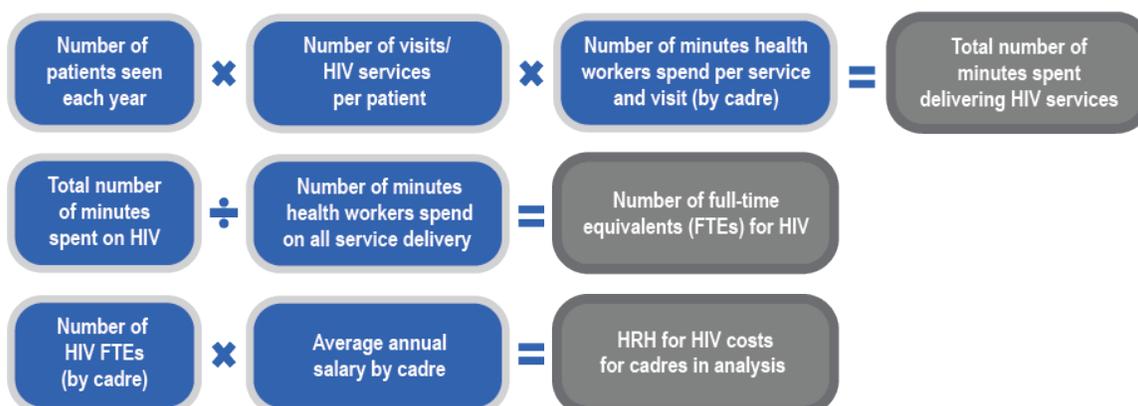
The number of patients seen each year was based on the targeted coverage of HIV services from the National HIV and AIDS Strategic Plan and the AIDS Control Program (ACP).[30] The numbers visiting public, private not-for-profit and private for-profit facilities was based on 2015 District Health Information System2 data where HIV services were provided. The number of visits per patient, per year, by type of HIV service, was based on national HIV guidelines. We developed two scenarios for number of visits per patient for ART; the first scenario assumed current ART guidelines would continue, whereas the second scenario assumed increased efficiency in health workers' time according to the national roll-out of ART differentiated care models under the new ART guidelines, by 2020 (see Exhibit 4). The number of minutes facility-based health workers spend per service and visit (by cadre) was based on a literature review of how much time is required by each type of health worker to deliver HIV services in Uganda (Annex A).[31,32,33,34,35] Given wide ranges in time requirements to deliver services by study, HRH2030 conducted a sensitivity analysis that accounted for the possible range in time it takes each type of health worker to provide HIV services to patients. For CHWs, information on time spent delivering HIV services was collected from consultations with The AIDS Support Organization in Uganda.

[30] Uganda AIDS Commission. (2015). *National HIV and AIDS Strategic Plan 2015/2016-2019/2020*. Kampala: Uganda AIDS Commission.

[31] USAID. (2010). *Baseline Assessment of HIV Service Provider Productivity and Efficiency in Uganda*. Technical Report. Washington, D.C.: USAID.

[32] Shade, S. B., et al. (2016). *Streamlined HIV care is associated with shorter wait times before and during patient visits in Ugandan and Kenyan HIV clinics*. Durban, South Africa: AIDS 2016.

[33] Wanyenze, R. K., et al. (2010). Evaluation of the Efficiency of Patient Flow at 3 HIV clinics in Uganda. Accessed at: https://www.ncbi.nlm.nih.gov/pubmed/20578908.

[34] Alamo, S. T., et al. (2013). Strategies for Optimizing Clinic Efficiency in a Community-based antiretroviral treatment programme in Uganda. Accessed at: https://www.ncbi.nlm.nih.gov/pubmed/22610422.

[35] Were, M. C., et al. (2010). *Creation and evaluation of EMR-based paper clinical summaries to support HIV-care in Uganda*. Indianapolis: Regenstrief Institute, Inc., Indiana University School of Medicine.

Exhibit 4. Assumed Frequency of Visits for ART, by Scenario

Frequency of…	Stable Patients*	Complex or New Patients	Children	Pregnant and Breastfeeding Women
Scenario 1: Current model *(2013 addendum ART + PMTCT guidelines)*				
Clinical assessments	9/year	4/year	9/year	9/year
Drug refills	9/year	4/year	9/year	9/year
Lab monitoring	VL or CD4 – 1/year	VL or CD4 – 1/year	VL or CD4 – 1/year	VL or CD4 – 1/year
Scenario 2: Increased efficiency *(2016 New ART guidelines)*				
Clinical assessments	6/year	2/year	6/year	4/year
Drug refills	6/year	4/year	6/year	4/year
Lab monitoring	VL – 1/year CD4 – 1/year	VL – 1/year	VL – 1/year CD4 – 1/year	VL – 2/year

Both scenarios assume Uganda will meet same government targets in 2020, the same type of health worker and amount of time is spent with a patient per specific service, and that the same percentage of services will be delivered in the public sector.

For facility-based health workers, average salaries by cadre and sector were estimated using publicly available data on HRH salaries. For the public sector, data came from the country's HRH recruitment plan.[36] Salaries in the private not-for-profit and private for-profit sectors were estimated based on small-scale studies and expert opinion on salary differences in the private versus public sectors.[37] Given considerable uncertainty in health worker salaries for the private for-profit sector, HRH2030 conducted a sensitivity analysis based on the salary ranges provided through consultations with experts in Uganda for this sector. Using information on the distribution of health workers and average salaries by type of health worker, we calculated a weighted average salary for medical officers, clinical officers, nurses, lab staff, and pharmacy staff (see Exhibit 5).

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[36] Uganda Ministry of Health. (2016). *National Human Resource for Health Plans for District and Central Institutions 2016/17 – 2018/19*. Kampala: Uganda Ministry of Health.
[37] Uganda Protestant Medical Bureau. (2015). Network Study. Kampala: Uganda Protestant Medical Bureau.

Exhibit 5. Calculated Weighted Average Salaries by Facility-based Health Worker Cadre and Sector (2015 $U.S.)

Cadre	Private For-Profit*	Private Not-For-Profit	Public
Doctors	$8,867 ($7,882–$9,852)	$6,092	$4,730
Nurses/midwives	$1,349 ($1,216–$1,482)	$1,194	$1,990
Clinical officers	$3,319 ($2,945–$3,694)	$3,052	$3,574
Laboratory staff	$2,033 ($1,893–$2,173)	$1,330	$2,335
Pharmacy staff	$4,415	$3,500	$3,494

*Low and high estimates for private for-profit sector based on sensitivity analysis.
Salary calculations for private sector include National Social Security Fund contribution by employers, which is assumed to be 10% of base salary. All data was provided in UGX - we assume 1 UGX= 0.00028 $U.S. We assume real wages stay constant.

For CHWs, total cost requirements were based on the cost per patient, per service, and the number of patients, to interact or be managed by each type of CHWs per year. The cost per patient, per service, was estimated by dividing the annual stipend cost, by cadre, by the number of patients that could be managed by each health worker, per year, accounting for time spent on non-HIV services (see Exhibit 6). The number of patients that can be managed by each health worker per year depends on where the health worker is stationed; therefore, we conducted a sensitivity analysis based on a range of estimates provided to us by one implementing partner. The annual stipend costs by cadre were collected from six PEPFAR implementing partners that support these types of workers. Average stipend costs per CHW, per year, ranged from about $180 per year for peer volunteers to $619 per year for linkage facilitators.

