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Transitioning HIV care and treatment programs in southern Africa to full local management

Sten H. Vermund, MD, PhD^{1,2,3,4}, Mohsin Sidat, MD, PhD⁵, Lori F. Weil^{1,6}, José A. Tique, MD^{1,4}, Troy D. Moon, MD, MPH^{1,2,4}, and Philip J. Ciampa, MD, MPH^{1,3}

¹Vanderbilt Institute for Global Health, Vanderbilt University School of Medicine, Nashville, Tennessee, USA

²Department of Pediatrics, Vanderbilt University School of Medicine, Nashville, Tennessee, USA

³Department of Medicine, Vanderbilt University School of Medicine, Nashville, Tennessee, USA

⁴Friends in Global Health, LLC, Maputo, Mozambique

⁵Departments of Community Health and Microbiology, Faculty of Medicine, Eduardo Mondlane University, Maputo, Mozambique

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INTRODUCTION

The global HIV pandemic may be the worst single-agent scourge since the bubonic plague outbreak in 14th century Europe.^{1,2} Efforts to substantially prevent sexually-acquired HIV infection have been disappointing, despite the fact that effective approaches for preventing spread of this infection are well known.^{3–9} UNAIDS estimated that there were 33.3 million [likely range 31.4–35.3 million] persons infected with HIV globally by the end of 2009,¹⁰ 68% of whom were in sub-Saharan Africa, home for only 13% of the global population.¹¹ In all of sub-Saharan Africa, an estimated 5% of the population aged 15–49 years was infected in 2009.¹⁰ In highest prevalence nations of southern Africa, 15–28% of adults are infected.¹²

Health investments from such sources as the U.S. President's Emergency Plan For AIDS Relief (PEPFAR; www.pepfar.gov, accessed February 19, 2012), the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund; <http://www.theglobalfund.org/en/>, accessed February 19, 2012), and the World Bank's Multi-country AIDS Programme (MAP; <http://go.worldbank.org/I3A0B15ZN0>, accessed February 19, 2012) enabled HIV/AIDS care and combination antiretroviral therapy (cART) treatment to expand markedly in sub-Saharan Africa and other resource-limited nations. Nonetheless by mid-2011, only 6.6 million of the world's 33.3 HIV-infected persons were on cART and an estimated 9 million people eligible for cART had yet to receive therapy.¹³ The gap would be fully 26.7 million if all infected persons were to be treated (an increasing common clinical and public health approach in high income countries). Donor nations, particularly the U.S., have taken on the challenge

Correspondence: Prof. Sten H. Vermund, Vanderbilt Institute for Global Health, 2525 West End Ave. Suite 750, Nashville, TN 37203 USA, sten.vermund@vanderbilt.edu, 615-322-9374.

⁶Now at the University of Pennsylvania

and have invested in this historic effort in partnership with local governments and non-governmental institutions, but the gap in services vs. need is a vast one.

GLOBAL HEALTH PROGRAMS

Successes are many in the scale-up of global efforts for HIV infection care, treatment, and prevention, but programmatic gaps pose future peril as PEPFAR, Global Fund, and MAP investments diminish. Terms like “treatment mortgage” and “exit strategy” suggest the current focus of donor nations, shifting from the emergency response to one that will mitigate their future financial burden of global HIV/AIDS care by having the lower income nations take on the care costs themselves.¹⁴ Recipient nations are concerned about disproportionately investing health resources in HIV/AIDS when the disease is one of many ills to which they must respond. Foreign donations to tackle HIV/AIDS have invited financial dependence when such funding dominates local governmental budgets. Several countries have actually diverted their own health investments to tackle other non-health issues when a generous flow of funds for HIV/AIDS and tuberculosis presents a perverse disincentive to properly invest in their citizens’ health needs.^{15–17}

In representative low income countries (e.g., Zambia and Mozambique), PEPFAR support represents fully 1 of every 3 health care dollars (Table 1). Even in comparatively higher income nations (e.g., Botswana and South Africa), PEPFAR support has been substantial (Table 1). Hence, the impact of a given per capita cut in lowest income nations will be far higher than that same per capita cut in more prosperous nations. Putting this another way, in Mozambique and Zambia, where the contribution of the government to overall health care is low (Table 1), it would take such a disproportionate national investment to make up lost PEPFAR resources that other health needs would likely suffer cuts to make up the HIV care and treatment needs. Given that more prosperous Botswana receives four and one-half times more PEPFAR support per capita than does more resource-constrained Mozambique (Table 1), one presumes the former to be in a much better position to rapidly take on greater national responsibility based on accelerated capacitation.

