Task shifting as a means to improve the cost-effectiveness of antiretroviral drug delivery

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Introduction

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Background

According to the World Health Organization (WHO), significant differences exist in the availability of health care workers as a percentage of the population between richer and poorer nations [1]. Health care workers in a broad sense are defined as health service providers (e.g., physicians, nurses or midwives) or management and supporting staff (e.g., pharmacists, health aids, technicians). These differences are substantial, as for example the density of health care workers in the Americas is more than 10 times higher compared to the density of health care workers observed in Africa [2]. In fact, the WHO has attempted to categorize health care worker density levels as insufficient or in "critical shortage" if the observed density is very unlikely to provide a high coverage of essential medical interventions to the population. As of the most recent 2006 report, 57 countries fulfilled these criteria, the vast majority of which were located in sub-Saharan Africa with additional countries identified in Southeast Asia, as well as Central and South America [2]. These shortages translate into a deficit of at least 2.4 million health service providers in the affected countries, with an additional 1.9 million shortfall in support workers, bringing the total gap to well over 4 million workers.

One alternative to mitigate the impact of this shortage is to move medical tasks from highly qualified workers to workers with shorter training and fewer qualifications [3]. This is commonly referred to as "task shifting" and implies assigning nurses or other health care workers to perform medical services that were historically performed by physicians. The objective is to improve public health by allowing a greater amount of patients to access an adequate form of health care given a fixed number of health care workers. Task shifting has some inherent limitations; for example, a hospital pharmacist cannot perform complex surgeries. Nevertheless, evidence from both high income [4] and less developed countries [5,6] suggests that at least certain medical tasks can be delegated from physicians to nurses and from nurses to community health care workers without a detrimental impact on patient care.

Task Shifting at the Infectious Diseases Institute in Kampala, Uganda

As a Pfizer Global Health Fellow focusing on cost-effectiveness research, I was tasked with introducing health economic concepts and methods to the staff of the Infectious Diseases Institute (IDI) in Kampala, Uganda. In practice, this involves mentoring a core group of about 10 researchers and together developing cost-effectiveness models in various disease areas to evaluate the value associated with respective medical interventions. Interestingly, we found that, in a resource-poor setting such as Uganda, improvements in health can be achieved for incredibly low cost. In our models, gaining one year of healthy life at the population level may be achieved for as little as $35 to $300, depending on the intervention.

Unfortunately, even though these interventions are effective and provide great value for the money, they are oftentimes not implemented or implementation is not scaled up nationwide for financial or logistical reasons. I have, therefore, been particularly interested in the concept of task shifting, in which given resources are essentially used more efficiently. In other words, how can one do more with the same (or less)?

IDI was established in 2004 to improve the treatment and care of HIV and related infections in HIV-positive patients in Uganda through a combination of research and educational activities, plus outreach programs, as well as through the operation of a dedicated outpatient HIV clinic. Due to greater availability and affordability of antiretroviral therapy (ART), IDI has been challenged with providing appropriate disease management to an ever-increasing patient population at the clinic. As of 2011, approximately 9,000 HIV+ patients received medical care at the outpatient clinic, with an additional 6,000 HIV-positive patients receiving care through various outreach programs.

For patients qualifying for ART, the typical treatment paradigm involves monthly physician visits, during which the patient is given a prescription for the ART refill. However, for many of the patients who were clinically stable, the benefit of the monthly physician visit is limited. Thus, IDI implemented a new disease management algorithm allowing clinically stable patients to enroll in a pharmacy-only refill program (PRP) enabling them to receive ART refills without first visiting a physician. PRP patients see their physician every six months, but are able to access physician services outside of scheduled visits if complications arise.

An analysis of the cost impact of the PRP suggests that significant savings were achieved [7], enabling the clinic to see more patients without increasing the operating budget. Patient services were shifted from the more expensive physician (hourly salary: US$8.46) to the less expensive pharmacy worker (hourly salary: US$3.38), and also reduced the time needed to see a patient (physician: 0.14 hours vs. pharmacy worker: 0.05 hours). Thus, the annual per-patient management cost, not including the cost of ART, decreased by two-thirds from US$31.68 to US$10.50. While these numbers may appear small, one has to keep in mind that the total annual per capita health expenditure in Uganda is US$24 [8], so an annual saving of US$20 can be considered meaningful in this setting. As an additional benefit, patient waiting time decreased from about 80 minutes to virtually zero, which was particularly valuable to patients by reducing the time needed away from work to refill their prescription. Finally, a separate analysis of the clinical and economic implications of PRP suggests that the cost savings were achieved without any significant negative impact on patient care [9].

