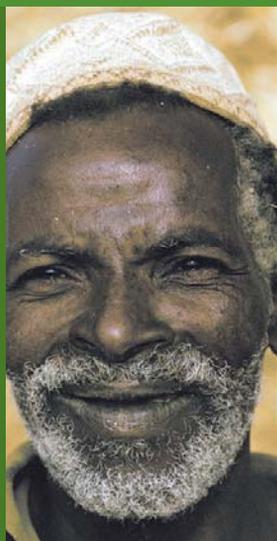


THE CHANGING HIV/AIDS LANDSCAPE

**SELECTED PAPERS FOR THE WORLD BANK'S AGENDA
FOR ACTION IN AFRICA, 2007–2011**



Editors

Elizabeth L. Lule

Richard M. Seifman

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Abbreviations

ACIP	Advisory Committee on Immunization Practices (United States)
ACT <i>africa</i>	AIDS Campaign Team for Africa
AFA	Agenda for Action
AIDS	acquired immune deficiency syndrome
AIM	AIDS Impact Model
ANC	Antenatal Clinic
ART	antiretroviral therapy
ARV	antiretroviral
ASAP	AIDS Strategy and Action Planning Facility
BAFROW	Foundation for Research on Women's Health, Productivity, and the Environment
BCC	Behavior Change Communication
CBO	community-based organization
CCM	country coordinating mechanism
CCR5	Chemokine Coreceptor 5
CD4	Lymphocyte Cell
CDC	Center for Disease Control and Prevention (United States)
CGIAR	Consultative Group on International Agricultural Research
CPIA	Country Policy and Institutional Assessment
CRS	Credit Reporting System
CSO	civil service organization
CSW	Commercial Sex Workers
DAC	Development Assistance Committee
DALY	disability life-year
DHS	Demographic and Health Survey
DOTS	directly observed treatment, short course
EPI	Expanded Programme on Immunization
EPP	Epidemic Projection Package
FBO	faith-based organization
FC1	female condom
FC2	female condom, new version
FDA	U.S. Food and Drug Administration
GAMET	Global Monitoring and Evaluation Team

GAVI	Global Alliance for Vaccines and Immunization
GEMS	Government Employees Medical Scheme, Namibia
GFTAM	Global Fund to Fight AIDS, Malaria, and Tuberculosis
GLIA	Great Lakes Initiative on HIV/AIDS
GNI	gross national income
HAART	highly active antiretroviral therapy
HARRP	HIV/AIDS Rapid Response Project
HBC	home-based care
HIV	human immunodeficiency virus
HIVResNet	HIV Drug Resistance Surveillance Network
HPV	human papilloma virus
HR	Human Resources
HSV-2	herpes simplex virus type 2
IBRD	International Bank for Reconstruction and Development
ICASO	International Council of AIDS Service Organizations
ICPD	International Conference on Population and Development
IDA	International Development Association
IEC	Information, Education and Communication
KDHS	Kenya Demographic and Health Survey
LDB	Live Database
LQAS	Lot Quality Assurance Sampling
M&E	monitoring and evaluation
MAP	Multi-Country HIV/AIDS Program
MARP	Most At Risk Population
MCH	maternal and child health
MDGs	Millennium Development Goals
MDR-TB	multidrug resistant tuberculosis
MSM	Men who have Sex with Men
NAC	National HIV/AIDS Commission
NAIDS	nutritionally acquired immune deficiency syndrome
NASA	National AIDS Spending Assessment
NtRTI	nucleotide reverse transcriptase inhibitors
NGO	nongovernmental organization
NNRTI	nonnucleoside reverse transcriptase inhibitors
NRTI	nucleoside reverse transcriptase inhibitors
NTLP	National Tuberculosis and Leprosy Program
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development

ORS	oral rehydration salts
ORT	oral rehydration therapy
OVC	Orphans and Vulnerable Children
PEP	postexposure prophylaxis
PEPFAR	President's Emergency Plan for AIDS Relief
PfSCM	Partnership for Supply Chain Management
PLACE	Priorities for Local AIDS Control Efforts
PLWA	people living with AIDS
PMTCT	prevention of mother-to-child transmission
PrEP	pre-exposure prophylaxis
PRGF	Poverty Reduction and Growth Facility
RESET	p-values for misspecification test
RNM	Resource Needs for HIV/AIDS Model
SACU	Southern Africa Customs Union
SADC	South Africa Development Community
SNNPR	Southern Nations, Nationalities, and People's Region
SRH	sexual and reproductive health
SSA	Sub-Saharan Africa
STI	sexually transmitted infection
SWApS	sectorwide approaches
TASO	The AIDS Support Organization
TB	tuberculosis
UN	United Nations
UNGASS	United General Assembly Special Session on HIV/AIDS
UNICEF	United Nations Children's Fund
UNRISD	United Nations Research Institute for Social Development
VCT	voluntary counseling and testing
WVS	World Values Survey
XDR-TB	extensively drug resistant tuberculosis
ZANARA	Zambia National Response to HIV/AIDS

Introduction

The HIV/AIDS pandemic in Sub-Saharan Africa remains a long-term development challenge for the region. Nearly 12 million African children have been orphaned as a result of the disease, and 22.5 million people in Africa—61 percent of them women—live with HIV. The hyperepidemics in southern Africa have diluted poverty reduction efforts and in several countries substantially reduced life expectancy.

The critical need to address this development problem is reflected in the sixth Millennium Development Goal (MDG), which seeks to halt and begin to reverse the spread of HIV/AIDS by 2015 and to make access to treatment for HIV/AIDS universal for all those who need it by 2010. With Sub-Saharan Africa representing nearly two-thirds of those living with HIV globally, and the fact that human development indicators of several countries in the region lag far behind the rest of the world, prospects for Sub-Saharan Africa reaching any of the MDG goals will require a sustained response to HIV/AIDS. Reversing the spread of HIV/AIDS is closely linked to combating other major diseases referenced in MDG 6, promoting gender equality (MDG 3), reducing child mortality (MDG 4) and improving maternal health (MDG 5).

In 2000, the World Bank began emergency operations in Sub-Saharan Africa through the Multi-Country HIV/AIDS Program for Africa (MAP). By 2008, International Development Association (IDA) funds provided \$1.6 billion for over 30 countries and five subregional activities to address cross-border issues. By early 2006, however, it was clear to World Bank leadership in Africa that much had changed, that countries and partners

had entered a new phase, and that the Bank needed to rethink its approach, to adjust to the new environment on the ground as well as to other technological and financial changes. The Bank also needed to move from its initial emergency response to a long-term, sustainable response.

This shift in the World Bank's approach is reflected in a strategy document, "The World Bank's Commitment to HIV/AIDS in Africa: Our Agenda for Action (AFA), 2007–2011," presented to the Bank's Executive Board in November 2007, and formally released, on World AIDS Day, December 1, 2007. AFA was based on an extensive consultative and analytical process, which produced several background papers dealing with evidentiary matters, partnership relations, economic, financial and operational aspects. Through the AFA process and as the AFA background papers were produced, the World Bank's AIDS Campaign Team for Africa (ACTAfrica) concluded that expanding selected pieces of this work and bringing together the results in a single volume would be of value to a wide-ranging audience of experts, policy makers, program managers, and other generalists.

The two chapters in Part I, Epidemiology and Technology, provide insights into the new epidemiological realities, which are based on more reliable estimates, the need to understand the underlying transmission dynamics of the virus and their implications for action, and the importance of supporting and sustaining prevention efforts. New and promising additions to the traditional arsenal of prevention tools are coming on stream. They include postexposure prophylaxis (PEP), male circumcision, and the integration of prevention of mother-to-child-transmission (PMTCT) activities and nutritional considerations combined with drug therapy. Because the incidence of HIV is the key to understanding the dynamics of the disease, its measurement can shape more effective responses. New techniques for monitoring incidence are therefore being tested.

Chapters 3 through 6 in Part II, Economic Aspects and Economic Policy Issues, discuss the links between HIV/AIDS and economic development. While there is a growing consensus that HIV/AIDS is related to growth and poverty, there is no agreement on the direction of causality, the specific channels through which those variables are related, or the magnitude of short- or long-term effects. The chapters in Part II review and critically discuss theoretical channels and the empirical evidence on the associations between HIV/AIDS and development outcomes. Chapter 4, in particular, discusses methodological issues that confront empirical investigations on the associations between HIV and socioeconomic status.

It challenges some of the commonly held views of the links between HIV/AIDS and three areas: poverty, early marriage, and serodiscordant couples (couples in which one person is HIV positive and the other HIV negative). The methodological debate is crucial because misconceptions about the epidemic can effectively hamper initiatives to respond to HIV/AIDS. The debate also highlights the need to continue to improve efforts to collect adequate data and improve the evidence base.

Chapter 6 discusses financial sustainability and economic policy problems that arise when considering how to finance the expenditures needed to respond to HIV/AIDS in a fiscally sustainable manner over the medium term, and how to ensure that resources are spent effectively. As the disease impact will persist in the long term, countries should attempt to establish consistent, reliable sources of long-term finance that will complement international aid.

Chapters 7 through 10 in Part III, Policy Challenges, examine the global financial architecture, public sector policy responses, and cross-cutting stakeholder dimensions. Noting the increase in the number of HIV-specific programs and new actors, the rise in transaction costs, the limited institutional capacity, and the heavy influence of external players on developing countries' politics and policies, chapter 7 suggests that the current "business model" is unsustainable. Future efforts should be more evidence based, should focus on better external donor coordination, and on alignment with national priorities and programs.

A plethora of public policy challenges linked to the HIV epidemic is discussed in chapter 8. These include predictability of donor financing, the deterioration of public sector revenues, the reduced ability of public sector staff to provide services in all sectors, the challenges facing the health sector system, and the emigration of health professionals, among others.

Chapter 9 discusses another aspect of critical importance—the gender dimensions of HIV, in particular the vulnerability of women. Gender inequality and vulnerability create significant barriers to effective prevention and treatment. In addition to purely physiological vulnerability, social susceptibility created by a set of interrelated economic and cultural determinants makes young girls and women more vulnerable to infection. While women and young girls are particularly at risk, some male populations—including men who have sex with men, prisoners, and soldiers—are at high risk of HIV infection.

The private sector has a role to play in both the demand and supply of HIV-related services. Private sector employees with HIV reduce

productivity and increase the costs of providing prevention and treatment services. The private sector is also a supplier of HIV services, through both direct service provision and financing mechanisms, such as insurance schemes. Chapter 10 explores the interface with public sector policies and programs by examining the leveraging of private sector health resources through public-private partnerships.

Communities are critical stakeholders in scaling up responses to achieve universal access to prevention, treatment, care, and support. Because most determinants of sexual behavior are rooted in cultural norms, social environments, beliefs, roles, and practices that are established, maintained, enforced, and modified at the local level, their formal and informal institutions must directly cope with illness, deaths, and dependency and play a major role in addressing behavior change. The many variants in community organization responses and the policy environment will determine the flexibility of their actions. Chapter 11 provides examples of what has been done and which factors affect the impact of interventions.

In Part IV, Strengthening National Health Systems, chapters 12 through 14 take into account that Sub-Saharan Africa's health sector has been forced to bear enormous additional burdens since the advent of the HIV crisis. Stakeholders are paying more and more attention to health sector weaknesses, including human resource gaps, inadequate linkages with other disease and critical nondisease responses, and the crucial role supply chains play in effective responses. Indeed, the demand for human resources for health in Sub-Saharan Africa has increased steadily with the need to deal with complex treatment processes.

The inadequate supply of health workers, outward migration, and insufficient training and levels of health worker performance and supervision represent significant obstacles to HIV scale-up efforts. The most responsive policies will be those that minimize the demand for health workers by implementing prevention and treatment models that take into account the acute shortage and suboptimal distribution of health workers. The case for examining the synergies between HIV/AIDS, sexual and reproductive health, tuberculosis, and nutrition is compelling. Chapter 13 explores both the basis of and the challenges in maximizing such linkages while taking account of the critical role of health systems. The management of supply chains is often given lower priority than it deserves in mounting an effective campaign to reach the MDG goals, in particular those related to HIV/AIDS. The discussion in chapter 14 highlights the actions needed to strengthen

supply chains and identifies options for achieving greater efficiency, reliability, and timeliness of crucial supplies.

Part V, *The Future*, discusses simulations of the likely impact of the HIV/AIDS epidemic from 2007 to 2011 as well as the effectiveness and impact of various responses. Chapter 15 explores three different scenarios, providing recommendations that will be of broad interest, debate, and application to the HIV/AIDS and development community.

PART I

EPIDEMIOLOGY AND TECHNOLOGY

HIV Epidemiology: Recent Trends and Lessons

David Wilson and Shilpa Challa

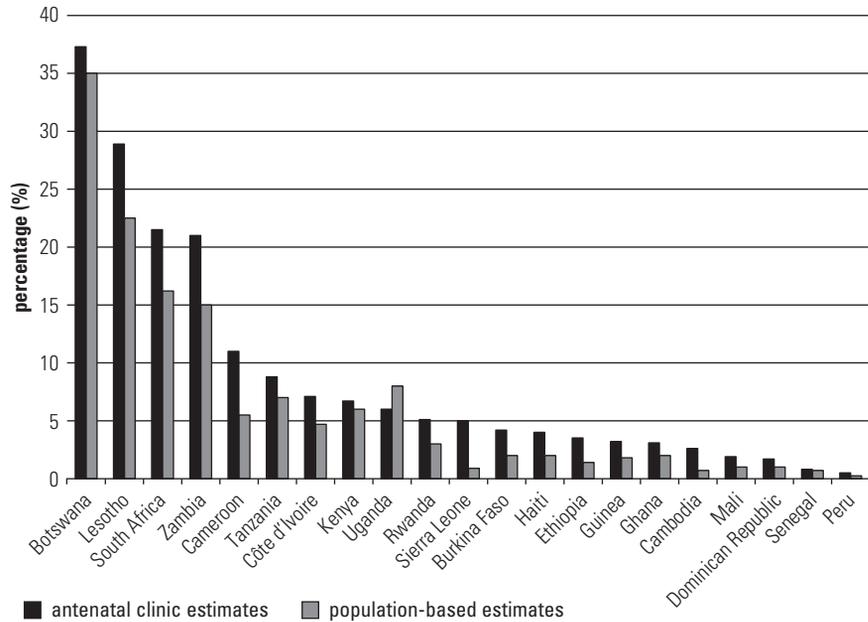
The understanding of HIV epidemiology—the global diversity of the disease, its transmission dynamics in different contexts, and effective prevention responses—continues to grow, and the prevalence of the disease is declining in a growing number of sites (UNAIDS 2008). This review summarizes recent trends and lessons learned from the global HIV epidemic and examines their implications for World Bank support.