The expansion of HIV/AIDS care and treatment services poses challenges to under-capacitated primary health care infrastructures, even as it has created opportunities for life-saving cART expansion.^{18,19} Most PEPFAR, Global Fund, and MAP support is through Ministries of Health and care and treatment technical partners (universities, non-governmental organizations). PEPFAR works primarily through USAID and CDC. This split authority has created some very odd field disparities; a good example is that USAID has building authority from the U.S. Congress while CDC does not. Hence, a USAID-supported PEPFAR implementer may build a needed clinic, while a CDC-supported implementer will not be authorized to do the same, regardless of need. Needed clinics have been put into shipping containers so that no building need be involved; this “Alice in Wonderland” illogic is mandated by restrictions that defy logical explanation by national authorities, US government sponsors, and implementers alike. Faith-based institutions, militaries, community-based organizations, orphanages, Peace Corps, malaria and tuberculosis control initiatives, and the National Institutes of Health are among the groups also supported by PEPFAR for projects in their spheres of expertise. Partners deliver HIV/AIDS care and prevention technical support within national programs that are theoretically designed to be sustainable, though few believe that they will be so in the near future in the most resource-limited settings.

Since the beginning of PEPFAR in 2003, many undercapacitated primary care services have been highly stressed to meet their other health care obligations in the face of rapid HIV service expansions.^{18,19} An opinion backlash against desperately needed HIV spending is

possible when other needs are neglected. Improving many programmatic elements, including better integration of services and a major expansion of the health workforce, including task shifting from unavailable to available staff, are essential for eventual sustainability of HIV programs (Table 2).^{20–27}

PROBLEMS FACED BY GLOBAL PROGRAMS

PEPFAR seeks to transfer authority to local entities to improve sustainability and to fully invest HIV/AIDS care and prevention within national programs and local nongovernmental organizations. This approach will save money by paying local rather than international salaries, for example, and will save on overhead from so-called “indirect cost” payments to American partners. Empowering local health entities and health workers (rather than expatriates) and incentivizing local governments to take on more of the fiscal burden of their own care and prevention are obvious goals for any foreign aid program. However, funders eager to diminish their fiscal exposure face the reality of huge local socioeconomic disparities at many levels: from nation-to-nation, within states/provinces, within districts/communities, and between persons of varying socioeconomic status.

Literacy comparisons from four southern African nations illustrate this development disparity. Adult (>15 years) literacy statistics from 2005–2008 are cited in the 2010 UN Human Development Report: Botswana, 83.3%; South Africa, 89.0%; Zambia, 70.7%; Mozambique, 54.0%.²⁸ Average national statistics mask disparities in rural settings. A provincially representative sample of female heads of households in Mozambique’s Zambézia Province demonstrated that of the Portuguese-speakers (31% of the 3,529 women surveyed) 51.8% were unable to read a single word on a literacy subscale, and of non-Portuguese speakers (69% of the women), fully 93.7% were unable to do so (PJC, unpublished data). Such severe socioeconomic and educational disparities pose additional challenges in delivering HIV care and treatment services without a sustained donor country commitment.

EXPERIENCES IN RESOURCE-LIMITED SETTINGS

Also telling is just how resource-constrained some of the most heavily afflicted countries really are. In 2010, Mozambique ranked 165 of 169 nations on the World Development Index of the United Nations Development Programme.²⁸ The World Health Organization estimates the gross national income to be US\$770 per capita in 2009, with male and female life expectancies of 47 and 51 years, respectively.²⁹ An estimated 142 children under age 5 years will die per 1000 live births. The total expenditure on health per capita in 2009 was only \$50 and represented only 5.7% of the national gross domestic product. Mozambique’s health workforce is one of the most under-capacitated in the world and nearly all HIV/AIDS care and treatment services are provided by nurses and técnicos de medicina (analogous to clinical officers in Anglophone Africa) rather than by physicians.^{21–24,27} To meet the needs in HIV care and treatment, effectively implement successful prevention programs, and integrate HIV into improved primary care programs, our experience suggests the need for sustained health workforce training and program support for decades to come.³⁰

In contrast, more prosperous nations like Botswana are making steady and impressive progress towards achieving target metrics for cART coverage by national guidelines. The results indicate the relative maturity of their testing programs, comparative successes in effective linkage to care, and substantial proportions of eligible HIV-infected persons placed on cART. We used a number of sources to contrast Botswana and South Africa (comparatively higher income) and Zambia and Mozambique (low income) nations vis-à-vis cART coverage estimates, in the context of estimated national populations and likely numbers of HIV-infected persons.