Exhibit 6. Assumptions and Cost per Patient for Community-based Health Workers

Cadre	Number of Patients Managed by One Health Worker Per Year			Percentage of Time Spent on HIV	Stipend Cost Per Patient Per Year
	ART	HTS	VMMC		
CASA/Expert Client	250–300	250–300	N/A	100%	$0.60–0.72
CCLAD Leader	60–100	60–100	N/A	100%	$1.80–3.00
Mentor Mother	100–150	100–150	N/A	50%	$0.75–1.13
Linkage Facilitators	400–500	400–500	200–250	100%	$0.50–0.62
Drama Member	300–350	300–350	500–700	50%	$0.06–0.08

Analysis assumes 70% of ART patients interact with an expert client, all stable patients interact with a CCLAD leader, all pregnant women test at the community level, all PMTCT patients interact with a mentor mother, all new patients diagnosed at the community-level and 25% to 75% of VMMC clients interact with a linkage facilitator, and all patients are exposed to drama members.

Fiscal Space Analysis

The WHO defines fiscal space as "the budgetary room that allows a government to provide resources for public purposes without undermining fiscal sustainability."[38] A fiscal space analysis involves estimating the combined resources that could be mobilized for health, or a particular disease area, across the government, donors, and households. Due to the uncertainty in how households may pay for HIV services and what percentage would go toward paying health worker salaries, the analysis in Uganda focused on what resources the government could mobilize, assuming PEPFAR would provide constant funding for HRH.

The first step in the fiscal space analysis was to estimate baseline funding levels from the government and PEPFAR for HRH salaries and the percentage of this salary support that went toward HIV service delivery. Total HRH salary support by the government was calculated by multiplying the number of health workers employed in the public sector by the baseline average salary cost, and subtracting funding support from donors. PEPFAR is the only donor that funds direct salary support for health workers in Uganda. Baseline PEPFAR investments in these health worker salaries was calculated by multiplying the number of health workers funded by PEPFAR in the public and private not-for-profit sectors by the average salary for each cadre.

The percentage of total salary support that can be allocated specifically to HIV is based on the baseline number of HIV services provided and the amount of time each type of health worker spends with each patient. Baseline HIV achievement was based on the District Health Information System2 and PEPFAR Country Operational Plan data.[39] The sources named above for the cost analysis on the amount of time spent per patient by type of HIV intervention was used in the baseline funding analysis, as well.

Future government funding for the HIV workforce depends on a range of factors (see Exhibit 7). To project future funding levels for the HIV workforce from the government, HRH2030 considered two scenarios: one where funding levels remain constant from 2015 to 2020 and another where funding increased in line with the governments HRH recruitment plan, which also accounts for absorbing some of the current health workers supported by PEPFAR.[40] Across both scenarios, HRH2030 assumed the same proportion of HIV services would be provided in the public sector.

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[38] World Health Organization. (2016). *Health financing for universal coverage: Fiscal space for health*. Accessed August 29, 2017. Available at: http://www.who.int/health_financing/topics/fiscal-space/en/.
[39] PEPFAR. (January 2017). *Uganda Country/Regional Operational Plan 2016: Strategic Direction Summary*. Washington, DC: PEPFAR.
[40] Uganda Ministry of Health. (2016). *National Human Resource for Health Plans for District and Central Institutions 2016/17–2018/19*. Kampala: Uganda Ministry of Health.

Exhibit 7. Factors That Influence Government Funding for the HIV Workforce

Government expenditure
- Projected GDP growth
- Projected revenue generation

Government expenditure on health
- Historical trends in allocation to health sector as % of government spending
- Health spending targets (ex: Abuja 15% of budget) or government commitment/prioritization of health
- Elasticity of government health spending in relation to GDP growth
- Change in prices of health products or services

Government expenditure on HRH
- Historical trends in allocation to wage bill (absolute and as % of health spending)
- Current number of HRH and planned scale-up according to strategic plans
- Projected number of vacancies and new positions to be available each year
- Capacity of training institutions to produce HRH and absorption into public sector
- Changes in wages and compensation package
- Plans and targets for pre-service and in-service training

Government expenditure on HRH for HIV
- HRH time spent on HIV vs. other services (wages)
- Availability of HIV services (integrated vs. stand-alone clinics)
- Number of HIV services vs. other services provided
- Time requirements to deliver HIV services vs. other services
- Type of health workers who provide HIV services

Political Economy Analysis

HRH investment is as much a political issue as it is an economic issue. Any workforce strategies and their accompanying financial plans must be country-based, country-led, and have strong leadership and political commitment. Therefore, it is important to use a political economy analysis to analyze political and administrative barriers and enablers to increasing investment in the overall and HIV-specific health workforce. A political economy analyses seeks to answer why things may happen in a certain context, usually determined through qualitative research methods. A political economy analysis of HRH shifts the focus from what technical solutions are needed to how they can be politically accomplished.

A WHO assessment of the Africa region highlights the main issues and challenges leading to workforce shortages: low levels of funding, a lack of concrete health workforce policies, insufficient training institutions, low motivation and retention, poor management, and inadequate data systems.[41] While the assessment suggests resolving low levels of funding by creating fiscal space, few reasons are offered as to why many countries have not done this. What is needed is a deeper understanding of what factors may sway governments toward investing in HRH.

HRH2030 completed a literature review of the barriers and enablers to government investment in HRH and the specific types of HRH investments that may be needed in Uganda. We

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[41] Awases, M., Nyoni J, Bessaoud, K., Diarra-Nama, A., and Mwikisa, C. (2010). "Development of human resources for health in the WHO African region: current situation and way forward." *Afr Health Monit.* 2010;12:25-7.

conducted initial consultations with in-country stakeholders to understand the key issues and the stakeholders involved in health workforce funding and decision-making.

Following this initial exercise, HRH2030 interviewed 52 participants in Uganda, with each session lasting one to two hours. As this activity falls under implementation research, rather than human subjects research, it did not require IRB approval; however, each interviewee was asked to verbally consent prior to participating in the interview. Participants came from a range of institutions, including national and local government, development partners, implementing partners, civil society, service providers, regulatory bodies, and the private sector.

The initial literature review identified a number of key areas for investment in HRH in Uganda, specifically pre-service training, recruitment, in-service training, retention, and absorption of PEPFAR-supported staff. During stakeholder interviews, participants were asked to identify the specific types of investments needed (e.g., increasing the wage bill to help recruitment and improving housing conditions to increase retention and productivity).

After preliminary validation, these areas of investment were used as probes throughout the political economy analysis interview process. During the interviews, our team focused answers less on the "what" (what investments could improve HRH conditions) and more on the "why" (why or why isn't the government making these investments). Participants were prompted to answer the question — "What is needed for the government to carry out these reforms and make these investments?" — with follow-up questions regarding whether these enablers were in place and who the key players and decision-makers were.

After the interviews were conducted, two HRH2030 team members conducted preliminary "tagging" of notes; after a secondary review, they finalized the code list. From this process, the team identified five high-level themes: expectations, external influence, government capacity, government willingness, and evidence (see Exhibit 8). In addition to coding the interview notes by theme, the HRH2030 team determined if the statements were positive, negative, or neutral.

