Investing in the health workforce to increase access to and use of HIV and AIDS services in Uganda

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Introduction

Despite progress over the last decade, Uganda's achievement of key health indicators, including for HIV and AIDS, remains unsatisfactory and continues to represent leading causes of morbidity and mortality [1]. As the Government of Uganda works to improve healthcare across all service delivery areas, HIV and AIDS receives heightened attention because of the country's ranking in terms of the number of new HIV infections, people living with HIV (PLHIV), AIDS-related deaths, and adult HIV prevalence rate [2]. Intensive efforts in HIV prevention, care, and treatment led to a decrease in HIV prevalence from a high of 18% in the 1990s to 6.4% in 2002. After persisting at this level from 2002 to 2007, HIV prevalence rose to a national average of 7.3% (2011) [3,4]. Many regions experience an even higher burden of HIV, especially in central and mid-northern Uganda, with prevalence ranging from 8.3 to 10.6% [4].

Health workforce challenges undermine HIV service delivery

Uganda's aim to strengthen and scale up its HIV and AIDS response to reduce new infections and achieve 'a population free of HIV and its effects' [5] is undermined by low utilization of health services and perceived low quality of healthcare [6]. A key element of quality service delivery and demand is a well performing and well trained health workforce [7]. Uganda's absolute shortage and inadequate geographic distribution of health workers

with appropriate skill mix to provide services across the continuum hinders achievement of epidemic control. A national staff audit conducted by the Ministry of Health in 2009 found that 47% of established positions in government health facilities were vacant [8]. In addition, about 71% of doctors and 41% of nurses and midwives were working in urban areas, although 85% of the population reside in rural areas [9,10]. Factors contributing to high health worker vacancy and low retention include weak leadership and management, inadequate planning and human resources management systems, low levels of motivation, and poor working and living conditions in rural areas [6]. To address health workforce challenges affecting quality of care for HIV and AIDS, the United States Agency for International Development (USAID) and U.S. President's Emergency Plan for AIDS Relief-funded global Capacity^{Plus} project and bilateral Uganda Capacity Program (UCP), both led by IntraHealth International, worked in close collaboration with the Ministry of Health to strengthen health workforce management to enable improved delivery of quality HIV and AIDS services. They also provided family planning, reproductive health and other health services with funding from PEPFAR and USAID's Population and Reproductive Health, Maternal and Child Health, and other programs. This field note describes selected interventions from a more comprehensive package of human resources management support provided to the Ministry of Health, to improve the utilization of data for evidence-based planning, deployment, and management

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of the health workforce. It also provides an example of how health workforce data can be analyzed alongside country-level HIV service statistics to ensure an adequate supply of human resources for health (HRH) where increased accessibility and scale-up of HIV services is needed to achieve 90–90–90 goals [11–13].

Developing the evidence base for human resources for health decision-making for improved access

To adequately plan, deploy, and manage the workforce requires real-time data on the location, supply, and skills and qualifications of health workers coupled with data from training institutions regarding projected health worker graduates. Outdated and inaccurate health workforce data had made it difficult for Uganda to map health workforce needs against service demands, including for HIV services. UCP and *CapacityPlus* worked with the Ministry of Health and health professional councils to develop a national electronic human resources for health information system (HRHIS), which now tracks about 140 000 health workers. The various HRHIS functions, which are built on the open source iHRIS Manage [14] and iHRIS Qualify Software [15], enable the Ministry to map, track, manage, and deploy health workers where they are needed most and assist professional councils to register, license, and regulate their respective cadres to support the Ministry's efforts to ensure that health workers have the skills and competencies to provide quality care, including services across the HIV continuum.

To inform decision-making, additional investigation into Uganda's health worker vacancies and retention, particularly in rural areas – where vacancies reached 60% [16] – was needed. This included better understanding of preferences to attract health workers to take posts in less desirable rural locations, which face some of the highest disease burden and HIV prevalence. *CapacityPlus* worked with the Ministry to apply the Rapid Retention Survey Toolkit [17], a step-by-step approach aided by specific software programs that guides HRH managers to conduct a rapid discrete choice experiment (DCE) – a quantitative survey method to assess health workers' motivational preferences – to identify evidence-based financial and nonfinancial incentive packages for rural recruitment and retention. The rapid DCE was carried out among 158 health workers in the western and northern regions and 544 students from three universities among priority cadres (doctors, nurses, pharmacists, and laboratory technicians). From these data, potential incentive packages were formulated, which included increased compensation, facility quality improvements, supportive management, and continuing education. The packages were costed using iHRIS Retain (the retention intervention costing tool developed by *CapacityPlus* and the WHO) [18] to identify which

combination of financial and nonfinancial incentives would be the most cost effective and feasible within the government's fiscal space.