Botswana (Figure 1) and Zambia (Figure 2) have succeeded in rapid scale-up with over half of eligible persons now on cART in both nations.^{26,31–37} Both have been more generously supported than have South Africa and Mozambique (Table 1). South Africa seems to have widespread coverage for high-access urban dwellers, but far less coverage for lower-access persons in rural or otherwise underserved communities; South Africa had reached 36.9% of infected persons eligible for cART by national standards in 2009, low, but a substantial increase from the 9.5% estimate in 2005 (Figure 3).^{31–38} At the same time, South Africa has already achieved a high level of independence in managing its own HIV care and treatment programs.³⁸ While the lag in achieving coverage in South Africa is due, in large part, to the AIDS-denialism viewpoint of the Mbeke government (1999–2008), the current South African Zuma administration is accelerating services at every level. Even though there has been consistent government support of cART in Mozambique (i.e., no AIDS denialism), only 29.7% of infected eligible persons were on cART in 2009 (Figure 4).^{31–37} Furthermore, much of Mozambique's challenge is in its rural regions with exceedingly limited infrastructures, workforce, and systems of drug delivery systems, data management, quality improvement, and transportation.^{30,39–43}

Some nations lack even a fraction of the qualified health workers needed. The 2010 Report from the Mozambican Ministry of Health Human Resources Department states that of 1105 physicians working for the government, about 62% were concentrated in Maputo City and urbanized areas of Maputo Province, Beira (Sofala Province) and Nampula City (Nampula Province); these three cities host the nation's three central hospitals.⁴⁴ The remaining seven provinces shared 420 public sector physicians to cover two-thirds of Mozambique's 21 million persons, corresponding to nearly 33,000 persons per doctor, compared to 10,000 persons per doctor in Maputo City, Beira and Nampula City. (Fewer than 1000 persons per doctor is the norm for high and high-middle income nations.) Shortages of nursing and other health staff are similarly serious; neighboring Malawi and Tanzania have similarly dismal population-to-doctor ratios that impede transition of HIV services to local management. Mozambique's current rural-urban disparity may have actually increased since 2005 when 57% of physicians were found in the city of Maputo and Sofala (including Beira) and Nampula Provinces.⁴⁵ In the face of this dire healthcare labor scenario in Mozambique, the timetable set for local control of PEPFAR programs is planned aggressively, despite current low treatment coverage rates, high loss to follow up, and poor levels of health infrastructures, health workforce capacitation, and programmatic integration. An excessively rapid timetable for transition to local management will not fit all circumstances and may well compromise those achievements that PEPFAR programs have nurtured in Mozambique and elsewhere to date.^{14,46,47,48}

LOCAL MANAGEMENT

A measured, staged approach of local capacity-building will depend on key elements of improvement that include sustainable change and program reform (Table 2). Recent insights into strategies for specific community engagement to maximize retention and adherence must be a chance to take hold beyond the limited areas where they have been implemented.⁴⁹ Low income nations need ongoing technical assistance for decades to come, even as better capacitated nations will take on the lion's share of managing their own HIV care and treatment programs. The morale imperative today is much the same as it was when PEPFAR was begun in 2003. The promise of earlier treatment as a tool for HIV prevention^{4,5,7} and the benefits of cART for tuberculosis control⁵⁰ suggest that continued care and treatment expansion today will save money in the long run through prevention of HIV transmission and prevention of future lost productivity and health care costs.^{51–55} It is essential that donor nations see this reality, even as they address their own economic

challenges that may result in political pressures to diminish high income nation commitments to overseas aid.^{14,56–60}

Transfer of capabilities to local entities is an important long term goal, but will have perverse consequences if done too quickly or too cheaply.^{15–19,61–65} National Ministries of Health are likely to welcome a longer term strategy to better integrate those myriad of HIV services introduced and/or supported by PEPFAR, Global Fund, and MAP programs, many years before marked reductions in international assistance should be implemented. In the emergency response, many HIV care programs, clinical databases, drug procurement systems, laboratories, and clinical infrastructures were established side-by-side with standard Ministry of Health facilities and now require full integration. In regions of greatest need, as with Zambia and Mozambique, where health systems deficits may continue to inhibit HIV-related service expansion, donor nations should stay the course to address gaps in care, partnering with recipient nations to bolster their health system and health worker capacities.⁶⁶ Premature cuts and hasty “exit strategies” risk millions of lives ... once again.

CONCLUSIONS

The history of the HIV epidemic in Africa has been changed dramatically by the national and international investments to improve care and treatment coverage for HIV-infected persons, as well as prevention interventions for mother-to-child, blood-borne, and sexual transmission. Our comparisons of data from comparatively higher and lower income PEPFAR-target nations illustrate huge disparities in financing and in-country capacities. Ongoing challenges in program implementation will be most acute in the poorest nations, particularly those in which PEPFAR funding has been lower, as with Mozambique (Table 2). In its efforts to turn over full management responsibility to national authorities, PEPFAR will do well to move huge chronic disease care obligations onto undercapacitated health service programs at a pace commensurate with their abilities to absorb such burdens. Infrastructure, work force, and health systems strengthening will be needed for years to come in building the first chronic disease management system in those nations that have not had prior experience with long-term, sustainable programs, particularly in rural settings.