### Exhibit 8. Codes for the Political Economy Analysis

Theme	Definition
External influence	Pressure put on government—positive, negative, or neutral—by external actors, such as civil society, media, and donors
Government capacity	Technical and financial constraints of the government, whether these arise at the system level (e.g., overall revenue constraints), institution level (e.g., technical expertise within particular ministries), or individual level (e.g., specific units or people)
Government willingness	The level of political will within the government to prioritize and act on HRH issues
Evidence	Types of arguments that could be made to sway government decisions (e.g., understanding the impact of health workers on the economy) and whether such evidence exists
Expectations	Participants predict levels of government funding and future prospects for HRH

Cost Analysis

HIV Targets Used in Cost Analysis

The cost analysis is based on achieving national HIV targets. The numbers to receive ART, PMTCT, VMMC, and HTS each year are the same across scenarios and sensitivity analysis. Exhibit 9 shows the baseline (2015) and targeted (2020) number of services to be provided. Of the 1.3 million people projected to be on ART in 2020, an estimated 52,294 are children. Of the adults on ART, the analysis assumes 90 percent will be virally suppressed by 2020.

Exhibit 9. Baseline and Targeted Number of ART, PMTCT, VMMC, and HTS Services Provided
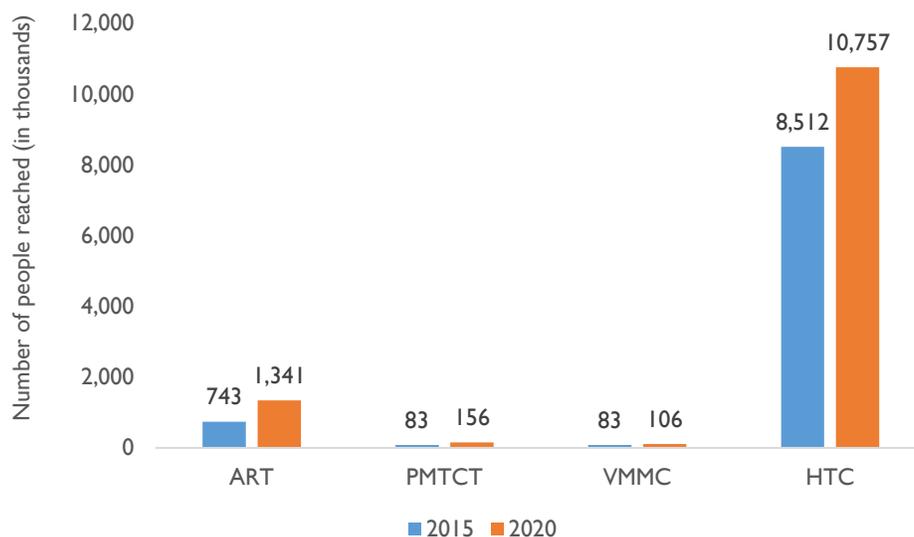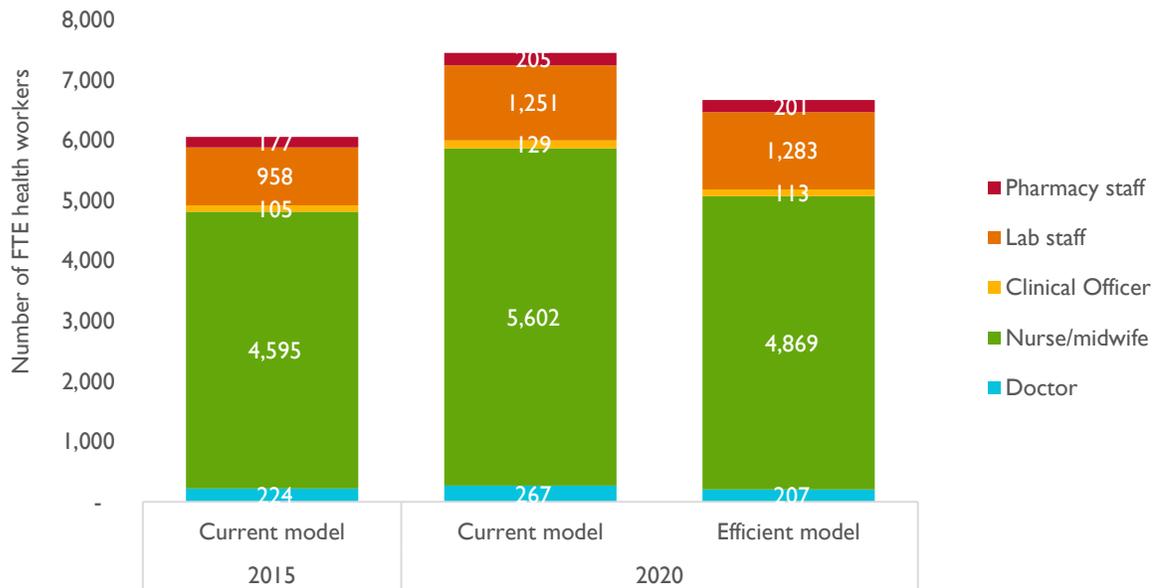

Because the majority of HIV services are provided in the public sector in Uganda, the analysis assumes this trend will continue. For example, the cost analysis assumes an estimated 82 percent of VMMC, PMTCT, and ART patients access these services in the public sector and 71 percent of HTS occurs in public facilities.

Health Worker Needs for HIV

To estimate HRH costs for HIV, we first examined how many health workers are needed exclusively for HIV service delivery. If using median estimates of HRH time requirements to deliver HIV services, the number of facility-based FTE health workers needed to meet HIV targets in Uganda for HTS, VMMC, ART, and PMTCT need to increase from an estimated 6,059 (range: 1,255 to 11,009) in 2015 to 7,455 (range: 1,537 to 13,573) if the current service delivery models remain unchanged (see Exhibit 10). However, under the efficient service delivery model scenario where Uganda rolls out ART differentiated care models nationally, only an estimated 6,674 FTE (range: 1,361 to 12,209) health workers are needed to reach HIV targets. This demonstrates that even if Uganda makes efficiency improvements that reduce the use of facility-based HRH for HIV, additional investment in the health workforce is still needed to reach national HIV targets. The largest need is for nurses, but lab staff require the greatest increase over baseline levels due to the planned scale-up of routine viral load testing to monitor all ART patients.

Exhibit 10. Median Number of FTE Health Workers Needed for HIV Service Delivery, by Scenario and Cadre

		Pharmacy staff
		Lab staff
		Clinical Officer
		Nurse/midwife
		Doctor

Bar chart: Y-axis "Number of FTE health workers" from - to 8,000

	Current model 2015	Current model 2020	Efficient model 2020
Pharmacy staff	177	205	201
Lab staff	958	1,251	1,283
Clinical Officer	105	129	113
Nurse/midwife	4,595	5,602	4,869
Doctor	224	267	207

In terms of community health workforce needs, between 1,071 and 2,158 CHWs are needed exclusively for HIV, depending on how many patients each health worker can manage in a year. Most of the CHW needs (62 to 65 percent) are for CCLAD leaders, followed by expert clients.

Salary and Stipend Costs for HIV

If current service delivery models continue, meeting national HIV targets may require $3.1 million (range: $0.6 to $5.2 million) more in salary support for facility-based HRH time to deliver HIV services (see Exhibit 11). The majority of this investment is needed in the public sector because most people access HIV services in public facilities. If the efficient model that reflects national roll-out of ART differentiated care models were implemented, however, the cost increase for facility-based health worker time to deliver HIV services would be less. A total of $13.6 million (range: $3.1 to $25.1 million) is needed under the efficient model scenario compared with $15.3 million (range: $3.6 to $28.0 million) under the current model scenario.