Improved Surveillance

Investments in improved surveillance have yielded important results and insights. Since 2003, 19 countries have conducted national population-based household HIV surveys. These surveys have enabled the World Bank to refine previous HIV estimates derived from antenatal HIV surveys and more accurately estimate the global prevalence of HIV.

In all countries except Uganda for which population-based estimates are available, population-based estimates are lower than estimates based on antenatal data—significantly lower in many cases (figure 1.1). In parts of East Africa (notably Ethiopia and Rwanda) and much of West Africa (including Burkina Faso, Ghana, and Sierra Leone), population-based estimates are just 20–50 percent those of antenatal estimates. Cambodia’s population-based HIV prevalence (0.6 percent) is also far lower than its antenatal estimate (2.6 percent).

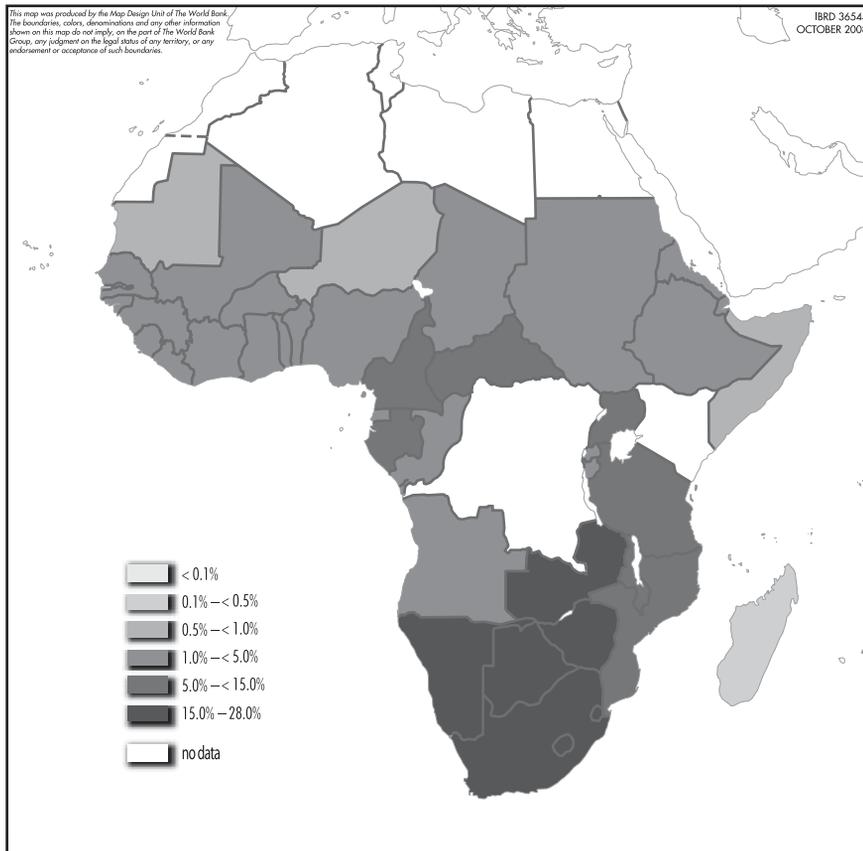
Figure 1.1: Most Recent Antenatal and Population-Based Estimates of HIV Prevalence in Selected Countries



Source: Wilson (2007).

Improved surveillance has provided greater insight into the global heterogeneity of HIV, revealing it to be much greater than previously recognized (figures 1.2 and 1.3). Africa's HIV epidemic may be divided into four distinct clusters. Southern Africa is characterized by highly generalized epidemics, with HIV prevalence exceeding 15 percent. HIV prevalence in East Africa, which for many years was grouped with southern Africa, is far lower and in many countries the trend is declining slightly or one that is stable. Prevalence in West Africa, Africa's most populous region, is considered stable and in some areas also declining according to the latest UNAIDS estimates.

To an even greater extent than previously believed, southern Africa is the epicenter of the global HIV epidemic. The hyper-epidemics of southern Africa are a continental—and a global—exception, which is unlikely to occur elsewhere. HIV epidemics elsewhere in Africa are less generalized than previously believed.

Figure 1.2: Sub-Saharan Africa HIV Adult (15–49) Prevalence Rate, 2007

Source: 2008 report on the global AIDS epidemic, UNAIDS/WHO, July 2008.

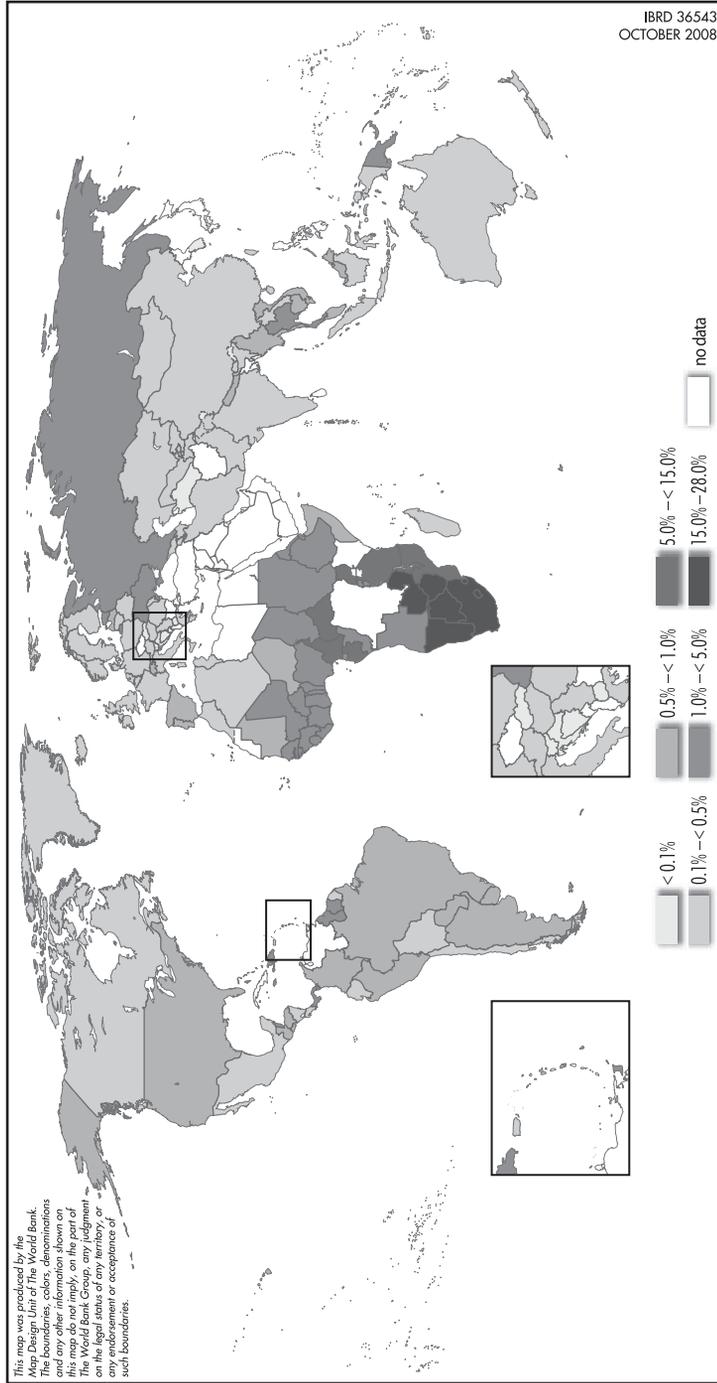
Note: At the time of UNAIDS 2008 report, data for Kenya and the Democratic Republic of Congo were unavailable.

The implications for development partners are clear. Southern Africa should remain the central focus for HIV/AIDS analysis and investments. Other regions also require continued support, but that support must reflect the greater heterogeneity of their epidemics.

Concentrated versus generalized epidemics

Traditionally, HIV epidemics have been considered concentrated if the prevalence in the general population is less than 1 percent; they have

Figure 1.3: Global HIV Adult (15–49) Prevalence Rate, 2007



Source: 2008 report on the global AIDS epidemic, UNAIDS/WHO, July 2008.

been considered generalized if prevalence in the general population exceeds 1 percent. Population-based surveys show that in many cases HIV infection in the general population has been overestimated. Recent data from Cambodia underscore this point. Whereas earlier estimates suggested that 2.6 percent of adults were HIV-positive, preliminary population-based estimates suggest that much less than 1 percent of adults may be infected.

The historical definition of *generalized* is flawed in several respects. First, it is often combined with overestimated prevalence figures to classify countries as having generalized epidemics. Second, it does not accommodate contexts in which vulnerable groups form a large enough proportion of the adult population to produce overall HIV prevalence estimates of more than 1 percent without significant transmission to the general population. Third, the categorization of an epidemic as general or concentrated is not based on transmission. It tends to arbitrarily classify countries as concentrated or generalized, limiting further analysis of underlying transmission dynamics.

An alternative, transmission-based definition is required that will encourage greater analysis of transmission dynamics and critical intervention priorities and points (table 1.1). The following definition could be adopted:

An HIV epidemic is concentrated if HIV transmission is attributable primarily to HIV-vulnerable groups and if protecting HIV-vulnerable groups would protect the wider population. In contrast, an HIV epidemic is generalized if the converse is true: HIV transmission is not primarily attributable to HIV-vulnerable groups and protecting HIV-vulnerable groups would not in itself protect the wider population.

Table 1.1: Distinctions between Concentrated and Generalized HIV Epidemic

ITEM	CONCENTRATED EPIDEMIC	GENERALIZED EPIDEMIC
Driving force	Sexual and injecting practices, especially among HIV-vulnerable groups, including sex workers and men having sex with men	Sexual behavior in general population
Effort required	Large-scale, high-coverage interventions to protect HIV-vulnerable groups, expanded coverage of proven interventions	Large-scale, fundamental changes in community norms and sexual values and practices; social and community change processes critical

Source: Author.

If this definition is used, there may be no generalized epidemics outside parts of Africa and the Caribbean (where epidemics are poorly understood). Moreover, within Africa there may be more concentrated epidemics than previously recognized. There may also be more mixed epidemics, displaying significantly more transmission both within and beyond HIV-vulnerable groups than previous analyses and typologies could readily identify.

Analysis of HIV prevalence and transmission patterns in three African countries in western, eastern, and southern Africa may shed light on this hypothesis. In Accra, Ghana, HIV prevalence in the general population is 2 percent, HIV prevalence among commercial sex workers approaches 80 percent, and 76 percent of new HIV infections among males 15–49 is estimated to be related to transactional sex (Côté and others 2004). These data depict a highly concentrated epidemic (figure 1.4).

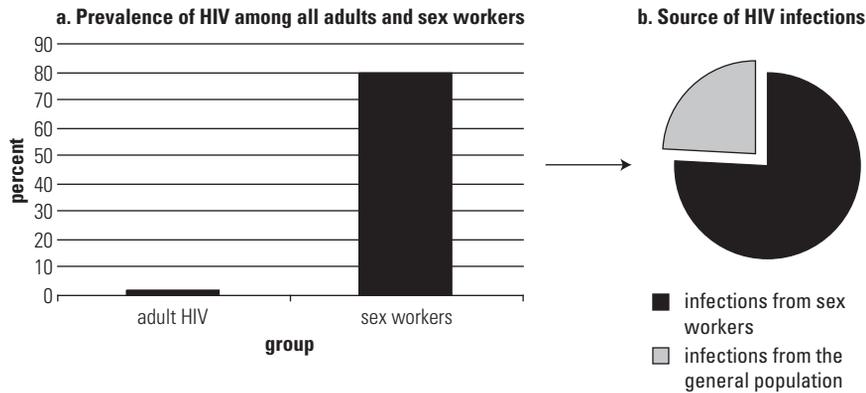
In Nairobi, the prevalence of HIV approaches 10 percent in the general population and about 60 percent among sex workers (figure 1.5). About half of the infections could be attributed to transactional sex (Pisani and others 2003). This pattern suggests a mixed epidemic, with HIV infections occurring almost equally in vulnerable groups and the general population.

In Zambia, the prevalence of HIV among adults is about 15 percent and 50 percent among sex workers. Less than 5 percent of HIV infection may be attributed to sex workers, their clients, and other male bridge populations, including soldiers and truckers (Shields 2005; figure 1.6).

These three cases depict three very different epidemics. In Accra, the epidemic is concentrated, with most transmission attributable to sex work. Programs to protect sex workers and their sexual partners are a clear priority. In Nairobi, the epidemic is mixed, with transmission among both HIV-vulnerable groups and the general population. There, interventions for both vulnerable groups and the general population are required in equal measure. In Zambia, the epidemic is highly generalized, with most transmission occurring in the general population.