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Figure 1. Estimated national population, number of HIV infected persons, and antiretroviral coverage, 2005–2009, Botswana. Data from references 26, 31–37.

Figure 2.
Estimated national population, number of HIV infected persons, and antiretroviral coverage, 2005–2009, Zambia. Data from references 31–37.

Figure 3. Estimated national population, number of HIV infected persons, and antiretroviral coverage, 2005–2009, South Africa. Data from references 31–38.

Figure 4. Estimated national population, number of HIV infected persons, and antiretroviral coverage, 2005–2009, Mozambique. Data from references 31–37.

Estimated per capita government expenditures on health and per capita PEPFAR expenditures per year, 2005–2009: Botswana, South Africa, Zambia, and Mozambique

Table 1

	Estimated costs of HIV care by year					
	2005	2006	2007	2008	2009	'05–'09
Botswana (Population estimate 1,950,000)						
Per capita government expenditure on health (using average exchange rate for US\$)	317	296	393	414	489	+154%
Total PEPFAR expenditure (millions of US\$)	43	55	76	93	95	
PEPFAR expenditure per capita (US\$)	22	28	39	48	49	+221%
Ratio, PEPFAR:Government health spending	1:14	1:11	1:10	1:9	1:10	
South Africa (Population estimate 50,110,000)						
Per capita government expenditure on health (using average exchange rate for US\$)	173	183	201	182	195	+13%
Total PEPFAR expenditure (in millions, USD)	222	398	591	561	560	
PEPFAR expenditure per capita (USD)	3.5	8	12	11	11	+214%
Ratio, PEPFAR:Government health spending	1:49	1:23	1:17	1:17	1:18	
Zambia (Population estimate 12,935,000)						
Per capita government expenditure on health (using average exchange rate for US\$)	23	34	30	42	36	+57%
Total PEPFAR expenditure (in millions, US\$)	149	216	269	271	277	
PEPFAR expenditure per capita (US\$)	12	17	21	21	21	+75%
Ratio, PEPFAR:Government health spending	1:2	1:2	1:1.5	1:2	1:2	
Mozambique (Population estimate 22,894,000)						
Per capita government expenditure on health (using average exchange rate for US\$)	14	13	14	17	20	+43%
Total PEPFAR expenditure (in millions, US\$)	51	94	162	229	253	
PEPFAR per capita (US\$)	2.2	4	7	10	11	+400%
Ratio, PEPFAR:Government health spending	1:6	1:3	1:2	1:2	1:2	

Table 1 sources: WHO Global Health Observatory Data Repository, <http://www.who.int/gho/database/en/>, accessed February 19, 2012; Office of the Global AIDS Coordinator, Department of State, U.S. Government, www.pepfar.gov, multiple pages, accessed February 19, 2012.

Table 2

Examples of essential elements requiring ongoing donor country investments to nurture successful and complete transition of HIV care and treatment programs to national governments and local organizations.

Essential Elements	Goals
Health workforce development	Increase substantially the numbers of health care providers, with special attention to coverage of rural care (e.g., nurses, clinical officers/técnicos em medicina, laboratory and pharmacy technicians, care partners, and/or community health workers)
Integration of services	Nest HIV/AIDS care and treatment within sustainable primary care services; link it to related goals such as control of sexually transmitted infection and tuberculosis and family planning
Physical infrastructures	Provide basic electricity, water, medical waste disposal, and space for physical examination, patient education and waiting, laboratory, and surgery in health centers
Pharmacy logistics systems	Ensure that inventory management, shipping, and storage systems avoid supply (e.g., test kits) and drug stock-outs for antiretroviral, antibiotics, and other drugs
Laboratory development	Decentralize laboratory work, as much as possible and affordable, with point-of-care diagnostic tests
Quality of care and iterative evaluation	Build sustainable quality improvement research and systems improvement efforts into HIV care programs
Hub-and-spoke models of care	Bring primary and HIV/AIDS care closer to people who are remote from major clinical services
Data management systems	Build sustainable, affordable electronic medical record systems to harmonize the myriad of systems created for the emergency response to HIV care and treatment
Community engagement to support programs	Implement innovative models of outreach, retention, and adherence support at the community level, tapping into the inherent strengths of patient-to-patient and family-to-patient support schemes as a form of task shifting
Cultural changes in the health sector	Train staff and reform procedures to protect patient confidentiality and privacy, provide more respectful, client-friendly services, and ensure that all communications are in native languages
Management and administration	Train and capacitate health systems to use modern business practices for financial and logistical management