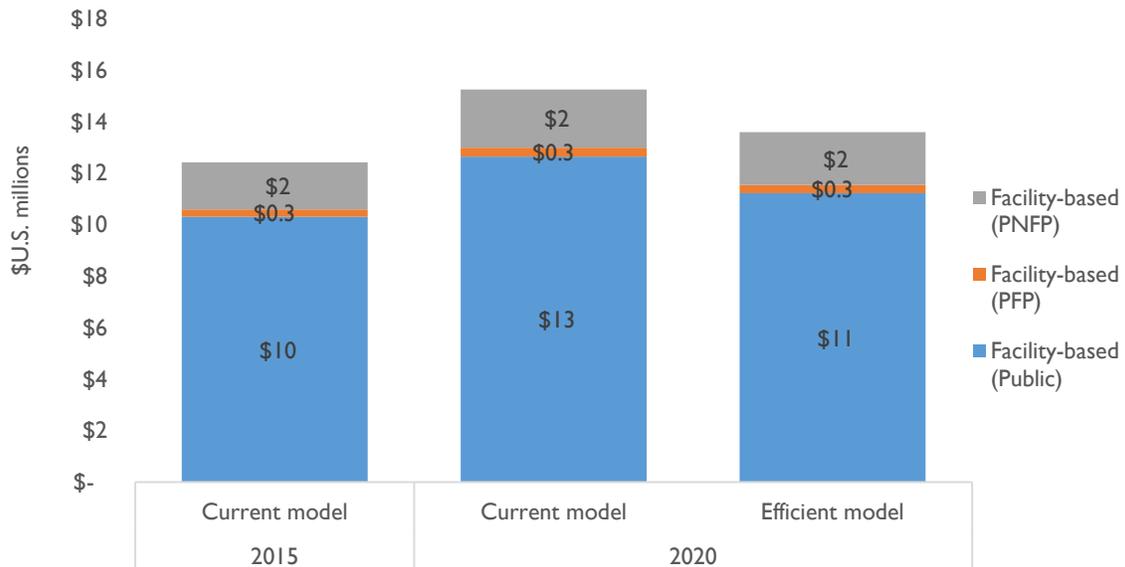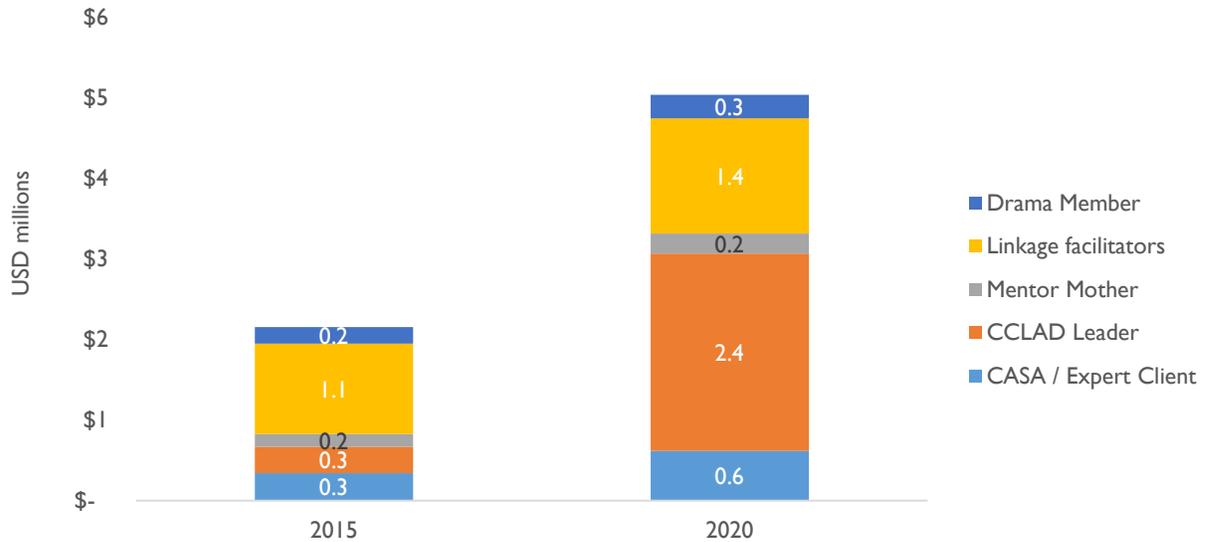## Exhibit 11. Median Facility-based HRH Costs for Providing HIV Services

Exhibit 12 shows the 2020 costs disaggregated by type of facility-based health worker, HIV service, and scenario. In both scenarios, most of the funding needs are for nurses. The percentage of health worker costs needed for ART and PMTCT is significant lower in the efficient model compared to the current model because the efficient model assumes 90 percent of adult ART patients will be stable on treatment and, therefore, will not visit the facility as often compared with the current model.

Exhibit 12. Median Facility-based HRH Costs for Providing HIV Services, by Service, Cadre, and Scenario (2020)
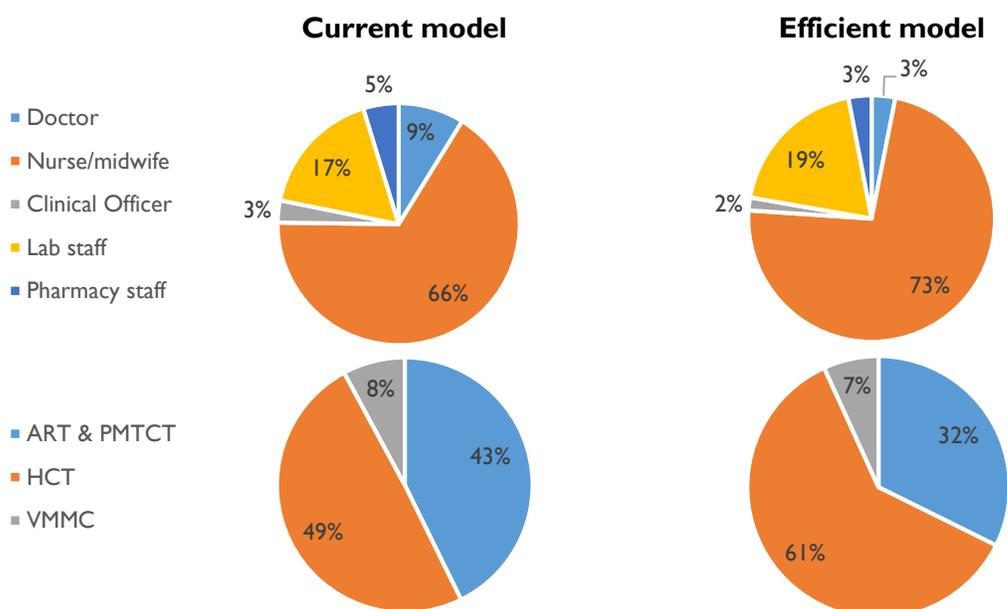
To reach national HIV targets, CHW costs are expected to increase significantly from 2015 to 2020 (see Exhibit 13). Based on the average number of cases managed by each health worker per year, costs are anticipated to more than double from 2015 to 2020 because there will be more stable patients and those patients will be supported at the community level. Specifically, the total cost of stipends for CHWs are predicted to increase from $2.2 million (range: $1.3 to $3.1 million) in 2015 to $5.0 million (range: $3.3 to $6.7 million) in 2020. In 2020, stipend costs are highest for CCLAD leaders and linkage facilitators.