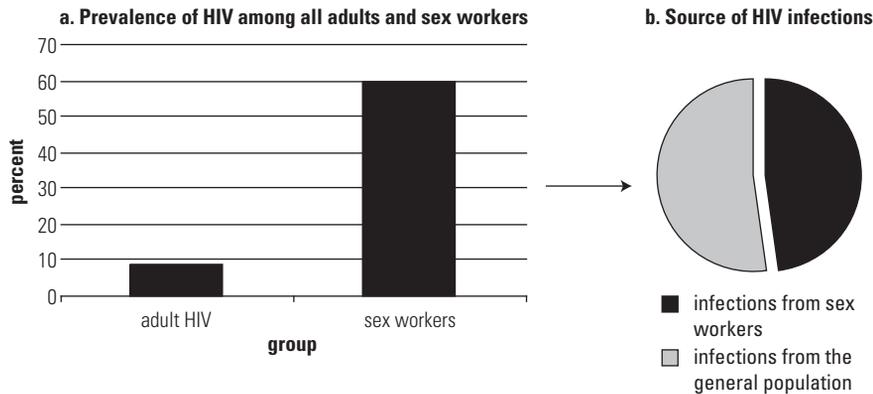
The three cases have implications for national programs and development partners. National AIDS programs and strategies must be based on a rigorous understanding of HIV transmission dynamics. It is vital to understand the proportion of HIV infections that may be attributed to each major source of transmission. Such understanding requires improved surveillance and epidemiological analysis at both the national and subregional levels. Subregional trends within geographic areas of affinity (that is, a cluster of countries that share common cultural, linguistic, economic, and

Figure 1.4: HIV Transmission Dynamics in Accra, Ghana



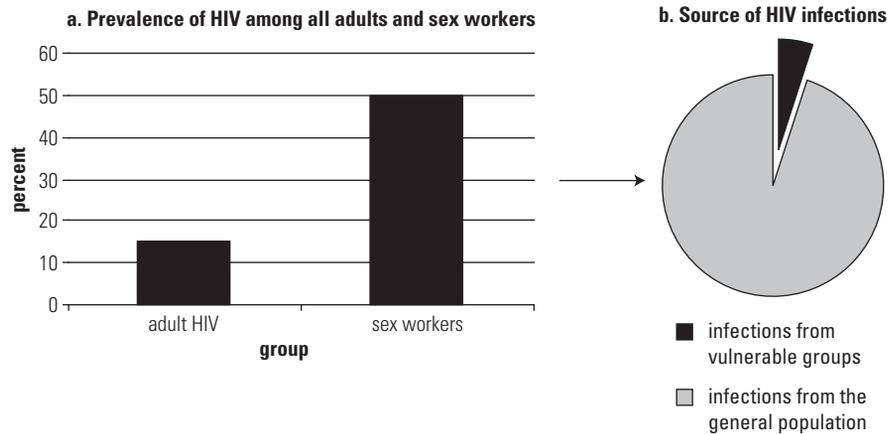
Source: Côté and others (2004).

Figure 1.5: HIV Transmission Dynamics in Nairobi, Kenya



Source: Pisani and others (2003).

trade patterns) typically display similar epidemic patterns. Armed with an understanding of national and regional transmission dynamics and infection sources, policy makers must design national and regional strategies and programs that address the major drivers of transmission. In short, continued investment is required, but investment must be more closely informed by evidence and analysis. As transmission dynamics and sources may change over time, such analyses must be frequently updated.

Figure 1.6: HIV Transmission Dynamics in Zambia

Source: Shields (2005).

Tailoring investments and interventions based on epidemic type

These findings have important implications for action (table 1.2). Concentrated and generalized epidemics are fundamentally different—and require different interventions. Rigorous analysis is required to identify epidemic typologies and to ensure that investments and interventions match these priorities. In the absence of such analysis, interventions may not be appropriately matched to epidemic typologies and transmission dynamics.

Highly concentrated epidemics, such as those in North Africa, require a narrow focus on protecting vulnerable groups. Highly generalized epidemics, such as those in southern Africa, require measures that target the population as a whole. Mixed epidemics, in which infection is driven both by particular groups and the general population, require a balance between targeted and general population investments that must be determined by local transmission patterns and sources of infection. In much of West Africa, where a significant share of infections may be caused by transactional sex, it is vital to immediately strengthen surveillance, analysis, investment, coverage, quality, and evaluation of targeted interventions among vulnerable groups, with the goal of achieving saturation coverage of sex workers and their clients. There are promising models to build on—both Benin and Côte d'Ivoire have implemented proven interventions for sex workers and their clients.

Table 1.2: Epidemic Typologies: Implications for Action

FACTOR	CONCENTRATED	MIXED	GENERALIZED
Geographic areas	North Africa, parts of West Africa, including Senegal	Much of West Africa, with more transmission from concentrated than generalized sources Much of Eastern Africa, with more transmission from generalized than concentrated sources	Southern Africa, especially the hyperepidemic Southern Africa Customs Union (SACU) subregion (Botswana, Lesotho, Namibia, South Africa, Swaziland)
Surveillance, monitoring and evaluation	Far greater emphasis on integrated biobehavioral surveillance of HIV-vulnerable groups, including sex workers and men having sex with men	Greater emphasis on integrated biobehavioral surveillance of HIV-vulnerable groups	Antenatal and episodic population-based surveillance adequate, but evaluation must be informed by recognition that existing interventions are not working well enough; new analysis and approaches required
Analysis	HIV prevalence, mapping, population size estimation, behavioral interactions within vulnerable groups and between vulnerable groups and the general population	Far tighter focus on understanding transmission dynamics	Tighter focus on understanding how to change sexual norms and behaviors in southern African context
Investment	Surveillance, targeted interventions, and stigma-reduction campaigns among the general population	Matching of investments to sources of transmission, which may vary across subnational regions and time	Investments directed to interventions that seek to promote normative change, supported by research agenda to better understand normative processes and change in southern Africa
Goal of interventions	Achieve saturation coverage of HIV-vulnerable groups	Tie interventions to transmission sources and maintain appropriate balance between targeted and general population activities	Change community norms, values, and sexual practices, particularly among males
Critical evaluation question	How to reach HIV-vulnerable groups with high-quality interventions	How to estimate the proportion of infections from different transmission sources and combine targeted and communitywide interventions	How to “de-norm” high-risk behavior in the wider adult population

Source: Author.

Other mixed epidemics, such as those in East Africa, may require equal emphasis on targeted and general population interventions. The decline in HIV infection in Kenya may reflect both effective, targeted interventions for vulnerable groups in large cities and along major highways and large-scale behavior change and partner reduction in the wider population. Countries may exhibit different epidemic characteristics in different regions, and these patterns may change over time. Zimbabwe, for example, appears to have moved very rapidly from a concentrated to a generalized epidemic.

Continued investments must be guided by improved surveillance, epidemic analysis, and synthesis. Development cooperation must focus on both financing and supporting better epidemic analysis, strategic planning, and prioritization.

From Epidemiology to Interventions: What Is Working?

What evidence is there that interventions may be working—and what are the implications for governments and development partners? The UNAIDS 2007 *AIDS Epidemic Update* reports a decline in the number of the world's people living with HIV, from 39.5 million in 2006 to 33.2 million in 2007. The decline is evident in both generalized and concentrated epidemics. According to the update, the revisions reflect a new methodology, improved HIV surveillance, and changes in the key epidemiological assumptions used to calculate prevalence.

About 70 percent of the difference in this decline is explained by reductions in prevalence in India and several Sub-Saharan African countries, including Angola, Kenya, Mozambique, and Nigeria. The remaining 30 percent reflects reductions in new infections in several countries in Sub-Saharan Africa. In some of these countries (notably Côte d'Ivoire, Kenya, Zimbabwe), the reduction reflects actual declines rather than statistical corrections. These declines reflect changes in behavior, probably partly spontaneous and partly as a result of formal HIV prevention programs.

Considerable evidence suggests that in some countries—notably Kenya, Uganda, and Zimbabwe in Africa and Cambodia, Thailand, and Southern India in Asia—behavior change has helped slow the epidemic. This is encouraging, as HIV prevention through behavior change remains the cornerstone of the global HIV response.

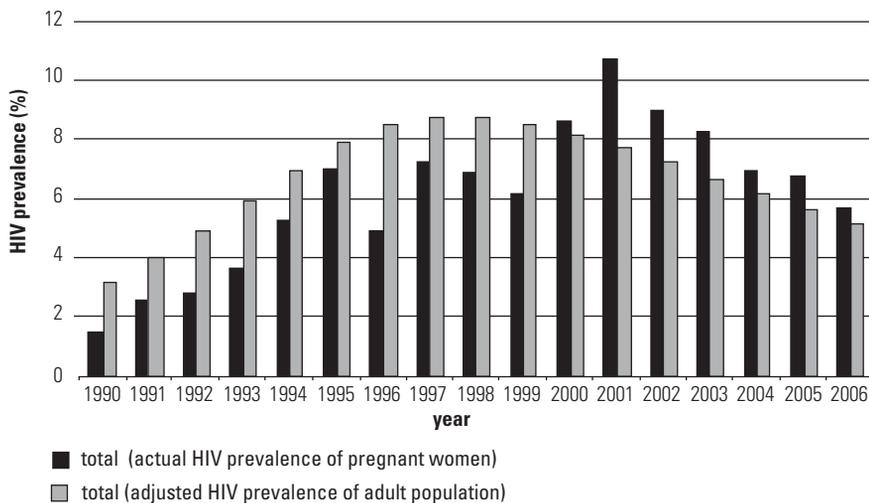
Evidence from Africa

Evidence of the decline in HIV prevalence is strongest in Kenya, Uganda, and Zimbabwe.

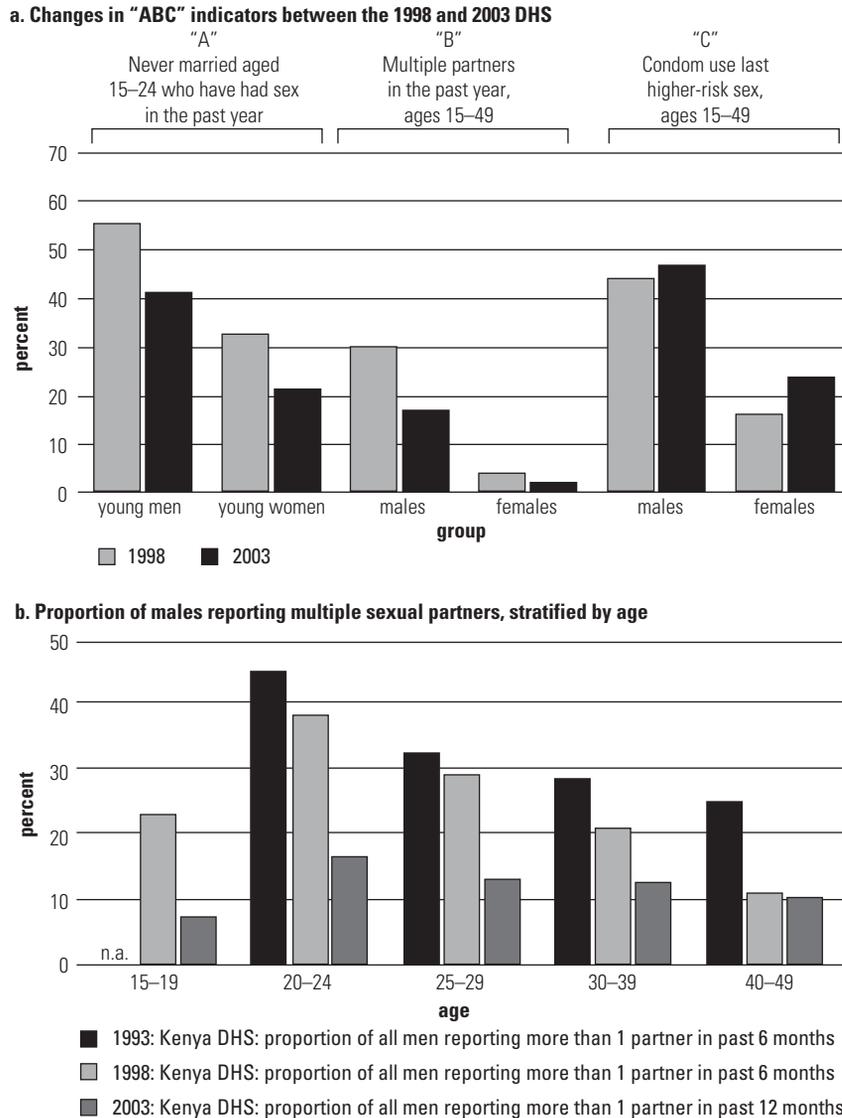
Kenya. HIV prevalence among pregnant women in Kenya fell from a peak of 13.4 percent in 2001 to 6.7 percent in 2004 (figure 1.7). Analysis of behavior change in the 1998 and 2003 Kenya Demographic and Health Surveys (KDHS) shows that partner reduction among adults played a major role in the decline, supported by deferred sexual inception among youth and increased condom use (figure 1.8). The KDHS data reveal that between 1998 and 2003 the percentage of sexually active unmarried people 15–24, fell from 56 percent to 41 percent among men and 32 percent to 21 percent among women.