Key Insights

The health care worker shortage in the developing world is real with little evidence that things will improve in the near future. Yet without adequately trained staff, there can be no delivery of health care interventions, including medications. Innovative models to mitigate the impact of this shortage on the delivery of health services, such as the pharmacy-only refill program implemented at IDI, therefore need to be more systematically evaluated. In addition, there may be several practical ways in which private-sector stakeholders can help to alleviate this shortage.

First, formulation and ease of administration: The simpler the route of delivery and the simpler the logistics involved in getting the drug to the patient, the lower the time burden on the health care worker. Whenever possible, these factors should be considered early on in the development process of medicines aimed for use in resource-poor settings.

Second, continuing medical education (CME): Socially responsible corporations interested in public health continue to make a significant contribution to CME in the developed world. CME programs adapted for use in resource-constrained settings, focused on disease areas of greatest local relevance, and targeted at medical professionals in select countries may be a way to ease the burden of the health care worker shortage in those areas.

Third, drug package size: In the area of HIV, the standard pack of antiretroviral medication contains a 30-day supply of medication. This, in turn, requires the patient to seek a refill once a month. For this, a physician or nurse as well as a pharmacist need to be seen. For patients in need of close monitoring, a monthly office visit is necessary; however, greater time intervals may be reasonable for clinically stable patients. Offering the option of a non-traditional 45-day supply of drugs would increase the time interval between refill visits from 4 weeks to 6 weeks and could reduce health care worker time by up to a third.

Finally, the mere scale of the health care worker shortage is too large for any single organization to address. Meaningful solutions to this problem can only be implemented through an integrated approach that involves a broad range of stakeholders. The private sector can get involved by joining the Global Health Workforce Alliance, an organization founded in 2006 by the World Health Organization in collaboration with several other organizations as "a common platform for action to address the crisis" [10]. Other members include national governments, U.N. agencies, professional associations, NGOs, foundations such as the Bill & Melinda Gates Foundation and the Clinton Foundation, universities and research institutions, and a variety of corporations [10].

References

[1] World Health Organization. *Global Atlas of the Health Workforce.* Geneva, Switzerland: World Health Organization; 2010. Website: http://www.who.int/globalatlas/default.asp Last accessed: 2011-04-28

[2] World Health Organization. *The World Health Report 2006: Working together for health*. Geneva, Switzerland: World Health Organization; 2006. Website: http://www.who.int/whr/2006/whr06_en.pdf Last accessed 2011-08-26

[3] World Health Organization. *Task Shifting: Rational Redistribution of Tasks Among Health Workforce Teams: Global Recommendations and Guidelines*. Geneva, Switzerland: World Health Organization; 2008. Website: http://www.who.int/healthsystems/TTR-TaskShifting.pdf Last accessed 2011-08-26

[4] Horrocks S, Anderson E, Salisbury C: Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. *BMJ* 2002, 324(7341):819-823.

[5] Wood R, Fox M, Conradie F, et al. Nurse management is not inferior to doctor management of ARV patients: the CIPRA South Africa randomized trial. *Abstract number LBPED03 presented at the 5th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention,* 19-22 July 2009, Cape Town, South Africa

[6] Morris MB, Chapula BT, Chi BH, et al.: Use of task-shifting to rapidly scale-up HIV treatment services: experiences from Lusaka, Zambia. *BMC Health Services Research* 2009, 9:5.

[7] Babigumira JB, Castelnuovo B, Lamorde M, et al. Potential impact of task-shifting on costs of antiretroviral therapy and physician supply in Uganda. *BMC Health Services Research* 2009; 9:192

[8] World Health Organization. *World Health Statistics 2009*. Geneva, Switzerland: World Health Organization; 2006. Website: http://www.who.int/whosis/whostat/2009/en/index.html Last accessed 2011-08-26

[9] Babigumira JB, Castelnuovo B, Stergachis A, et al. Cost effectiveness of a pharmacy-only refill program in a large urban HIV/AIDS clinic in Uganda. *PLoS One* 2011; 6(3): e18193. doi:10.1371/journal.pone.0018193

[10] World Health Organization. *Global Health Workforce Alliance.* Website: http://www.who.int/workforcealliance/media/qa/09/en/index.html Last accessed: 2011-07-25