Exhibit 13. Average Community-based HRH Stipend Costs for Providing HIV Services

Legend:
- Drama Member
- Linkage facilitators
- Mentor Mother
- CCLAD Leader
- CASA / Expert Client

2015 values (bottom to top): CASA / Expert Client 0.3, CCLAD Leader 0.3, Mentor Mother 0.2, Linkage facilitators 1.1, Drama Member 0.2

2020 values (bottom to top): CASA / Expert Client 0.6, CCLAD Leader 2.4, Mentor Mother 0.2, Linkage facilitators 1.4, Drama Member 0.3

Y-axis: USD millions

Fiscal Space Analysis

Baseline Expenditure on HRH Salaries and Stipends

In 2015, the number of facility-based health workers in the public, private not-for-profit, and private for-profit sectors was estimated to be 27,771, 21,939, and 6,993. Even though there are more facility-based health workers in the public than public not-for-profit sector, HRH2030 estimates more is spent on HRH salaries in the public not-for-profit sectors because of the differences in the composition of the health workforces and in the average salaries, by cadre (see Exhibit 14).

Exhibit 14. HIV versus Overall Expenditures for Facility-based HRH Salaries (2015)
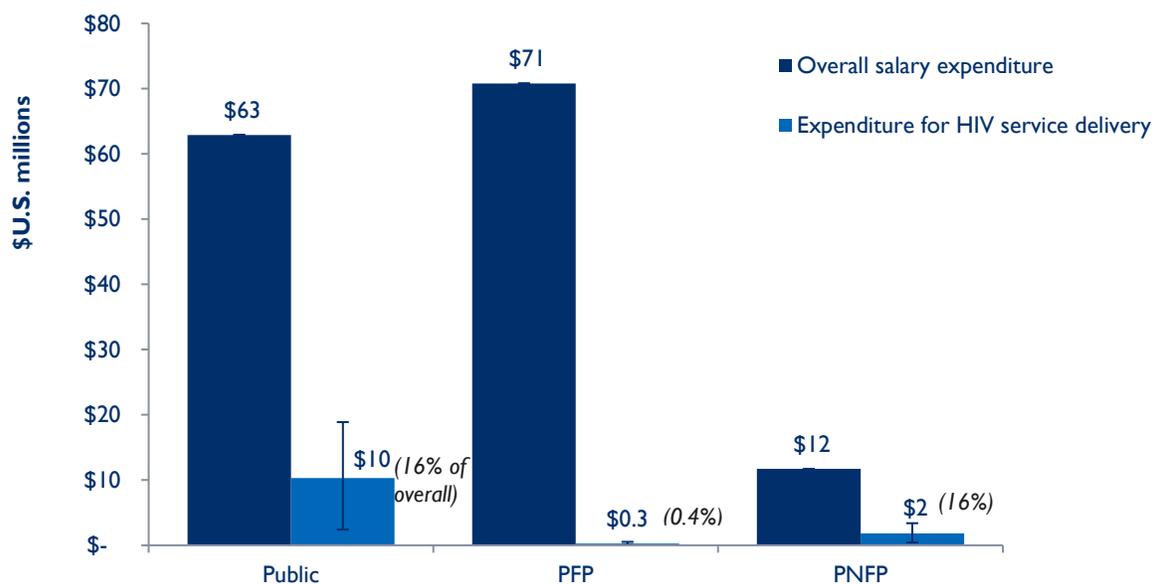
In terms of funding specifically for facility-based health workers providing HIV services, an estimated 16 percent of overall salary expenditure in the public sector was spent on health worker time providing HTS, VMMC, ART, and PMTCT in 2015, assuming the median estimate for the amount of time required to deliver each service. This translates into approximately $10 million (range: $2.4 to $18.9 million) of salary support being spent on facility-based health workers in the public sector for HIV. PEPFAR is estimated to fund about $2.4 million (24 percent) of this salary support in the public sector, whereas the GoU is estimated to fund the remaining $7.6 million.

The HIV expenditure as a percentage of overall HRH salary expenditure in the public not-for-profit sector is 16 percent, the same percentage for the public sector. This is approximately $2 million (range: $0.4 to $3.4 million) being spent on HRH time to provide HIV services in the sector. PEPFAR provides significant salary support ($1.9 million) for health workers in the public not-for-profit sector. The remaining funding for salary support in the sector is through a combination of government and private sources, including funding from households (user fees).

Due to the limited number of HIV services provided in the private for-profit sector in Uganda, expenditure on health workers' time to provide HIV services is relatively low at $0.3 million

(range: $0.1 to $0.5 million), representing just 0.4 percent of total salary expenditure in the sector.

Stipends for CHWs are entirely funded by donors in Uganda. Even government-employed village health teams are volunteers; some receive small stipends from donors for supporting donor-funded service delivery. The overall amount of stipend support going to the more than 180,000 CHWs in Uganda is unknown. However, it is estimated that PEPFAR spent approximately $2.2 million (range: $1.3 to $3.1 million) in stipend support to CHWs in 2015.

## Projections of Resources Available for HRH

The government has a plan for absorbing select PEPFAR-supported health workers and increasing the overall number of facility-based health workers (see Exhibit 15). For absolute numbers, the biggest planned increases are for nursing staff. However, pharmacy staff will have the largest increase in the rate of increase. While the government plans to introduce a formalized CHW cadre — CHEWs — currently, this cadre does not have sufficient funding or concrete plans for introduction.

Exhibit 15. Government of Uganda HRH Recruitment Plan for Select Cadres
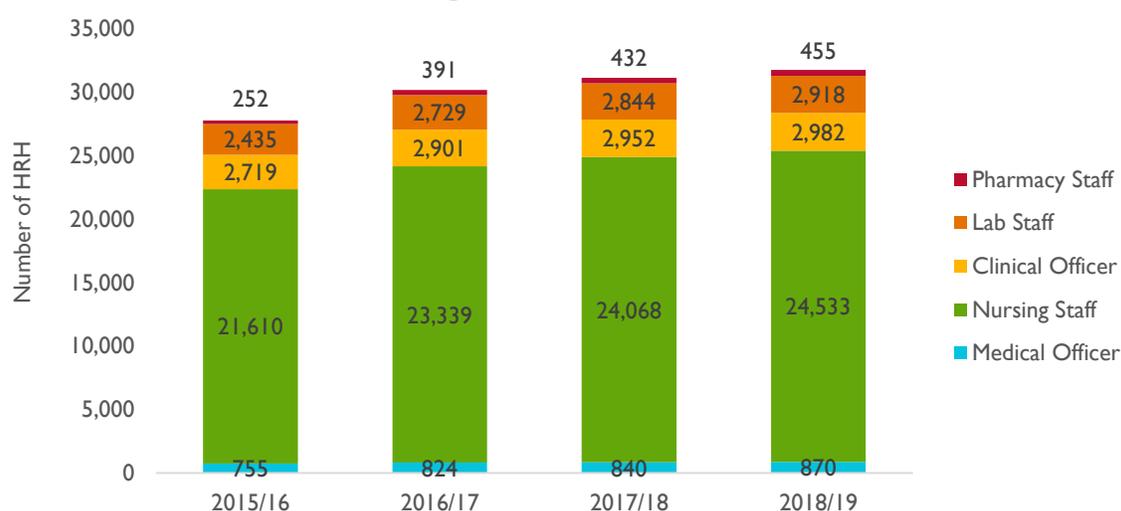
If the government met its recruitment targets, spending on facility-based HRH in Uganda across all sectors could increase to $154 million (see Exhibit 16). This represents a $9 million increase in funding by the government. Assuming that health worker availability to provide HIV services remains constant from 2015 levels, an estimated $14.3 million would be available to support facility-based HRH salaries for HIV service delivery.