Uganda. HIV prevalence declines have been reported within many groups in Uganda, including urban and rural women who use antenatal clinics; young and old; military recruits; the general population; and youth in the Masaka and Rakai districts (figure 1.9). Population-based surveys conducted by the World Health Organization in Uganda from 1989 to 1995

Figure 1.7: HIV Prevalence among Pregnant Women in Kenya, 1990–2006



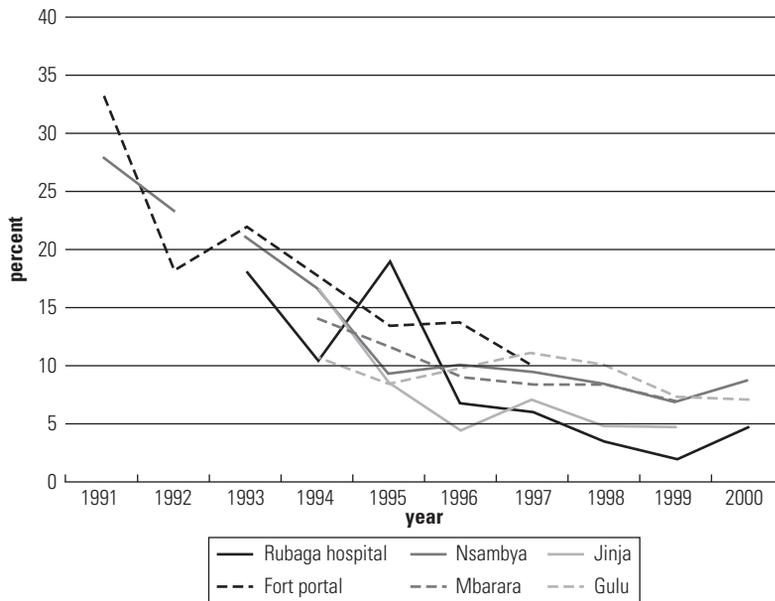
Source: NASCOP (2007).

Figure 1.8: Behavior Change in Kenya, 1998–2003

Source: Kenya DHS (NCPD, CBS, and MI 1999, 2003).

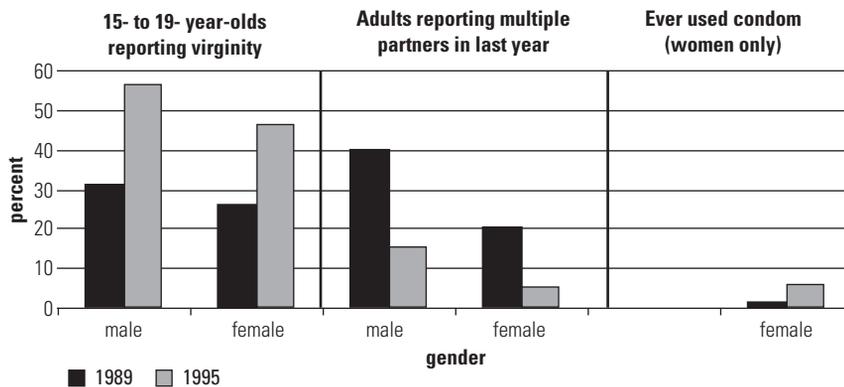
reveal impressive evidence of behavior change, with partner reduction among adults—particularly highly sexually active men—playing a major role, supported by deferred sexual inception among youth and increased condom use (figure 1.10).

Figure 1.9: HIV Prevalence among 15- to 19-Year-Old Pregnant Women in Uganda



Source: Hogel and others (2002).

Figure 1.10: Behavior Change in Uganda, 1989–95



Source: Wilson (2007).

Several features of Uganda’s efforts to reduce HIV appear to have contributed to success:

- The focus was on behavior change, specifically partner reduction.

The Changing HIV/AIDS Landscape

- Political commitment and engagement was high at all levels.
- Leaders provided clear, unambiguous information and warnings, which pierced denial and helped overcome stigma and discrimination.
- Efforts were multisectoral, involving government, community, and religious leaders at all tiers.
- Efforts were based on the premise that communities can be mobilized to prevent HIV and that communities have the resources and capital to reverse the epidemic.
- Social communication channels and networks were used to educate people about HIV.
- A strong sense of personal risk of HIV infection and proximity to the epidemic was ingrained that many communities and countries with equally high HIV infection levels have not yet attained.

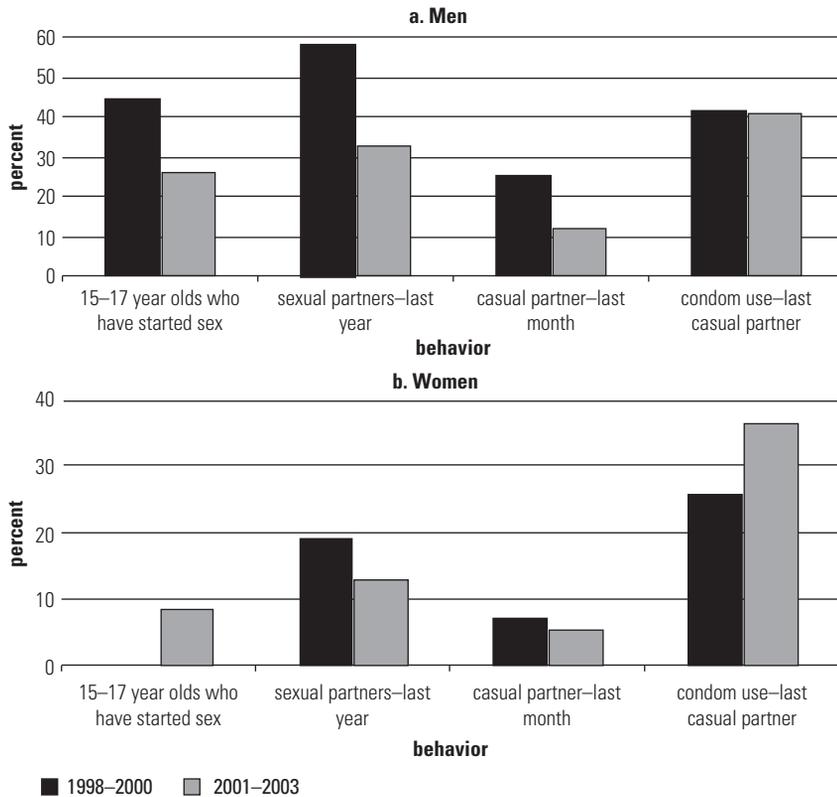
Zimbabwe. HIV prevalence among pregnant women fell from 26 percent in 2001 to 15.3 percent in 2007 (UNAIDS 2008). The rate among pregnant women 15–24 declined even more, falling from 21 percent in 2002 to 14 percent in 2006. Surveys conducted by Imperial College in Manicaland, Zimbabwe, show significant behavior change (figure 1.11). Partner reduction among adults played a major role, supported by deferred sexual inception among youth.

Evidence from Asia

HIV prevalence among sex workers and pregnant women fell in Cambodia. The change was associated with a steep decline in unprotected sex and in the proportion of men having sex with sex workers (figure 1.12). Data from India show reduced HIV prevalence among young women using antenatal clinics and people being treated for sexually transmitted infections in South India, where HIV rates are highest (figure 1.13). HIV prevalence among sex workers fell in Thailand, as condom use rose to extremely high levels in transactional sex and the proportion of Thai men visiting sex workers fell steeply (figure 1.14).

The evidence from Asia thus suggests that concentrated epidemics can be curbed through large-scale programs targeting sex workers and their clients.

Figure 1.11: Behavior Change in Manicaland, Zimbabwe, 1998–2003

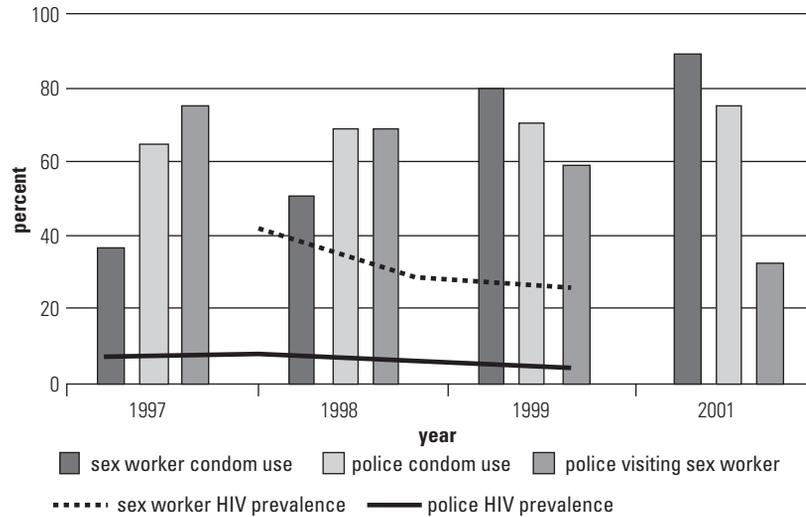


Source: Gregson and others (2006).

It confirms similar findings, albeit on a smaller scale, from Abidjan, Côte d’Ivoire, and Cotonou, Benin, that concentrated epidemics and subepidemics can be effectively addressed.

Conclusions

Several implications for national programs and development partners, particularly the World Bank, emerge from these findings. First, HIV prevention is working and must be sustained. Prevention remains the first weapon against this epidemic. Prevention programs are improving;

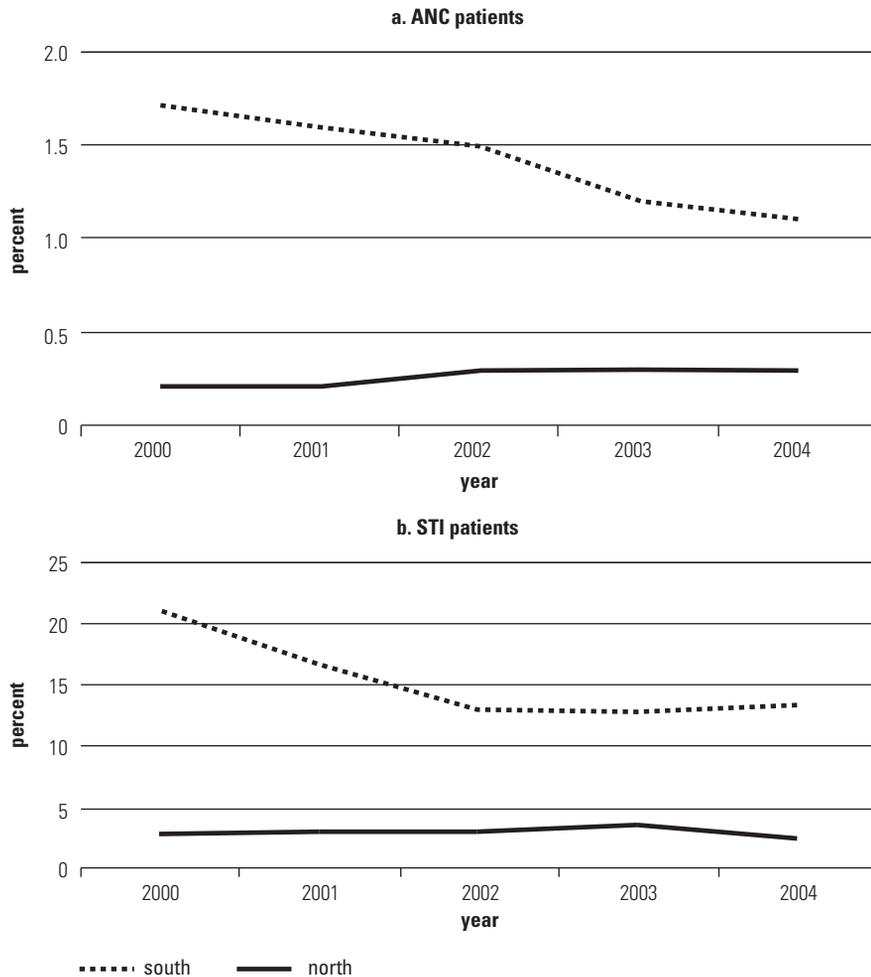
Figure 1.12: Behavior Change and HIV Prevalence in Cambodia, 1997–2001

Source: Wilson (2007).

if sustained and intensified, they can turn the tide in the incidence of HIV. Understanding of what drives HIV transmission and how to address these drivers is also growing, providing a solid basis for even more effective HIV prevention responses.

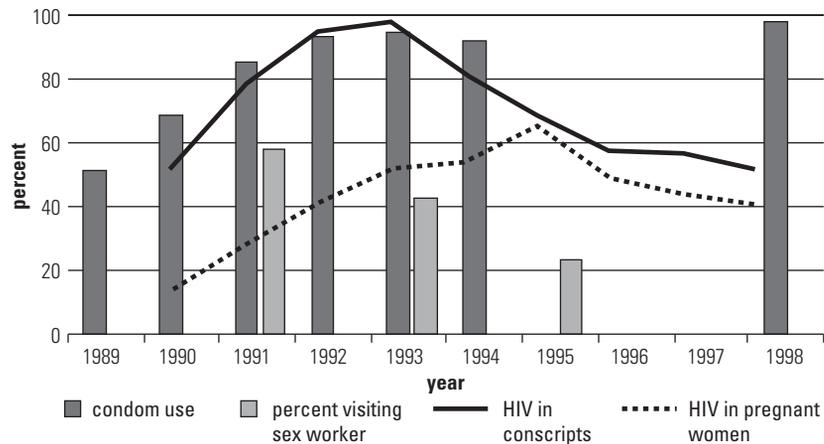
Second, continued HIV financing is needed in every subregion of Africa, for very different reasons—and the long-term continuity of these resources needs to be ensured. Financing needs differ markedly across regions. The most striking case is the South African Development Community (SADC) subregion of southern Africa, the center of the global HIV epidemic. Despite having the highest HIV prevalence in the world, this subregion receives limited World Bank support, because it consists largely of middle-income countries, which are reluctant to borrow on the nonconcessionary terms offered by the International Bank for Reconstruction and Development (IBRD). The evolving Bank Southern African Customs Union (SACU) strategy recognizes this problem and proposes several possible solutions, including increasing technical and analytic support and creating new financing mechanisms. Central and West Africa present a different challenge. Although their AIDS epidemics are milder than previously thought, Bank financing remains critical, because many countries in this region, particularly countries in Central Africa, receive little funding from other sources, such as the Presidency's Emergency

Figure 1.13: HIV Prevalence in India, 2000–2004



Source: Kumar and others (2006).