Increased accessibility and use of HIV services through recruitment of over 7000 new health workers

With continued support to utilize HRHIS and retention data, the Ministry of Health successfully advocated with the Ministry of Finance for increased funding to address workforce shortage and distribution issues affecting access to HIV and other health services. Resulting allocation of an additional \$20 million, or a 16% increase, for the health wage bill allowed the Ministry to recruit 7211 new health workers in one fiscal year (2012–2013). The Ministry's recruitment previously averaged about 500 health workers annually. In recognition of the importance of incentives, the bill doubled the pay of medical doctors working at the health center (HC) IV level (county-level mini-hospital serving 100 000 people) to attract more doctors to rural areas with the greatest service delivery needs.

As presented in Fig. 1, the percentage of filled health worker positions by region increased from a mean of 55% in 2009 (range 39–100%) to 66% in 2013 (range 57–78%). Figure 1 illustrates how timely HRHIS and HIV prevalence data can be combined to map where HIV burden and workforce gaps intersect to aid decision-making in the future. With this level of evidence to inform decisions, health workforce planners and managers would be better able to target recruitment, deployment, and retention efforts to the geographic areas and facilities with the highest HIV volume. Though the mapping was done retrospectively, the 41% increase in staffing (from 39.5 to 55.8% of positions filled) may likely contribute to reducing Central 1 region's HIV prevalence – the highest in the country (10.6%). Notably, the urban area of Kampala (where HIV prevalence is 7%, slightly below the national average [4]) experienced a decline in public-sector positions filled (from 100 to 78%), with more health workers recruited to work in rural areas thus increasing access to HIV services for rural communities in need.

The 7211 newly recruited health workers – comprised mainly clinical professionals such as medical and clinical officers, nurses, midwives, and laboratory staff – were deployed to 1030 health center IIIs (subcounty-level inpatient facilities serving 20 000 people) and health center IVs across all 111 districts of Uganda. An analysis of service statistics from the District Health Information Software Version 2 between 2012 and 2014 at 962 matched facilities found that the mean number of persons tested for HIV increased 97% whereas the number of PLHIV started on cotrimoxazole prophylaxis increased by 15% (t test: $P \leq 0.01$) (Fig. 2). Although this rise in service use may also be attributed to other

Map design: Daren Trudeau, scale 1:5,000,000, Intrahealth International, 2015.

Fig. 1. Change in regional staffing [19] from 2009 to 2013, in relation to HIV prevalence in men and women aged 15–49 [3,4]. NB. There was a change in naming of some regions between the 2007 and 2011 surveys: in 2007 Mid Western was named Western; Mid Northern was North Central; and Mid Eastern was Eastern. Also, in the 2007 Service Provision Assessment Central 1 and Central 2 were combined into one region (Central) for a total of nine regions (there were ten regions in the 2011 AIDS Indicator Survey).

concomitant factors, the large increase in access to health workers is likely to have been a key factor for this important difference. For example, the increase in the annual number of people tested for HIV was statistically significant ($P \leq 0.01$) across facility type (HC III: 105% and HC IV: 80%) and all four regions of the country (ranging from 51 to 210%) (Table 1). Though there were variations across facilities and regions, overall, the mean number of persons tested for HIV doubled between the 2 years. As it is relatively unusual for health programs, donor and partner support, or other interventions to be applied to the same degree across almost 1000 facilities and Uganda's four geographic regions, it is likely that the increase in health worker availability through improved recruitment and deployment contributed to the positive service results and that the results cannot be solely explained by the implementation of other initiatives.

Conclusion

The availability of health workers is essential for the delivery of services across the HIV continuum. The Uganda Ministry of Health's effective use of accurate and updated HRH data for evidence-based analysis, planning, and management of the health workforce enabled increased delivery of HIV and other essential health services in areas with the greatest need. This example highlights important areas of health workforce intervention, which if more routinely applied across countries would help ensure an adequate supply and distribution of health workers for achievement of 90–90–90 goals and ultimate sustained epidemic control. It also illustrates how tracking and mapping information on the health workforce against HIV program data can highlight critical gaps in service delivery and aid policymakers in evidence-based decision-making for improved program performance.

Fig. 2. Mean annual numbers receiving HIV services between 2012 and 2014 at health facilities with newly recruited health workers, by select HIV service. * $P \leq 0.01$, ¹CPT = cotrimoxazole prophylaxis.

Table 1. Mean annual number tested for HIV at health facilities receiving newly recruited health workers, by facility type and region.

Category	No. of facilities	Mean (2012)	Mean (2014)	Difference	Percentage difference (%)	95% Confidence interval of differences
HC III	797	1735	3555	1820	+105	(-2374.13, -1267.34)*
HC IV	147	4164	7499	3335	+80	(-4072.47, -2596.99)*
Central region	190	1870	2920	1050	+56	(-1433.27, -667.15)*
Eastern region	271	2459	5204	2745	+112	(-3142.25, -2347.34)*
Northern region	206	1543	4776	3233	+210	(-5310.35, -1155.91)*
Western region	277	2365	3563	1198	+51	(-1489.71, 906.87)*

* $P \leq 0.01$.

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This repeats the above "sources of support". though I deleted the 2nd one, I'm not sure which is preferred.

Conflicts of interest

There are no conflicts of interest. This article does not represent the views or positions of USAID or the United States Government.

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