Exhibit 16. Facility-based HRH Fiscal Space under Two Scenarios

Total Facility-based HRH

Facility-based HRH for HIV
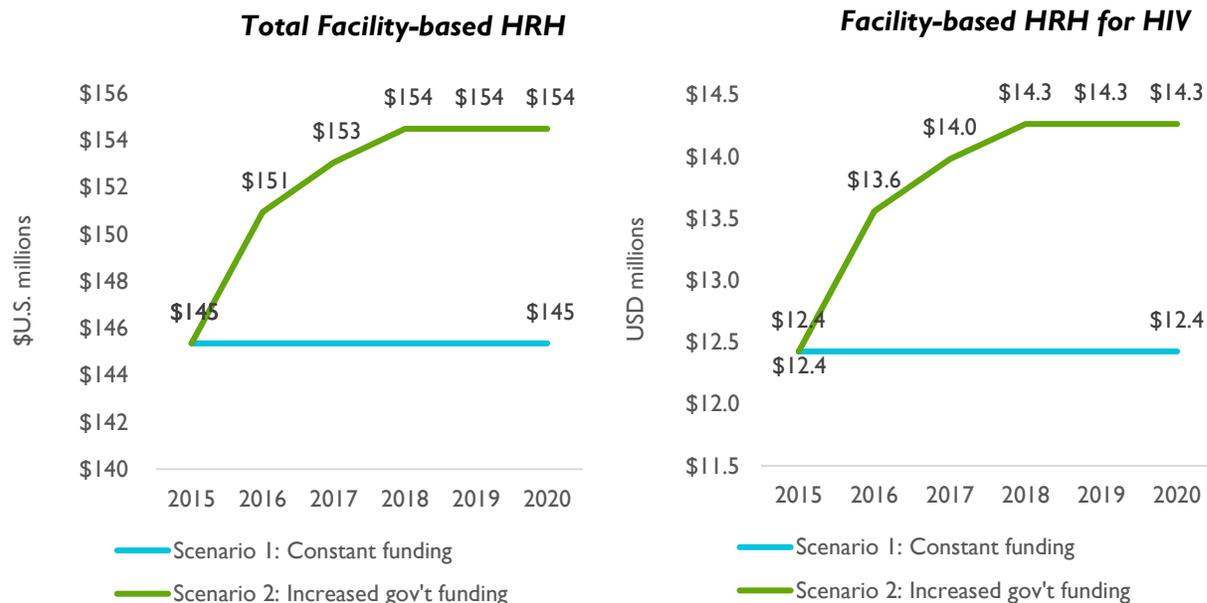
Given slower-than-anticipated economic growth and a 29 percent decrease in health funding from FY 2016/17 to 2017/18 in the National Budget Framework Paper, it may be challenging to meet these HRH recruitment targets and secure additional funding for the health workforce.[42] However, there are also some positive signals for increases in HRH funding. The projected declines in health spending are mainly result from development projects coming to a close; districts expect to receive about $3 million more in funding in FY 2017/18 than in FY 2016/17 for health wages.[43] Further, the International Monetary Fund is projecting that annual real GDP growth will rebound in the near term, possibly allowing for increased spending on HRH if it is prioritized in the government budget.[44] Therefore, even though Uganda faces financial constraints to increasing HRH investment for HIV in the short-term, investing in HRH recruitment may be feasible over a five-year horizon given macroeconomic and other projections.

Projected Funding Gaps for the HIV Workforce

By comparing fiscal space and cost scenarios, we can estimate the funding gap for the HIV workforce. CHEWs actually face the biggest gap, due to their critical role in HIV service delivery and the current lack of government funding for CHWs. Based on this analysis, Uganda can reach its HIV goals only under a scenario where HRH recruitment targets are met, Uganda improves service delivery efficiency through a national roll-out of differentiated HIV treatment models of care, and there is significant increased investment in the community-based health workforce for HIV (see Exhibit 16).

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[42] Ministry of Finance, Planning and Economic Development (MOFPED). (2016). *National Budget Framework Paper FY 2017/18 – 2021/22*. Kampala: MOFPED.
[43] Ibid.
[44] International Monetary Fund. (2017). Article IV Country Report No. 17/206. Available at: https://www.imf.org/en/Publications/CR/Issues/2017/07/12/Uganda-2017-Article-IV-Consultation-and-Eighth-Review-Under-the-Policy-Support-Instrument-45069.

Exhibit 17. HIV HRH Funding Gap in 2020 Based on Median Cost Estimates

HIV HRH financial space scenarios	HIV HRH Cost Scenarios	
	Scenario 1: **Current service delivery models**	*Scenario 2:* **Increased efficiency (ART differentiated care model)**
Scenario 1: **Constant funding levels (all sources)**	Facility-based HRH: $2,827,296 gap Community-based HRH: $2,877,424 gap	Facility-based HRH: $1,167,494 gap Community-based HRH: $2,877,424 gap
Scenario 2: **Increased government funding**	Facility-based HRH: $987,667 gap Community-based HRH: $2,877,424 gap	Facility-based HRH: $672,135 surplus Community-based HRH: $2,877,424 gap

Political Economy Analysis

Overall, the political economy analysis revealed limited government capacity and appetite and enabling environment for increasing an investment in the HIV workforce. Following are the specific issues and potential enablers, described by theme.

Grim Expectations for Future Government Investment in HRH

Generally, participants did not expect government priorities to shift from investments in infrastructure and energy toward health and HRH without significant pressure to do so. Expectations for increasing funding were low; one participant from the Ministry of Finance, Planning and Economic Development (MOFPED) suggested an increase in HRH funding is particularly unlikely, as economic growth projections for the next three years are relatively weak because the country will not see economic benefits from current investments in energy and infrastructure until the medium-term.

Given the prioritization of infrastructure development, some interview participants noted that there are plans to build more health centers III and to upgrade existing facilities, which would require accompanying investments in health workers to staff these facilities. However, in the past, the government hasn't hired HRH at the same pace as they invested in building new facilities, which has exacerbated HRH shortages.

External Influence: Perceptions of Diminished Role of Civil Society Advocacy

Within the context of HRH in Uganda, a number of stakeholders and external influencers play a role in swaying government decision-making. A 2015 case study entitled, *Uganda: Winning Human Resources for Health,* outlines an HRH campaign that won millions of dollars of new funding for health.[45] This campaign brought together a number of stakeholders to unite behind the single goal of increasing resources for staff at health clinics. Research and advocacy groups (such as the Center for Health, Human Rights, and Development [CEHURD]), grassroots activist groups (such as Health Gap), international coalitions (such as the White Ribbon Alliance), and other civil society organizations harmonized their messaging, and used the media and public support to persuade the government to reallocate 49.5 billion Ugandan Shillings to the health sector.