Plan for AIDS Relief (PEPFAR). Global Fund grants are extremely valuable, but they have too short and too uncertain a funding cycle to form the foundation of national AIDS responses. For many countries in West and particularly Central Africa, especially countries with recent histories of conflict, the Bank is the funder of first resort and the bedrock of national AIDS responses. Even in East Africa, where resources are readily available, Bank funding is vital for sustainability.

Figure 1.14: Behavior Change and Declining HIV Prevalence in Thailand, 1989–98

Source: Wilson (2007).

Third, the nature and context of investments should change. Future investments should include far greater emphasis on strengthening national analytic capacity to enable countries to rigorously and objectively assess their epidemics, identify the major sources of HIV transmission, align investments and interventions to their epidemic typology, and continuously monitor changes in epidemic typology. Achieving these goals will require closer analytic partnerships between national HIV/AIDS councils, which play a coordinating role, and national HIV/AIDS programs in health ministries, which are the repositories of much of the best epidemiological and technical expertise in their countries. The Bank must support greater national analytic capacity, by providing financing and developing networks of good practice. The first two rounds of the Bank's Africa Multi-Country AIDS Program (MAP) focused on good managerial practice; future investments should focus on good epidemiological, strategic, and evaluation practice. The Bank could also support greater subregional epidemic analysis by supporting epidemic syntheses, such as the syntheses recently completed in South Asia and just commissioned in West Africa.

Fourth, the response to HIV/AIDS needs to be better informed by evidence, more intelligent, and better tailored to specific circumstances. In addition to supporting such responses through investments, the Bank needs to play an expanded technical role, through the clusters already supporting AIDS investments. The Bank's AIDS Campaign Team for Africa

(ACTAfrica) will face greater technical demands, which call for enhanced capacity. Within the Global HIV/AIDS Program, the recent strategy note by the Global Monitoring and Evaluation Team (GAMET) commits it to supporting more analytic work to assist countries in implementing better-informed, more relevant, and more intelligent HIV/AIDS responses. Implementation of the new AIDS Strategy and Action Planning Facility (ASAP) will also be required to help African countries develop and implement more evidence-based HIV/AIDS strategies and action plans.

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The Evolution of HIV/AIDS Programs: Recent and Ongoing Developments in Selected Areas

Albertus Voetberg

The year 2006 marked the 25-year anniversary of the first description of an unusual immune system failure that led to the definition of AIDS, the isolation of the lymphadenopathy-associated virus, and the identification of the virus as the cause of AIDS in the following years. Although the global dimensions of the spread of HIV soon became clear, the global response remained limited and woefully inadequate. The epidemic had a particularly strong impact in Sub-Saharan Africa, with devastating consequences in the hardest hit countries. Significant financial resources with which to address the epidemic throughout the region only came forward in 2000, when the World Bank launched its Multi-Country AIDS Program (MAP). MAP was followed by the launching of the Global Fund to Fight HIV/AIDS, Malaria and Tuberculosis (the Global Fund) in 2002 and the Presidency's Emergency Plan for AIDS Relief (PEPFAR) in 2003. The number of global, regional, national, and local partners has increased rapidly, and their combined contributions have resulted in a significant change in the response to the epidemic.

This chapter describes some of the main evolutions—ongoing and expected—that may significantly shape the World Bank's contribution to regional, national, and local HIV/AIDS programs. The focus is on issues and interventions that are particularly relevant for the World Bank and its work in Sub-Saharan Africa.

Prevention

Until a cure for HIV infection is found, prevention remains the single most important approach to sustainable control of the HIV epidemic. In the absence of the wide availability of treatment—the result of weak political and social support for HIV control efforts—prevention has only partial effectiveness (Salomon and others 2005). Evidence about treatment–prevention interactions remains limited and controversial.

Since the start of the epidemic, preventive efforts in Africa have relied on a limited number of tools meant to reduce both the risk of exposure to the virus and the risk of transmitting it. Postexposure prophylaxis (PEP) was added to the menu of options only after the introduction of antiretroviral therapy (ART). New developments are likely to result in a further increase in approaches to prevention in the near future. Male circumcision in appropriate circumstances has recently been added as an important strategy, and preexposure prophylaxis may follow soon.

There is little doubt that the most significant potential gain in prevention lies in scaling up preventive efforts and customizing them to local realities and epidemiological priorities. Key prevention services currently reach less than 10 percent of people at risk. Expanding these strategies worldwide would avert more than half the HIV infections projected to occur by 2015 and save \$24 billion in treatment costs (Stover and others 2006).

The second-most significant potential gain in prevention efforts is in expanding the evidence base. More data are needed on both the country-specific status of the epidemic and the drivers of the epidemic. Such data would allow policy makers to adopt more targeted and potentially more efficient prevention strategies (Bertozzi and others 2006; Walker 2003).

While gender relations have been recognized as a main factor determining the vulnerability to infection—and ultimately to the course of the HIV epidemic—very little progress has been made in addressing gender inequalities in the context of HIV prevention. Many observers agree that HIV prevention efforts have, to a large extent, failed women. Correcting this situation would yield potential benefits well beyond the area of HIV/AIDS (Bertozzi and others 2006; World Bank 2007).

Once appropriate epidemiological and social diagnostics are available, much can be gained from tailoring behavior-change programs to the specific circumstances and needs of the target population. Especially in low-prevalence countries with concentrated epidemics, identifying and

focusing on hot spots of vulnerability and risk can produce efficiency gains. The Priorities for Local AIDS Control Efforts (PLACE) maps hot spots along major transport corridors and models the main modes of transmission to identify geographical areas in which risky behavior occurs or vulnerable populations live. Not all vulnerability to HIV infection can be geographically defined or detected, however; factors such as gender and age may prove to be more important, particularly in generalized epidemics. Demographic and social mapping of vulnerability is therefore an essential component of efforts to increase the efficiency of targeted interventions.

Further strengthening of the capacity of health departments and community-based organizations to implement effective behavioral and public health interventions continues to be crucial. Scaling up prevention interventions and finding the right balance between treatment, care, and prevention are high on the agenda of many countries. The disproportionate burden of HIV infection in women, the issue of discordant couples, and the large differences in prevalence rates both between and within countries all require focused attention and new approaches.

The growing number of people living with HIV means that more people are potentially capable of transmitting the virus to others. Despite substantial progress, the majority of people living with HIV do not know they are infected and are at considerable risk for developing AIDS and unknowingly transmitting HIV. In addition, the benefits of prevention interventions could be undermined by behavioral “disinhibition”: if an intervention leads people to think that can safely have more sexual partners or unsafe sex, the risk of becoming infected could increase.

Evidence suggests that drug use, particularly use of heroin, is increasing in Africa, particularly in coastal countries such as Nigeria (<http://www.unodc.org/nigeria/en/abuse.html>, 2006), South Africa (Dewing and others 2006), Tanzania, and Kenya (Beckerleg and Hundt 2004). The HIV prevalence among intravenous drug users in 2006 is estimated at 8.9 percent in Nigeria, 19.4 percent in South Africa, 29–31 percent in Tanzania, and 22.9–50.0 percent in Kenya (Needle and others 2006). Twenty-seven percent of intravenous drug users in Kenya and 11 percent in Nigeria had shared syringes within the previous six months.

A changing perception of the severity of HIV infection, prevention fatigue, and, in some countries, increases in substance abuse present new challenges to HIV prevention. High rates of discordance in HIV status

among couples have become very clear from the results of population-based surveys. They require different approaches.

Preexposure preventive methods

The chance of exposure to the virus and contracting HIV can be reduced in a variety of ways. Since the first MAP projects became effective, further insights have been gained into the effective application of existing methods, new methods have become available, and the context of existing methods has changed. The availability of ART will probably have an impact on behavior (change) and the use of HIV testing services, but the magnitude and direction of this impact is not known, particularly with regard to the long-term effects.

Behavior change. Behavior change is the last step in the pathway of breaking the silence, creating awareness and knowledge, and changing attitudes. Behavior change interventions generally seek to reduce exposure to HIV through sexual contact by changing condom use, sexual partnerships, treatment-seeking behavior for sexually transmitted infections (STIs), and age at first sex. Good evidence indicates that many behavioral prevention strategies are effective, especially if they include motivational and skills components (Johnson and others 2006). But the determinants of behavior are complex and vary from person to person, from one group within a society to the other, and from society to society.

Scaling up, expanding the evidence base on, and tailoring behavior change interventions to the target population remain the priorities for existing prevention programs that target behavior change as an outcome. Experience with the “dos and don’ts” of behavior change interventions that are specific to particular client groups and sociocultural settings is accumulating. Incorporating these lessons into programs and projects will be essential to increase their effectiveness and efficiency.

Many questions still remain, including the question of whether, or when, providing people with HIV with prevention services to prevent further transmission is more effective or efficient than prevention interventions that target HIV-negative people. Numerous interventions describe the success of programs targeting HIV-negative people to reduce their risk behavior; only a few describe the effectiveness of interventions that target risk reduction among people already infected with HIV. The evidence suggests that

after having been diagnosed with HIV infection, many people reduce or abandon behaviors that place them at risk for contracting STIs and transmitting HIV to others, but some do not change such behaviors, and others resume them later in life.

The importance of risk behavior reduction among people on ART has been highlighted with the scaling up of ART programs and is crucial to prevent the transmission of, possibly drug-resistant, HIV to their partners and to protect themselves against “superinfection” (infection with an additional, but different or mutated virus). The different needs and support interventions available suggest that behavior change prevention efforts need to be tailored to the HIV status of the client. Increased understanding of how best to support specific groups at risk will require a more diverse range of behavior change programs.

Recognition of the importance of discordance in HIV status among couples and the growing relevance of sexual behavior among people receiving ART are challenges that have become increasingly important (HIV/AIDS Sero-Behavioural Survey [2004–2005], Uganda, Measure 2006). Estimates indicate that 13–36 percent of couples in South Africa may be in discordant relationships, that the group at greatest risk of infection in Zambia is the seronegative partner in a discordant couple, and that there is an 8 percent annual seroconversion rate of negative partners (Majewski 2003). New approaches to prevention among discordant couples are being explored. They include the use of couple testing, preexposure prophylaxis (see chapter 4), and reproductive health and preconception counseling.

Treatment of STIs. It has long been recognized that STIs can enhance the transmission of HIV and serve as an indicator for increased risk of HIV infection (World Bank 2008a). People infected with STIs are at least two to five times more likely than uninfected people to acquire HIV if they are exposed to the virus through sexual contact (Chen and others 2007). In addition, if an HIV-positive person is infected with another STI, he or she is more likely to transmit HIV through sexual contact than an HIV-positive person without another STI.

Indications from studies in Tanzania and Uganda about the possible effect of STI treatment in reducing the risk to HIV infection (Grosskurth and others 1995; Wawer and others 1996) prompted many national programs to significantly scale up the availability, accessibility, and quality of

STI treatment services. Since those studies were conducted, it has been suggested that this approach is particularly useful in high-risk populations and settings (Korenromp and others 2005).

Early detection and treatment, screening of sexual partners, and prevention are the main strategies used to control STIs. Syndromic management remains the recommended approach. It involves treating people who have signs and symptoms of STIs, without laboratory diagnosis if laboratory services are not available, using drugs targeting a range of diseases. STIs are often symptom free, however, and may therefore go undetected. Even patients who have symptoms may fail to recognize them or to access effective treatment. Moreover, it has been suggested that those most at risk (such as sex workers) are least likely to benefit from this approach (Kaul and others 2004). Mass STI treatment and presumptive treatment algorithms have been mentioned as alternatives to overcome these limitations (Mayaud and McCormick 2001) but never applied on a large scale.

In 2003, the World Health Organization revised its guidelines for the management of STIs in recognition of the observed increase of herpes simplex virus type 2 (HSV-2) as the main cause of genital ulcers in developing countries. The revisions included changes in the management of vaginal discharge to reflect its complexity and the controversy over its role as an entry point for managing cervical gonococcal and chlamydial infections (WHO 2003). More recently, the U.S. Centers for Disease Control and Prevention (CDC) updated its guidelines for the management of STIs (MMWR 2006).

Interventions that include frequent and regular STI screening and management of syndromes, in combination with information and counseling about HIV and other STIs in the highest-risk groups, are effective in controlling both HIV and STIs; consideration should be given to the greater use of this strategy (Riedner and others 2006). Increasing the coverage and quality of STI services, especially in high-prevalence countries and priority targeting of such services for high-risk groups could yield substantial gains. Interventions that are managed or implemented with active involvement of the client population, such as peer-based activities for sex workers, seem to hold the greatest promise for effective scale-up (Bertozzi and others 2006).

Efforts to integrate care for STIs into reproductive health care services, with involvement of the private sector, have proved to be more complex than expected. Control of STIs must be included as a crucial element in national strategies for the prevention and care of HIV (WHO 2006).

The role of HSV-2 as a biological modifier of HIV infectiousness has received increasing attention in recent years, because HSV-2 control interventions may reduce the sexual transmissibility of HIV and potentially delay ART initiation in people with both HSV-2 and HIV infections. A meta-analysis by Freeman and others (2006) of studies in this area concludes that a person with genital herpes is about three times as likely to contract HIV following sexual exposure than a person without genital herpes. An early trial studying the effects of treatment of HSV-2 on HIV transmission has not revealed any beneficial effect from suppressive therapy with twice daily acyclovir (Celum and others 2008). Other drug regimen and anti-HSV-2 vaccines need to be explored.

