

# Health human resource capacity is a constraint to the expansion of HIV care and prevention programs in Uganda

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## Key Points

According to WHO, there are approximately 2,200 doctors and 16,000 nurses working in Uganda

While Uganda was able to achieve its '3 by 5' target of putting 60,000 individuals on ART, the staffing ratios used in most ART programs to reach this target are greatly in excess of what is replicable to allow for further significant ART expansion.

Significant expansion of overall human resource capacity is needed to further expand HIV care, treatment and prevention services.

## Background

Limited funding for antiretroviral drugs has been highlighted as the primary challenge toward achieving universal access to antiretroviral therapy (ART) in developing countries.

The role of underdevelopment of health human resources (HHR) capacity has been recognized by the Ugandan Ministry of Health as a factor limiting ART expansion.

However, it has received neither sufficient budgetary allocation nor widespread attention from international donor agencies or the scientific community.

We determined appropriate staffing ratios for HIV care and treatment programs in Uganda and the anticipated additional needs in relation to the population as a whole.

## Study objectives

To describe the current numbers of medical doctors and nurses available in Uganda in relation to

- the size of the HIV-uninfected population
- the number of HIV-infected individuals requiring basic care w/o ART
- the number of HIV-infected individuals requiring basic care and ART

To determine what increases in HHR capacity would be needed to appropriately care for these populations in Uganda.

To compare these figures with current staffing levels in Ministry of Health facilities and other implementing partners currently engaged in HIV care and treatment in Uganda.

## Methods

Uganda 2004 HHR data and the number of individuals requiring ART were acquired from WHO, and population size and HIV prevalence estimates from UNAIDS.

Outpatient visits per capita, adjusted for the proportion of HHR employed in the public sector (~50%), were obtained from a 2002 Ugandan Ministry of Health report.

The number of physicians and nurses apportioned to HIV care was determined by 2004 levels of HHR capacity, population percentages and expected health service demands.

Assumed levels of health service utilization:

- For HIV-uninfected individuals: 0.5 physician visits and 0.5 nursing visits per year
- For HIV-infected individuals not ART eligible: 1 physician visit; 4 nursing visits per year
- For HIV-infected individuals on ART: 3 physician visits and 6 nursing visits per year

Rates were calculated per 1000 patient population and were re-examined using scenarios where HHR capacity increased or by an amount to provide 1 doctor or 7 nurses per 1000 ART clients (see reference 5).

Table 1: Estimates of human resource capacity for physicians in Uganda

	HIV+ on ART	HIV+ not on ART	HIV uninfected
Physician visits per year	3	1	0.5
Population:	148 000	852 000	27 800 000
Population percentage	0.51%	2.96%	96.53%
Allocated number of physicians	65	124	2021
Ratio doctors per 1000 pts	0.44	0.15	0.07
Increase capacity to 1 per 1000 ART pts	148	284	4627

A **2.3-fold increase** in HR capacity is necessary to ensure 1 doctor per 1000 ART pts

This assumes that **8.5% of physicians** would be working exclusively in HIV care

With such an expansion, there would be **1 doctor per 10 000** people in the general population

## Results

Out of an estimated population of 28.8 million, approximately 1 million Ugandans are HIV-infected and 148,000 are in urgent need of ART.

Current estimates are that 2,209 doctors, 16,221 nurses and 3104 midwives working in Uganda, or 0.77 health care workers per 1000 population

1168 (52.9%) physicians and 7318 nurses (45.1%) work in Ministry of Health facilities

When distributed according to the estimated health service demands, there currently are

- 0.07 doctors available per 1000 uninfected individuals,
- 0.15 per 1000 HIV-infected individuals not on ART,
- 0.44 per 1000 individuals on ART.

Nursing capacity:

- 0.45 per 1000 uninfected,
- 3.57 per 1000 HIV infected individuals not on ART
- 5.35 per 1000 individuals on ART.

Table 2: Estimates of human resource capacity for nurses in Uganda

	HIV+ on ART	HIV+ not on ART	HIV uninfected
Nurse visits per year	6	4	0.5
Population:	148 000	852 000	27 800 000
Population percentage	0.51%	2.96%	96.53%
Allocated number of nurses	792	3038	1239
Ratio nurses per 1000	5.35	3.57	0.45
Increase capacity to 7 per 1000 ART pts	1036	3976	16 217

A **1.3-fold increase** in HR capacity is necessary to ensure 7 nurses per 1000 ART pts

However, **23.5% of nurses** would be working exclusively in HIV care.

Suggests that the HHR needs for nurses need to be shifted to other cadres of staff.

HHR capacity would need to increase 2.3 times to provide one full time equivalent doctor per 1000 ART clients.

HHR capacity for nurses appears adequate for the proposed staffing ratios for HIV, but the large numbers of nurses (over 20%) allocated to HIV care would likely exacerbate further understaffing of care and prevention programs for non-infected individuals

Limitations:

- Analysis assumes that all staff work in outpatient facilities
- Did not examine other health professional cadres such as clinical officers, or field workers (for home based programs)
- Analysis assumes that staff in public and private systems can be distributed as needed
- Analysis assumes a fixed need for ART services, when in fact, need is constantly increasing
- Human resource data collected in 2002 – 2004. May not reflect current capacities.

## Conclusions

Uganda has 0.77 health care workers per 1000 population; approximately 30% of the minimum standard of 2.5 per 1000 identified by WHO.

Significant increases in HHR capacity are required to offer ART services with 1 doctor and 7 nurses per 1000 clients without significantly drawing staff away from other health service areas.

To limit the potential impact of ART scale-up on other health services, the successful expansion of access to ART and basic HIV care will require close and ongoing attention to HHR capacity and needs

## References

1. World Health Organization. World Health Report 2006
2. World Health Organization. '3 by 5' Progress Report March 2006
3. Narasimhan V, Brown H, Pablos-Mendez A, Adams O, Dussault G, Elzinga G, et al. Responding to the global human resource crisis. *Lancet* 2004 363; 1469 – 72.
4. Ugandan Ministry of Health. Statistical Abstract 2002
5. Hirschorn L, Oguda L, Fullem A, Dreesch N, Wilson P. Estimating health workforce needs for antiretroviral therapy in resource-limited setting. *Human Resources for Health* 2006 4(1): 1 – 16.