Despite the success of this campaign, and mentions by nearly all participants that civil society advocacy is critical for garnering increased investment in the health workforce, these organizations often conduct budget advocacy work under short-term projects, making it difficult to continue efforts past the end of a project. Additionally, the Public Finance Management Act in 2015 shortened the budget cycle, making the window of opportunity for civil society influence smaller. However, strong local civil society organizations, such as the Civil Society Budget Advocacy Group, have the capacity and power to bring together stakeholders and other groups to generate evidence on the health budget and rally behind a single message for health sector funding.

One potential avenue for convincing the government to strategically invest in HRH is to use broadcast media and social media posts. Interview participants cited that these have been effective avenues to reach wide groups of people and influence public opinion, hoping to put

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[45] Larsen, J. (2015). *Uganda: Winning Human Resources for Health*. Available at: http://www.internationalbudget.org/publications/uganda-winning-human-resources-for-health/.

pressure on political decision-making. As an example, widespread media coverage in November 2017 when doctors went on strike to protest poor remuneration and lack of medical supplies resulted in the government increasing starting salaries for doctors and other medical professionals.[46]

External Influence: Donor Dependence

Participants noted that donor dependence prevents the government from investing more in the health workforce and it attracts some of the best-trained health workers away from public service to work on donor-funded projects. While PEPFAR support has filled immediate and urgent needs, and should continue to fill these gaps in the HIV workforce, there is a general mentality that the government will not significantly increase funding for HRH as long as donors continue to support such investments.

Specifically, Uganda has faced challenges in transitioning PEPFAR-supported health workers to the government payroll. Although the national government has agreed to absorb PEPFAR-supported health workers within a certain time frame, local governments make the hiring decisions and they have been inconsistent in their adherence to these commitments. It was recommended that PEPFAR, the Ministry of Health (MOH), the Ministry of Public Service (MOPS), and MOFPED enter into a memorandum of understanding to absorb all PEPFAR-supported staff, and that PEPFAR work with all the key actors in local government to endorse the absorption plans.

Misaligned cadre structures between PEPFAR and the government was also one of the most common barriers cited for absorbing PEPFAR-supported workers. For instance, PEPFAR-supported counselors have different specializations than government nursing cadres and they do not fit into the government structure, making HRH absorption and management complicated. However, this issue could be alleviated if PEPFAR changed their cadre names and ensured alignment in salary payments when staff is first hired; for instance, a counselor could be renamed as a nursing assistant with a specialization in counseling and be paid within the same salary scale as other nursing assistants.

Government Capacity: Dearth of Funding, Management, and Clear Guidance

Government capacity was frequently mentioned as a barrier to increasing investments in HRH. On the financial side, almost all participants stated that the government does not have the revenue to allocate additional funds to health and HRH. Moreover, one participant mentioned that corruption, mismanagement, and misuse of funds within the government led to a "leaky pipe" effect: what little money they have does not make it down to the district level. Generally, participants cited poor communication and coordination between the MOH, MOF, and MOPS, resulting in poor understanding of health workforce staffing needs.

Additionally, participants cited that the MOH lacks technical capacity. For example, the human resources department in the MOH is preoccupied with pensions and, therefore, cannot re-evaluate staffing needs. In fact, Uganda's recent pension audits indicate an effort to crack down on fraud, and to demonstrate that the government is focusing more on efficiency with the existing resources than on mobilizing additional financial resources for HRH.

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[46] Ainebyonna, E. (2017). "Museveni offers Shs5m as start-pay for doctors". *The Daily Monitor.* Available at: http://www.monitor.co.ug/News/National/Museveni-offers-Shs5m-start-pay-doctors/688334-4197664-d3rcnaz/index.html.

Poor leadership was also highlighted as a barrier to progress — without overarching guidance from the government, it is difficult to implement any changes at the lower levels. This lack of strong leadership can be seen throughout the system. The MOH human resources department is understaffed with no clear leader to undertake large initiatives, such as re-examining staffing norms. Furthermore, participants mentioned two types of inappropriate appointments within the government and health sector, in general: (1) government positions that are based more on political connections than on merit, and (2) the appointment of health workers who were only trained in service delivery moving into management positions, particularly those that manage finances.

Participants noted a few enablers that could increase government capacity, namely better accountability systems, sanctions, and regulations. Furthermore, participants suggested that training health institution managers on how to manage finances would make a significant impact in budget execution, reporting, and efficiency, which could lead to improvements in HRH financing.

Government Willingness: Sector Competition and "Donor-dependence Syndrome"

In terms of government willingness to invest more in HRH, many participants mentioned that, within the MOH, they at least acknowledged there are issues with HRH and staffing levels and they deserve attention. However, participants noted that this acknowledgment of the issue was less prevalent in the MOFPED and MOPS. One participant highlighted the fact that even though updating staffing norms would help improve understanding of the true resource needs for HRH, it is a long and difficult process and the public sector is weary of such widespread change.

Furthermore, participants overwhelmingly noted that the current government priorities are on energy and infrastructure, and it is difficult for the social sectors to compete for funding. While champions of health and HRH are in the government, participants indicated that these champions were in the 9th Parliament and have recently been replaced.

Importantly, many participants also pointed out the government's "donor-dependence syndrome." After many years of receiving aid, government officials know that, in a crisis, donors and implementing partners will step in to provide assistance. The government is unwilling to direct their own resources toward health and HRH, when compared to other sectors that do not receive support. Some parliamentarians who were interviewed also pointed out the potential for an AIDS trust fund, but noted that their main priority here, especially if donors withdraw support, is to finance essential HIV commodities, rather than HRH. Additionally, participants mentioned that some people view HRH in a negative light given the high rates of absenteeism and reports of poor quality service delivery. This negative opinion understandably diminishes their willingness to invest in HRH versus other areas.

One enabler to increasing government willingness would be to revitalize the HRH technical working group within the MOH. The technical working group could develop arguments for convincing internal MOH staff of the importance of increasing HRH investment.

Evidence: Convincing the MOF Through Economic Arguments

As far as evidence, the ability to phrase the argument for HRH investment in economic terms was highlighted as a critical strategy and piece of evidence for increasing HRH funding.

Participants mentioned that the MOFPED wants to know the return on investment and that the MOH's failure to demonstrate this value leads to an unconvinced and unwilling MOFPED. For example, one participant suggested the need to demonstrate how recruiting additional health workers would boost the overall GDP, through increases in employment and improved health outcomes that reduce productivity losses. While there is concrete evidence of how infrastructure and energy directly affects GDP, this type of modeling evidence is not available for HRH at the country level.

Uganda's staffing norms prove to be a key barrier to generating effective evidence for advocacy. Health worker staffing norms in Uganda are based on facility standards rather than on a needs assessment that accounts for workload and evolving demographics and disease burden. Moreover, these staffing norms have not been updated since 2010. Uganda conducted a national WISN assessment in 2012 in an attempt to show the limitations of the existing staffing norms and provide an evidence base to reshape policy. However, this assessment has not informed any changes to staffing norms or hiring decisions, highlighting the fact that part of the evidence gap is not just to generate the evidence, but to disseminate and use it appropriately. Several interviewees noted that, without revised staffing norms, the sector is unable to provide proof that hiring more workers is, in fact, required to handle the current demand for health services.

One alternative piece of evidence suggested was the idea to "use a face to tell a story," or to create more of a narrative out of the current workforce shortage. A few civil society members emphasized that this tactic helps with members of Parliament and the cabinet. This type of storytelling also makes HRH more relatable, portraying them as real people who make real sacrifices (e.g., living in poor housing, located in undesirable locations, working long hours), rather than just rates of productivity.