Many other infections of the genital tract—including schistosoma haematobium infection, syphilis, and human papilloma virus (HPV)—have also been associated with significantly increased risk of HIV infection (Kjetland and others 2006). In the United States, HPV is also the leading cause of cervical cancer. There are many parallels between the HIV and HPV-related occurrence of cervical cancer. In both cases the disproportionate burden of disease is borne by women in resource-poor countries. Annually, an estimated 471,000 new cases of cervical cancer are identified worldwide, 80 percent of them in resource-poor countries, which have only 5 percent of global cancer diagnostic capabilities and care; 233,000 of these cases resulted in death (Parkin and others 2005; Steinbrook 2006). These two epidemics not only parallel each other, they may also reinforce each other. Women infected with HIV have higher prevalence and incidence of HPV infection, more-persistent HPV infection, greater difficulty clearing HPV, and a greater likelihood than their HIV-negative counterparts of progressing to a disease caused by HPV.

There is clear evidence that HIV-positive women are more likely than HIV-negative women to have abnormal Pap smears and neoplasia and that the seriousness of abnormalities increases with the degree of immunosuppression (MMWR 1990). However, there is no firm evidence that HIV-positive women are at greater risk than HIV-negative women of invasive cervical cancer. HIV-positive women who do develop invasive cervical cancer tend to have disease that is more aggressive than that found in their non-HIV-positive counterparts. The disease also tends to be more difficult to treat in HIV-positive women and is more likely to metastasize to unusual locations. The CDC has included invasive cervical cancer as an AIDS-defining illness.

The evidence on whether ART in HIV-positive women affects the development and progression of HPV-related abnormalities is inconclusive. It seems that immune system restoration as a result of treatment may not be sufficient to halt the progression of HPV-related abnormalities. While treatment guidelines for many STIs are well established, the treatment of HSV-2 and HPV viruses is still subject to research or not yet widely available. Further research into HSV-2 treatment and vaccines is expected.

Treatment for HPV infection has long been restricted to topical treatment of warts. In June 2006, the U.S. Advisory Committee on Immunization Practices (ACIP) recommended that a newly licensed vaccine, designed to protect against HPV, be routinely given to girls at age 11–12 (CDC 2006). The vaccine is highly effective against four types of the HPV virus, including two that cause about 70 percent of cervical cancer in the United States. The ACIP recommendation also allows for vaccination of girls beginning at age 9 as well as vaccination of girls and women 13–26. When more-affordable HPV vaccines become available, women identified as being at increased risk for STIs should also be considered candidates for HPV immunization, especially if they are young and have not previously had HPV infection (Steinbrook 2006). The effectiveness and possible application of the HPV vaccine in Sub-Saharan Africa is still subject to further studies.

Male circumcision. Most experts believe that male circumcision can be promoted as a proven option for preventing (but not eliminating) HIV but that it should not cause policy makers or practitioners to abandon existing effective strategies, such as correct and consistent condom use, behavioral change, and voluntary testing and counseling. Ecological, cross-sectional, and cohort epidemiological studies of HIV transmission have consistently found that circumcised men in Africa and Asia and men having sex with men in North America have rates of HIV infection that are half or less than those of uncircumcised men. Three randomized, controlled clinical trials were conducted in Kenya, South Africa, and Uganda to determine whether circumcision of adult males reduces their risk for HIV infection. The study in South Africa was stopped in 2005 (Auvert and others 2005) and the studies in Kenya and Uganda stopped in 2006 after interim analyses found a statistically significant reduction in male participants' risk for HIV infection from medical circumcision (Bailey and others 2007; Gray and others 2007). Male circumcision may not have a significant protective

effect for men having sex with men or men with ulcerative genital disease; it may promote HIV transmission if sexual activity is resumed before the surgical wound has completely healed (Wawer, Kigozi and Serwadda 2008).

Although knowledge about the benefits of male circumcision to female partners is still limited, indications suggest that over a longer period of time male circumcision reduces the risk of HIV infection among women. The effect may reflect decreased viral shedding from circumcised men or the reduction in ulcerative STIs acquired by female partners of circumcised men (Gray and others 2006; Turner and others 2007).

Lack of male circumcision has been associated with sexually transmitted genital ulcer disease and chlamydia (Alanis and Lucidi 2004). A systematic review and meta-analysis concludes that there is a significantly lower risk for syphilis and chancroid among circumcised men; the reduced risk of herpes simplex virus type 2 infection has a borderline statistical significance (Weiss and others 2006). Recent reports have also suggested a lower incidence of STIs in the wives of circumcised versus noncircumcised, HIV-negative men (Tobian and others 2008). Male circumcision also appears to reduce the rates of trichomonas and bacterial vaginosis in female partners (Gray and others 2006).

The potential impact of male circumcision as a method of preventing HIV transmission is probably situation specific. It appears to depend on, among other factors, the overall HIV prevalence in the community in which the intervention is introduced, the coverage of the intervention reached, and any possible behavioral disinhibition that may occur. Using a dynamic simulation model based on country-level prevalence of circumcision and HIV, Williams and others (2006) estimate that the procedure could prevent 2 million new infections and 300,000 deaths in Sub-Saharan Africa over 10 years.

Gray and others estimate that in Rakai, Uganda, with 60 percent efficacy and 100 percent program coverage, circumcision could reduce the incidence of HIV sufficiently to interrupt the epidemic (Gray and others 2007). Moreover, since the possible protective effects of circumcision are probably long lasting, even lifelong, circumcision is likely to be a cost-effective intervention, comparable to other proven preventive strategies, such as provision of antiretroviral drugs for the prevention of mother-to-child HIV transmission. If circumcised men and their partners develop a false sense of security and increase their risk behaviors, however, disinhibition could offset any benefits afforded by circumcision, emphasizing the need to maintain intensive risk-reduction efforts.

Barrier methods. Since the early days of the HIV epidemic, the male condom, used correctly and consistently, has been promoted as an effective means of reducing the risk of acquiring and transmitting HIV infection and other STIs. Strong evidence confirms that condom use does indeed reduce the risk of transmission of HIV, gonorrhoea, chlamydia, and herpes simplex virus in both women and men as well as HPV infection in women (Steiner 2006; Winer and others 2006). Moreover, a review of 174 condom-related prevention approaches concludes that such interventions do not increase unsafe sexual behaviour (Steiner and Cates 2006). Promotion of male condom use thus needs to be part of a more comprehensive approach to risk reduction.

The first female condom (FC1) was developed in the 1990s by the Female Health Company. It provides a barrier method for women to use, particularly in situations in which they are unable to insist on male condom use by their partner. Early efforts to introduce female condom use were targeted to sex workers, among whom the female condom is well accepted in many countries, especially when clients refuse to use male condoms.

Although shown to be effective in preventing pregnancy and acceptable to users, the female condom has not achieved its full potential in national programs because of, among other barriers, its relatively high cost. FC1 is available to donor programs through an agreement with the Joint United Nations Programme on HIV/AIDS at a cost of £0.38 (about \$0.66) per unit—about 22 times the cost of a male condom (\$0.03 per unit). In 2005, only 14 million female condoms were available for distribution, while 6–9 billion male condoms were provided worldwide (UNFPA 2006).

A new version of the female condom (FC2) is made of synthetic nitrile. The product will be available for developing countries in the course of 2008 and the manufacturer expects that, depending on the volume of condoms purchased, the FC2 could be sold for as little as US \$0.22 per unit while essentially maintaining equivalence with respect to safety, performance, and efficacy. If high utilization rates of the new device can be achieved, its use may make a substantial contribution to prevention of unwanted pregnancy and STIs, including HIV.

A diaphragm and lubricant combination containing an antiretroviral drug as an HIV prevention device is under research as a second female-controlled HIV prevention tool. One early clinical trial concluded that there was a reduced frequency of HIV infection, but the difference between

the control and test groups was not statistically significant (Peterson and others 2007). Another clinical trial concluded that the use of a diaphragm, lubricant gel, and condoms was not more effective in preventing HIV than condoms alone (Padian and others 2007). However, in women who used condoms less frequently, diaphragm use was not associated with an increase in infection, suggesting that diaphragm use may have compensated for the difference in condom use (Padian and others 2007). At least four other trials are ongoing examining the same issue in high-risk populations.

Prevention of mother-to-child transmission (PMTCT). The prevention of HIV transmission from mother to child during pregnancy, labor, or breastfeeding has been one of the priority areas since nevirapine became widely available and accessible for that purpose. However, between 2003 and 2005, less than 10 percent of HIV-positive pregnant women received antiretroviral prophylaxis before or during childbirth. As a result, thousands of infants a year continue to be born HIV-positive (WHO/UNAIDS 2006).

Since the first MAP projects, significant issues related to PMTCT have evolved and improved the programs in many countries. These developments concern different approaches to testing and screening, different treatment protocols, the increasing availability of ART, and new insights into the prevention of HIV infection during breastfeeding.

With the availability of rapid tests, and in combination with new testing approaches, there is both an opportunity and an urgent need to increase access to and use of PMTCT services. Better integration into mother and child and ART services could yield substantial gains to HIV/AIDS programs.

HIV care and follow-up need to be better integrated into maternal and child health services; enlisting male partner support and ongoing involvement is critical to ensure that the uptake of PMTCT services becomes universal. Investigators find that at the same level of expense, an effective contraceptive strategy averts 28.6 percent more HIV-positive births than nevirapine. "Increasing contraceptive use among nonusers of contraception who do not want to get pregnant is cost-effective and is an equally important strategy to prevent perinatal transmission as prenatal care programs that provide and promote nevirapine to HIV-infected mothers" according to Reynolds (Reynolds and others 2006). The optimum antiretroviral regime for the prevention of HIV transmission from mother to child during pregnancy and postpartum is still under investigation, but single-dose nevirapine is slowly

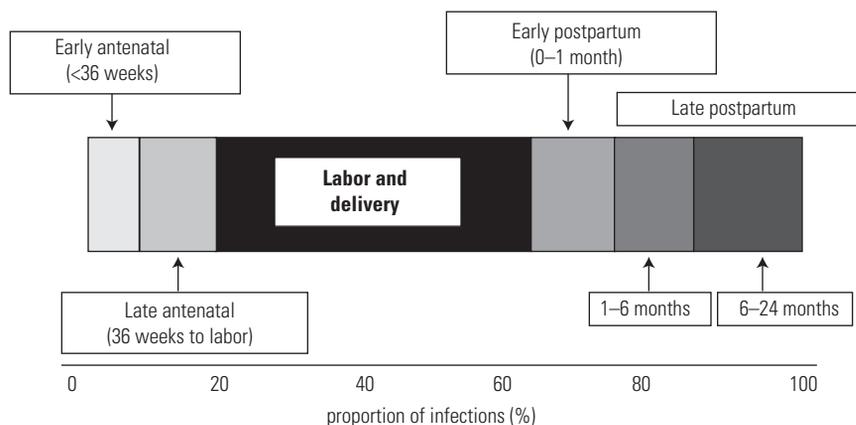
being phased out and more complicated regimes recommended (Arrive and others 2008; WHO 2003).

Transmission through breast milk continues to be a main source of infection for children (figure 2.1). In many settings, safe and affordable alternatives to breast milk are not available—and even if they are, safe drinking water is not. Furthermore, formula feeding carries stigma, because it is often an indication of the mother’s HIV status. ART may represent the best option for HIV-positive mothers who are breastfeeding (World Bank 2007).

Several clinical studies have shown that exclusive breastfeeding carries a lower risk of mother to child HIV transmission than “mixed” feeding, in which infants are breastfed but also receive water and other foods (Kuhn and others 2007). The Petra study showed that the longer the breastfeeding period lasts, the higher the risk of HIV transmission (Petra Study Team 2002). A study in Zambia showed that early weaning may be counterproductive for the child if breast milk is replaced by poor food sources with a limited range of nutrients, leaving children open to poor growth and infections (Makasa and others 2007).

Low rates of HIV infection have been observed in children when mothers were kept on three-drug, highly active antiretroviral therapy (HAART) regimens from late pregnancy through six months of breastfeeding. Although

Figure 2.1: Timing of Mother-to-Child Transmission



Source: Slide adapted from Mofenson 2006.

Note: Figure represents breast-feeding mothers who are not taking antiretroviral drugs. Breastfeeding accounts for up to 40 percent of all mother-to-child transmissions of HIV.

breastfeeding from an HIV-positive mother poses a risk of HIV transmission to the infant, breastfeeding is still recommended for HIV-positive women until their babies are six months old, based on evidence that it provides better health outcomes than formula feeding (Thomas and others 2008). Trials are underway to find ways of reducing the risk of mother-to-child transmission during breastfeeding.

Studies have shown an increased risk of mortality among HIV-positive and uninfected children born to HIV-positive women who are at an advanced stage of HIV disease during pregnancy, with a nearly twofold increase in deaths before two years of age if the mother's CD4 count is less than 350 cells/mm³. Higher maternal viral load, maternal anemia, and child undernutrition raise the risk of child mortality (Chatterjee and others 2007).

With a gradually rising uptake of PMTCT programs in the region—in particular in countries that have adopted a routine or opt-out approach to testing—such programs can be expected to grow in importance as an entry point for addressing the issues facing discordant couples and efforts to limit further increases in the number of orphans. Current interventions in these areas such as the counseling and testing of couples and antiretroviral treatment targeted to parents are very limited in scale.

Microbicides and antiretroviral preexposure prophylaxis. Microbicides have always offered a promise of a prevention tool that women can control. The first MAP projects paid little attention to microbicides, because none was available for use within the context of national HIV/AIDS programs. The sole exception was the experimental use of nonoxynol-9, the active ingredient in spermicides. There is now a consensus among organizations concerned with sexual and reproductive health that nonoxynol-9 plays no role in preventing HIV or other STIs and that its use should be discouraged by anyone perceived to be at risk, because its corrosive effects may actually increase susceptibility to HIV infection. There continues to be a role for spermicides containing N-9 as readily available but only moderately effective nonhormonal contraceptives, for women and couples at very low risk of HIV or other STIs (WHO/CONRAD 2003).

Despite enormous financial, technical, practical, and ethical challenges and despite disappointing results thus far, medical researchers are continuing to explore new products. Two major microbicide studies were halted in 2007, after women using the microbicide cellulose sulphate seemed more

likely to become infected with HIV. In February 2008, trials with a seaweed derivative (Carraguard) showed the product to be safe but could not demonstrate its effectiveness in preventing HIV infection. The next generation of microbicides to enter into clinical trials consists of those containing single or combination antiretroviral compounds.

Several delivery mechanisms are being tested for their efficacy, safety, adherence, convenience, and acceptance. Most microbicides are formulated as gels, but other mechanisms—including combinations with cervical barriers, slow-released agents placed in intravaginal rings, and sperm-activated compounds—are being explored. Ongoing studies are also evaluating daily versus coitus-dependent use of tenofovir gel and nonnucleoside reverse transcriptase inhibitors, such as TMC-120, in vaginally inserted rings. Combinations of chemical agents, including conventional ART and fusion and entry inhibitors, are also being developed. Long-term studies will be needed to ensure that microbicide usage does not undermine the use of male or female barrier methods.

Modeling studies indicate that even a 60 percent effective microbicide could have considerable impact on the spread of HIV. If used regularly by just 20 percent of women in countries with substantial epidemics, microbicides could avert hundreds of thousands of new infections over a period of three years (Rockefeller Foundation 2001).

Preexposure prophylaxis (PrEP) to prevent sexual transmission of HIV refers to the use of antiretroviral medications before (potential) exposure to the virus. It holds promise for people who may be exposed to HIV despite taking precautions. While animal experiments support the potential efficacy of PrEP, no relevant clinical trials have been completed in humans (Denton and others 2008). Seven PrEP clinical trials with the drug tenofovir, some in combination with emtricitabine, are ongoing; early results may be available in late 2008. The future application of microbicides, PrEP, or both seems very likely; but when they will be available for use is not yet clear.

Vaccination. Researchers have long sought a vaccine against HIV. The challenge of doing so remains enormous, however, because of inadequate resources, clinical trial and regulatory capacity concerns, intellectual property issues, and the scientific difficulty of the problem.

The scientific challenges relate to three properties of the HIV virus that have complicated the search for an effective vaccine over the past 20 years.

HIV converts its genetic material from ribonucleic acid (RNA) to deoxyribonucleic acid (DNA) after it infects cells. It then hides this DNA within long-lived CD4 T-cells, where it is ready to start producing more HIV particles at any time. The variability in the virus's structure, both within and across patients, has resulted in inadequate responses to vaccines. Moreover, the two vaccines that have entered large phase III trials were designed to target the envelope proteins (gp120 and gp160) on the surface of the HIV particle. Researchers now understand that these proteins change shape and position when they bind to the receptors on the surface of a human T-cell, rendering the antibodies ineffective (Duerr and others 2006).

More success was expected from the use of DNA-based vaccines to introduce HIV genes into the body, often using vectors to carry the genes, such as other harmless viruses or bacteria. It has been suggested that using these vectored vaccines and a combination of more than one type of vaccine in a "prime and boost" strategy may result in the best solution (Gomez-Roman and others 2006). The results of a clinical trial based on data from 3,000 volunteers, however, show that although the vaccine induced HIV-specific cellular immune responses, they were not effective at preventing HIV infection or reducing levels of the virus in people who became infected despite vaccination (Cohen 2007a, 2007b). Researchers are now hard at work trying to determine why the vaccine was not effective and to identify any role it may have played in increasing susceptibility to HIV in some people. There is great uncertainty about the evidence suggesting the vaccine may have increased the risk of HIV infection, but there are several possible biological explanations for this difference and further analysis is ongoing. Some groups, including the AIDS Vaccine Advocacy Coalition, are now advocating that other efficacy trials should be postponed until definitive conclusions can be drawn. But many researchers think it is still imperative to test other candidates that induce different immune responses.

Postexposure prophylaxis

The use of antiretroviral drugs after possible or confirmed exposure to HIV has been experimental. Based on animal research, this approach has been driven by the desire to help people who have been exposed to the virus by workplace accidents or rape. The most direct evidence supporting PEP effectiveness was a case-control study of needle-stick injuries to health care workers, which found an 81 percent reduction in HIV infection

compared to health care workers who had not been administered PEP (Cardo and others 1997).

Similar findings have been reported from other observational studies and registries that studied risk after sexual HIV exposure, such as in a high-risk HIV incidence cohort in Brazil (Harrison and others 2001) and sexual and injection drug use exposed individuals in San Francisco (Kahn and others 2001).

When used, PEP should be initiated promptly, as animal research suggests that it may be less effective or even ineffective if started later than 24–36 hours after exposure. Determining which and how many agents to use or when to alter a PEP regimen is primarily an empirical matter. Guidelines for treating HIV infection (a condition typically involving a high total body burden of HIV) recommend use of three or more drugs. The applicability of these recommendations to PEP remains unknown. Among people with HIV, combination regimens with three or more anti-retroviral agents have proved superior to monotherapy and dual-therapy regimens in reducing HIV viral load, cutting the incidence of opportunistic infections and death, and delaying the onset of drug resistance (Badri and others 2006). In theory, a combination of drugs with activity at different stages in the viral replication cycle (for example, nucleoside analogues with a protease inhibitor) might offer an additive preventive effect in PEP, particularly for occupational exposures, which pose an increased risk for transmission or for transmission of a resistant virus.

Although use of a three- (or more) drug regimen might be justified for exposures that pose an increased risk for transmission, it is not clear that the potential added toxicity of a third or fourth drug is justified for lower-risk exposures, especially in the absence of data supporting increased efficacy of more drugs in the context of occupational PEP. Offering a two-drug regimen is a viable option, primarily because the benefit of completing a full course of this regimen exceeds the benefit of adding the third agent but risking non-completion. For these reasons, recommendations usually provide for two- and three- (or more) drug PEP regimens on the basis of the level of risk for HIV transmission represented by the exposure (MMWR 2005).

Policy makers have argued that one precondition for offering PEP is the widespread availability of HIV antibody testing, so that people at risk are aware of their own HIV-negative status. This would be especially important if the treatment option provided were inappropriate for treating people

with HIV (for example, single-dose nevirapine, short-course combivir [AZT and 3TC], or both). Although the rationale for the use of PEP remains largely unsubstantiated by randomized trials confirming its efficacy, there are sufficient reasons to make PEP more widely available and accessible. Findings from animal studies in combination with the social responsibility to help those who unwillingly, or even forcefully, have been exposed to the virus justify expansion of the PEP program (Kim, Martin, and Denny 2003).

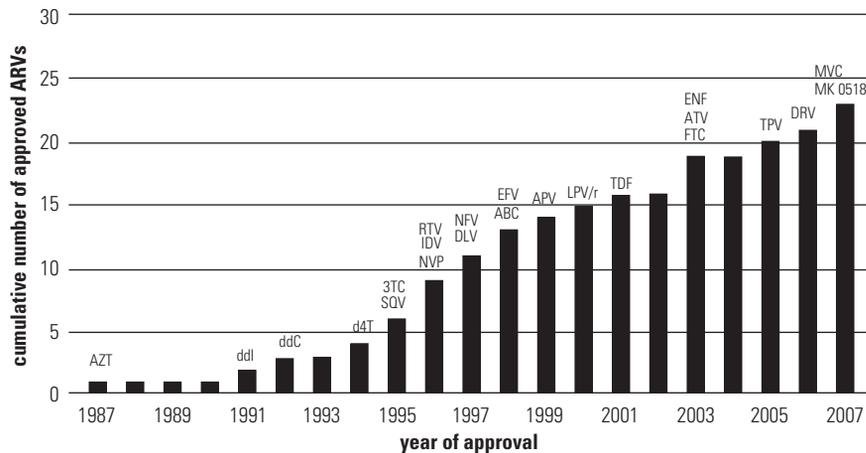
PEP interventions related to rape will require expanded efforts to integrate these services into the services of the health and police sectors. Additional investments are needed to train uniformed personnel such as police officers and medical personnel, strengthen referral services, and expand testing facilities.

Treatment

First synthesized in 1964 as a drug intended to treat cancer, zidovudine (AZT) became the first drug approved by the U.S. Food and Drug Administration (FDA) (in 1987) for use against HIV. The FDA approved didanosine (ddI) in 1991, zalcitabine (ddC) in 1992, and stavudine (d4T) in 1994. The initial treatment protocols, based on AZT only, were prohibitively expensive (\$7,000 per patient per year). In July 2006, the FDA approved the first three-drug, fixed-dose tablet for use in the United States, a combination of efavirenz, tenofovir, and emtricitabine. Another fixed-dose combination, containing lamivudine, zidovudine, and nevirapine, for use twice daily was tentatively approved for use in PEPFAR countries. Use of such once or twice daily fixed-dose combinations is expected to help people better tolerate their medication and improve adherence.

As of the end of 2007, 23 drugs (individual compounds) had been approved by the FDA (see figure 2.2). With the advent of more treatment options, lower costs, and more-effective combination therapy, ART has gradually become accessible on a wider scale.

Antiretroviral agents from six classes of drugs are currently available to treat HIV infection. These include nucleoside reverse transcriptase inhibitors (NRTIs), nucleotide reverse transcriptase inhibitors (NtRTIs), nonnucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors, fusion inhibitors, and CCR5 antagonists. The most commonly used HIV treatment

Figure 2.2: Antiretroviral Drug Approval by the FDA, 1987–2007

Source: FDA (2008). Slide adapted from Gulick (2004).

combinations in the developing world consist of NRTIs and an NNRTI, usually nevirapine.

By the time the first MAPs projects were prepared, many questions remained about the feasibility, sustainability, and public health consequences of scaling up access to ART in low- and middle-income countries. Further developments in viral and pharmaceutical research, in combination with additional cost reductions and findings from operational research, have dramatically changed countries' responses to HIV/AIDS. Some innovative projects pioneered by international nongovernmental organizations (NGOs) in diverse settings have clearly established that a very simple approach to ART with intensive community engagement and support can achieve remarkable results (WHO 2007).

The focus has now shifted toward finding new, more-convenient drug regimens with fewer side effects; identifying the optimal trigger for treatment initiation; learning how to manage coinfection with other viral disease, such as hepatitis B or C; securing long-term, sustainable financing; setting the appropriate balance between treatment and prevention and understanding how the two interact; monitoring and learning more about the development of drug resistance; and increasing the capacity of health systems to cope with the additional burden of rising numbers of patients under treatment. Nutritional support for people under treatment, adherence programs, social

support mechanisms, and community linkages are also increasingly recognized as critical elements of effective treatment programs (World Bank 2007). Finally, there is growing acceptance of adopting a public health approach to the management of ART programs (that is, setting up programs so that they optimize the benefits for the population as a whole) (Rosen and others 2005).

Governments must go beyond the focus on ART to confront the social and economic conditions that prevent access and optimal health outcomes. ART programs need to be integrated into a continuum of AIDS-related health care and community participation. The stakes are high: if effective treatment programs are not achieved, drug resistance may well become a major obstacle to the success of future ART programs (Hardon 2005).

Limited and inequitable access translates into implicit rationing. Questions have been raised as to whether explicit rationing, or targeting, would yield higher social welfare benefits, if found to be practical and acceptable. Without depriving anyone from accessing ART programs, targeting could aim at specific groups of eligible people, such as parents or mothers, skilled workers, poor people, people at high risk for transmitting HIV, and people committed to adhering to the ART regimen. The first-come-first-serve approach may be the least costly, but it is also the most susceptible to inequity.

Multistakeholder collaboration is key to confronting the HIV/AIDS pandemic. When ART became available, civil society organizations developed treatment literacy programs to help people living with HIV/AIDS gain access to and use treatment programs properly. ART programs involve life-long treatment and high levels of adherence, which are especially difficult in situations in which access is constrained and levels of stigma high. Community participation in ART programs at all levels appears to be fundamental to addressing these problems. Supporting national ART programs to establish linkages with existing community-based organizations and associations of people living with HIV/AIDS is likely to help maximize the benefits.

A not necessarily causal association between malnourishment and poorer prognosis in HIV-positive individuals was well described in the period before anti-HIV treatment became available (Malakasuka and Masangi 2002). Even in the era of potent ART, the unintentional loss of just 3 percent of body weight is associated with poorer survival. It is possible that malnourishment at the time when anti-HIV treatment is started

could result in poorer recovery of immune function, meaning that patients are vulnerable to opportunistic infections for longer. There is also a strong correlation between the body mass index and the clinical stage of HIV infection, a significant determinant of HIV infection outcome, either with or without ART.

As access to ART increases in developing countries, a larger number of people living in resource-limited settings are able to use the drugs to extend the length and improve the quality of their lives. Interactions between ART and food and nutrition can significantly influence the success of therapy by affecting drug efficacy, adherence to drug regimens, and nutritional status (FANTA 2004).

There is a tremendous need for basic, clinical, and operational research on the myriad potential interactions between nutritional status and prevention, care, and treatment of people with HIV/AIDS, particularly in the context of high prevalence of food insecurity. Several studies are underway or planned that investigate whether food supplementation for nutritionally compromised people with HIV (before and during ART) in resource-constrained settings improves their nutritional status, clinical status, effectiveness of treatment, adherence, quality of life/functioning, and survival (UN Standing Committee for Nutrition 2006).

The sustainability of ART programs depends not only on the mobilization of global resources and adequate government planning. It also depends on the speed at which resistance to ART develops and the extent to which prices of second-line treatments, pediatric drugs, and diagnostics decrease.

The level of drug resistance in untreated people with HIV varies with access to ART and will continue to be an important issue. A global HIV drug resistance surveillance network (HIVResNet) has already been set up to monitor resistance. Such data will be of great use to national policy makers. Progress on the implementation of drug resistance monitoring strategies at the national level is mixed. It needs urgent support, especially as it has been shown that some drug-resistance mutations emerge at different frequencies and speeds in different viral subtypes (Soares and others 2007).