Discussion

Uganda-specific Recommendations

Increasing investment in HRH is essential to reach national HIV goals and 90-90-90 targets by 2020 and to sustain achievements. While Uganda faces political and financial constraints to increasing HRH investment for HIV in the short term, investing in HRH absorption and recruitment may be feasible over a five-year horizon, given macroeconomic and other projections. However, increasing investment in facility-based HRH in line with the government's recruitment plan is still not enough to reach national HIV targets; investments in CHWs, based on defined roles of community-based workers for HIV, and efficiency gains are also needed. The analysis suggests that national roll-out of differentiated care modes for HIV treatment, for example, can improve efficiency to allow more people on treatment with fewer facility-based HRH. Further, providing more HIV services in the private sector could also help alleviate the burden of HIV service delivery in the public sector.

This analysis has several limitations. First, salary costs for management and support staff are excluded, meaning the total salary support needed to reach HIV targets is probably higher than estimated here, based on the needed requirements of these workers to support HIV service delivery. Further, there is a lack of data; and, therefore, considerable uncertainty in average salaries paid by cadre in the private sector and how much time is required to deliver HIV services in those settings. To assess the related impact on total cost projections, HRH2030 attempted to account for this uncertainty by conducting sensitivity analyses that varied estimates of private sector salaries and time spent by cadre delivering HIV services. Similarly, wide ranges in CHW costs are due to uncertainty in annual cases seen by and workload requirements for the range of CHW cadres supporting HIV. Existing CHW workloads vary based on current models of HIV care supported from one implementing partner to another, and data were available from only one partner. Last, the projected cost savings from national roll-out of ART differentiated care models do not account for any additional costs that may be required during scale-up, such as the costs of pre- or in-service training; they assume that facility-based HRH time saved from implementing these models of care can be used to complete other tasks.

Due to these limitations and based on the findings from Uganda, further analysis is recommended, including:

- Filling critical data gaps through routine updates to Open Source Health Workforce Information Solutions (iHRIS), conducting an assessment quantifying CHW workload, and surveying private sector service delivery models for HIV and salaries, by cadre.

- Conducting a feasibility assessment to examine how facilities can maximize the use of existing staff and hire additional workers, as needed, including CHW cadres supporting HIV, to realize projected HRH efficiency gains from differentiated models of care.

> **RECOMMENDATIONS FOR IMRPOVED FUNDING OF THE HIV WORKFORCE**
>
> - Incorporate focus on efficient use of facility-based HRH for HIV within scale-up of differentiated care models as outlined in the new ART guidelines.
> - Explore how more HIV services could be provided in the private sector to alleviate the burden on HRH in the public sector for providing HIV services.
> - Consider how the community-based HIV workforce could be integrated into government HRH structures, including integration with the proposed new Community Health Extension Worker cadre to ensure sustainability of contribution for required HIV services.
> - Working with Ministry of Finance, Planning, and Economic Development; Ministry of Public Service; Ministry of Health; and other stakeholders, develop a plan for the government to take on required additional HRH currently being supported by PEPFAR and other donors to maintain HIV services.

- Analyzing how differentiated care models and introducing a new government CHEW program affects health worker requirements and costs for HIV services.

- Analyzing other potential HRH efficiency gains through possible improvements in HRH productivity or further task sharing.

- Estimating the economic and social impacts of investing in facility- and community-based HRH in Uganda, which civil society groups and the MOH can use to advocate for more strategic investment in the health workforce, particularly for HIV service delivery.

Global Implications

The analysis from Uganda has implications for other countries. Many countries may face funding gaps for HRH that jeopardize their achievement of national and global HIV targets. Like Uganda, countries have limited fiscal space for health, including for HRH, and ministries of finance may be unwilling to invest in the health workforce given concerns of a rising wage bill. In these cases, an evidence-based HIV workforce investment case will help understand planning requirements better and convince key stakeholders to make more strategic investments in HRH for HIV.

To develop a comprehensive HIV workforce investment case, countries need to (1) generate evidence on the HIV workforce, including estimates of the resource requirements and impact on health, economic, and social outcomes in the country; (2) bring together stakeholders, including civil society, development partners, and government, to identify priority areas for HRH investment and develop a unified funding task; (3) develop a comprehensive investment case document that crafts arguments for increased HRH investment for HIV, based on a solid understanding of key decision-makers' priorities; and (4) use the investment case to conduct targeted, relevant budget advocacy during key windows in the budget cycle.

The type of strategic investment required will vary by country, but may include increased government spending, reallocation of existing financial resources, increased provision of HIV services in the private sector or at the community level, integration of HIV financing into broader health financing reforms (e.g., health insurance), and/or smarter use of HRH by introducing or expanding efficient service delivery models, such as differentiated models of care for ART. The analysis in Uganda found that a combination of approaches — increased government spending on HRH salaries and absorption of PEPFAR-supported staff, improved efficiency in HIV treatment through scale-up of differentiated care models, and increased provision of HIV services in the private sector — is needed to sustainably and adequately finance the HIV workforce. Other countries will probably also need a multi-pronged approach for more strategic investment in the HIV workforce.

Annex A. Time Requirements to Deliver HIV Services

Study	Findings Used to Estimate HRH Time Requirements for HIV
USAID. (2010). *Baseline Assessment of HIV Service Provider Productivity and Efficiency in Uganda.* Technical Report. Washington, D.C.: USAID.	Just 36% of provider time was spent on direct service delivery. Average patient contact time by activity was: • Consultation: 14 minutes per patient • Clinical assessment: 7 minutes per patient • Counseling: 4 minutes per patient • Lab: 10 minutes per patient • Dispensing: 5 minutes per patient
Shade, S. B., et al. (2016). *Streamlined HIV care is associated with shorter wait times before and during patient visits in Ugandan and Kenyan HIV clinics.* Durban, South Africa: AIDS 2016.	Patients spend between 22 and 27 minutes receiving HIV services, with 8 to 18 minutes spent receiving HIV care, 1 to 3 minutes spent on laboratory services, and 1 to 4 minutes spent on medication dispensing
Wanyenze, R. K., et al. (2010). *Evaluation of the Efficiency of Patient Flow at 3 HIV clinics in Uganda.* Accessed at: https://www.ncbi.nlm.nih.gov/pubmed/20578908.	Median time spent per patient per visit from 3 different clinics: • Doctors: 7, 10, and 20 minutes • Counselors: 13, 35, and 60 minutes • Nurses: 3, 4, and 18.5 minutes • Clinical officers: 9, 15, and 30 minutes • Lab technician: 3, 5, and 8.5 minutes • Pharmacy technician: 6, 4, and 16.5 minutes
Alamo, S. T., et al. (2013). *Strategies for Optimizing Clinic Efficiency in a Community-based antiretroviral treatment programme in Uganda.* Accessed at: https://www.ncbi.nlm.nih.gov/pubmed/22610422.	• Nurses spend 10 to 14 minutes per patient per visit • Counselors spend 16 to 43 minutes per patient per visit • Lab staff spend 14 to 23 minutes per patient per visit • Pharmacy staff spend 11 to 21 minutes per patient per visit
Were, M. C., et al. (2010). *Creation and evaluation of EMR-based paper clinical summaries to support HIV-care in Uganda.* Indianapolis: Regenstrief Institute, Inc., Indiana University School of Medicine.	• Clinicians spend 6.4 to 7.7 minutes per patient per visit • Lab staff spend 1.7 to 11.6 minutes per patient per visit