Dual HIV infection with two or more genetically distinct viruses can occur either as coinfection at the time of the original infection or as a result of superinfections, in which an HIV-positive person is infected with a different viral

strain. Evidence suggests that the progress of disease is more rapid in many people with dual infections (van der Kuyl and Cornelissen 2007). It is therefore suggested that prevention counseling for people diagnosed as HIV-positive be given more prominence as an instrument in limiting the exposure to other viral strains.

NRTIs still provide the backbone to NNRTIs or protease-inhibitor containing regimens. The historical introduction of NRTIs with sequential mono and dual therapies has left many patients harboring persistent NRTI-resistant strains. The extent of this phenomenon in countries that had much lower access to ART is less clear, but it seems likely that new antiretroviral drugs will become necessary in the future to address the issue of resistance against the older drugs.

One reason why some countries are reluctant to scale up access to treatment is the unpredictable and short-term character of the financial resources supporting ART programs. This is an issue that the World Bank, in partnership with other global, bilateral, and national financing institutions, needs to address. Exploring options for mobilizing additional financial resources increasing program efficiency, including by addressing issues related to prevention-treatment balances; and negotiating lower prices for essential inputs are critical. The Bank could also undertake cost-benefit analyses of treatment initiation options, various treatment regimens with fixed-dose combinations, and beneficiary assessments of prevention, mitigation, care, and treatment programs.

Creating an enabling environment for prevention and ART programs could yield significant benefits in terms of uptake, efficacy, and efficiency. Providing nutritional support and prevention counseling for people on ART and strengthening referral systems—both within the health system and between the health system and communities, NGOs, community-based organizations, and organizations of people living with HIV/AIDS—are just a few examples of how prevention and treatment programs can be strengthened.

Monitoring and Evaluation

Since the start of the MAPs, monitoring of both the epidemic and project activities has been inadequate and evaluation of interventions largely absent.

These weaknesses have greatly hampered the identification of hot spots and drivers of the epidemic; the identification of the linkages between activities and relevant outcomes and results; and, as a result, the creation of a more substantial and meaningful evidence base for national HIV/AIDS programs.

Antenatal surveillance data on HIV prevalence have long been the only data available for monitoring trends in the epidemic. Other data sources are too expensive; representative of too small a section of the population (incidence estimates through cohort analysis); subject to additional bias (voluntary counseling and testing service statistics); or are not yet available for multiple years (population-based surveys such as DHS+ [Demographic and Health Survey with an HIV/AIDS component with HIV testing]).

The reliance on prevalence data has meant that programs focus on epidemics that started years earlier, with very little information about what had happened since. In addition, antenatal surveillance data do not allow for gender-disaggregated analysis. These data can also be used to identify areas of particular interest for research studies to inform the interpretation of surveillance data and provide directly measured trends in prevalence and incidence.

Recently, estimates of the prevalence of HIV have become more accurate, thanks to the availability of results from national population-based surveys in countries with generalized epidemics and to the use of an explicit analytic framework and the greater availability of data on the size of groups with high-risk behavior in countries with low-level or concentrated epidemics. The focus of these analyses has also been shifting from the global level to the national and increasingly the subnational level.

The modeling of incidence data can provide significant insight into the origin of the most recent new infections. Attempts to monitor the occurrence of new infections (incidence) rather than prevalence include the development of laboratory tests that can distinguish between recent and old infections. These tests include the (BED)–capture assay and modeling techniques, among others (see VAX 2007). For now, tests for the detection of recent HIV infection (the BED assay, tests that detect the p24 antigen, and use of multiple tests with different sensitivity) are not recommended for routine use.

The Epidemic Projection Package (EPP) is a mathematical modeling program that can provide estimates of the trend of adult prevalence by fitting a mathematical model to existing census and HIV surveillance data. The HIV prevalence curve generated by the EPP can be used as an input to other

software packages, such as Spectrum, to generate estimates of HIV/AIDS prevalence for adults and children, the number of new HIV infections, new AIDS cases, AIDS mortality, and the number of AIDS orphans.

The implications of having an instrument to estimate incidence are significant. Such an instrument holds the potential for identifying hot spots of new infections and priority populations for prevention interventions, rapidly assessing the efficacy of prevention interventions, and providing more-timely risk-reduction interventions, such as partner notification.

More attention is being paid to the diversity of the epidemic among sub-populations at increased risk and the determinants of such risk. The specifics of vulnerability and vulnerable populations have become clearer. Depending on the scope of the monitoring, region-, country- and area-specific analyses can provide guidance on the need for and substance of targeting of specific practices or clients, such as young married girls, married couples, people with disabilities, men having sex with men, sex workers, intravenous drug users, refugees and other people affected by mobility, uncircumcised men, prisoners, uniformed personnel, and others.

Progress can be expected in the development of instruments to measure or estimate incidence more accurately. Modeling tools that incorporate estimates of HIV incidence and mortality are also likely to be developed as these data become available. To increase their explanatory power, these models should incorporate programmatic inputs. Data from second-generation population-based surveys (such as the DHS+), which will become available in the near future, will provide further operational guidance for better targeting interventions.

The diversity of the HIV epidemic within countries needs to be accompanied by an accordingly diversified menu of interventions and monitoring and evaluation programs. The monitoring of localized hot spots and their drivers may become at least as important as the monitoring of aggregated national data. Programs and projects will need to recognize and support efforts to monitor the epidemic within both geographical areas and social groups.

The issue of drug resistance will become increasingly important as the number of people on ART rises. The World Bank should play a role in helping ensure that appropriate monitoring mechanisms are in place and that the required capacity and technologies are supported. It should also continue to support adherence programs and evaluate their effectiveness in various settings.

Summary of Implications

Building the evidence base

In order to arrive at equitable, effective, and efficient HIV/AIDS-related interventions, more investment and analytical support are required, as well as rigorous evaluations of interventions. Specific challenges are identified below.

Tailoring support to meet national and subnational needs. Support needs to be better tailored to the specifics of the epidemic at the national and subnational levels. Where information is not available, research needs to be conducted in order to help policy makers formulate and support the most appropriate response. This research should include specific information on gender, poverty, and other social aspects that may help explain the epidemiological information gathered.

Increasing coverage and improving targeting. Efforts must continue to address the limited coverage of prevention, care, treatment, and mitigation interventions and to improve the targeting of interventions so that they yield the greatest benefits at the lowest costs. As new and easy-to-administer HIV test kits and treatment options become available, the importance of scaling up efforts will grow. The scale-up, integration, and decentralization of prevention, treatment, and care will need to be accompanied by a strengthening of referral systems, quality control mechanisms, monitoring and evaluation, supply chains, human resource management, and community linkages.

Encouraging policy dialogue. The introduction of new technologies and approaches needs to be preceded by well-informed policy dialogue. Examples of topics that need to be discussed by all stakeholders at the national and subnational levels include use of easy-to-administer tests and the adoption of provider-initiated testing; the decentralization of HIV prevention, care, and treatment services and their integration into existing services; the counseling of discordant couples and male circumcision; and a new focus on the epidemic in rural areas and among the poor (Wambura and others 2007; Gouws and others 2006).

The introduction of a public health approach in the management of national responses to HIV/AIDS, including ART programs, should also be addressed, in particular concerning the linkages with poverty reduction strategies. The de facto rationing of ART does not optimize equity or epidemiological or other social welfare benefits.

The increase in intravenous drug use in a number of countries requires urgent dialogue to address the dual challenges of substance abuse and risks of HIV infection. Harm-reduction strategies, such as needle exchange programs, will become an important aspect of the response to HIV/AIDS in areas of countries in which substance abuse is a problem. Recently released data from second-generation, population-based surveys and longitudinal cohort studies provide the opportunity to better target interventions and research.

Addressing the disproportionate burden of HIV/AIDS on women and girls. The burden of the epidemic on women and girls has increased the urgency of addressing gender relations and female control over all aspects of sexuality and reproduction. HIV/AIDS programs in all countries in which the epidemic is disproportionately affecting girls and women should increase their engagement in dialogue, research, and interventions in this area. Financial support for program development of women-controlled prevention methods, such as microbicides, and PrEP may be required in the near future.

Evidence is accumulating that combination ART is more efficacious in reducing the transmission of HIV from mother to child than nevirapine-only therapy. Integrating PMTCT into the broader agenda of child health, reproductive health, and nutrition will require urgent attention in order not to compromise the benefits of successful programs by the insufficient achievements of others.

Developing pediatric testing and treatment guidelines. The development of pediatric testing and treatment guidelines as an integral part of national HIV/AIDS programs needs to be supported where such guidelines do not exist. Access to pediatric ART is very limited (WHO 2008) and substantial resources will be required to scale up such efforts. The importance of early detection of HIV infection, through the use of dried blood spots, for instance, is becoming more evident; investments in appropriate technologies will need to accompany increased access to pediatric care and treatment. As more and more countries in the region, particularly countries that have adopted the provider-initiated approach to HIV testing, adopt PMTCT programs, these programs should become increasingly important as entry points for addressing the needs of discordant couples and limiting further increases in the number of orphans.

Reducing the impact of codeterminants of AIDS-related morbidity and mortality. The efficiency of HIV/AIDS-related investments can be compromised if

insufficient attention is given to important codeterminants of morbidity and mortality, such as tuberculosis, malnutrition, and childhood illnesses. The need for increased investments in these areas is becoming apparent where successful disease-specific programs do not yield a commensurate impact in terms of overall morbidity or mortality, for example, successful PMTCT programs without an improvement in infant mortality rates. Financial support for the development and use of laboratory assays to diagnose tuberculosis, estimate HIV incidence, and detect resistance to drugs used to treat people with tuberculosis, HIV, and malaria will need to increase significantly in the near future.

Supporting research. The evolving areas described in this chapter provide enormous scope for research that can make a significant difference and assist client countries, especially in the areas of economic, social, and public health impact evaluation. As new tools for prevention as well as treatment become available, the need for analytical work estimating demand, acceptability, cost implications, and the optimal distribution and marketing strategies for such new methods will increase. Cost-benefit analyses of treatment initiation options; treatment regimens with fixed-dose combinations; and beneficiary assessments of prevention, mitigation, care, and treatment programs are other examples of analytical work that could be initiated by the World Bank.

Research institutions should become increasingly important partners in helping countries build the capacity to conduct impact evaluations. At the local level, partnerships with communities and organizations of vulnerable populations, including people living with HIV/AIDS, remain of utmost importance. Prevention, care, and treatment programs can achieve only partial results without their active engagement.

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PART II

ECONOMIC ASPECTS AND ECONOMIC POLICY ISSUES

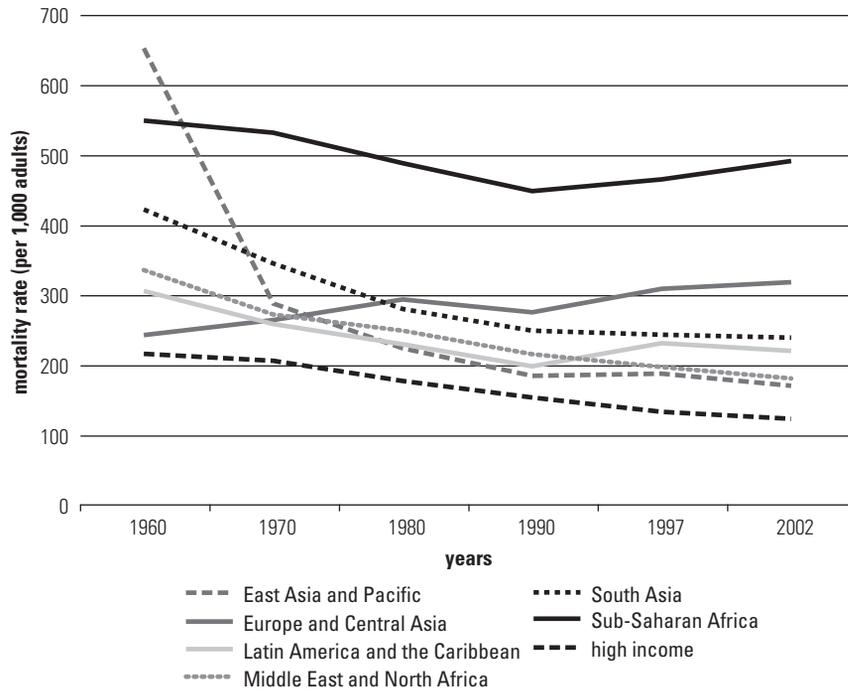
Links between HIV/AIDS and Development

Jorge Saba Arbache

What are the poverty impacts of HIV/AIDS? This question has received increasing attention in recent years, because empirical evidence shows that the epidemic is associated with development outcomes. Health statistics show that the poorest regions of the globe are also the most affected by the infection.¹ Sub-Saharan Africa hosts more than 68 percent of the global number of people living with the HIV virus, and more than 23 million have already died as a result of the disease. In 2007, 76 percent of people who died of AIDS and 68 percent of the newly infected were in Sub-Saharan Africa (UNAIDS/WHO 2007). HIV/AIDS is widely regarded among the main obstacles preventing Africa from attaining the MDGs (World Bank/IMF 2008).

AIDS is one of the main causes of increasing adult mortality and decreasing life expectancy at birth in many developing countries. In Sub-Saharan Africa it has contributed to the shift in the long-term decline in mortality (figure 3.1). Latin America also experienced a shift, but it soon returned to its long-term trend. By the early 2000s, the mortality rate among male adults in Sub-Saharan Africa had reached almost 500 per 1,000—four times higher than that of high-income countries.

Life expectancy at birth rose until the late 1980s in Sub-Saharan Africa, falling thereafter to the levels observed in the 1970s (figure 3.2). The shift in trend has been attributed partly to HIV/AIDS. Since the late 1980s, the life expectancy gap between Sub-Saharan Africa and all other developing regions has widened.

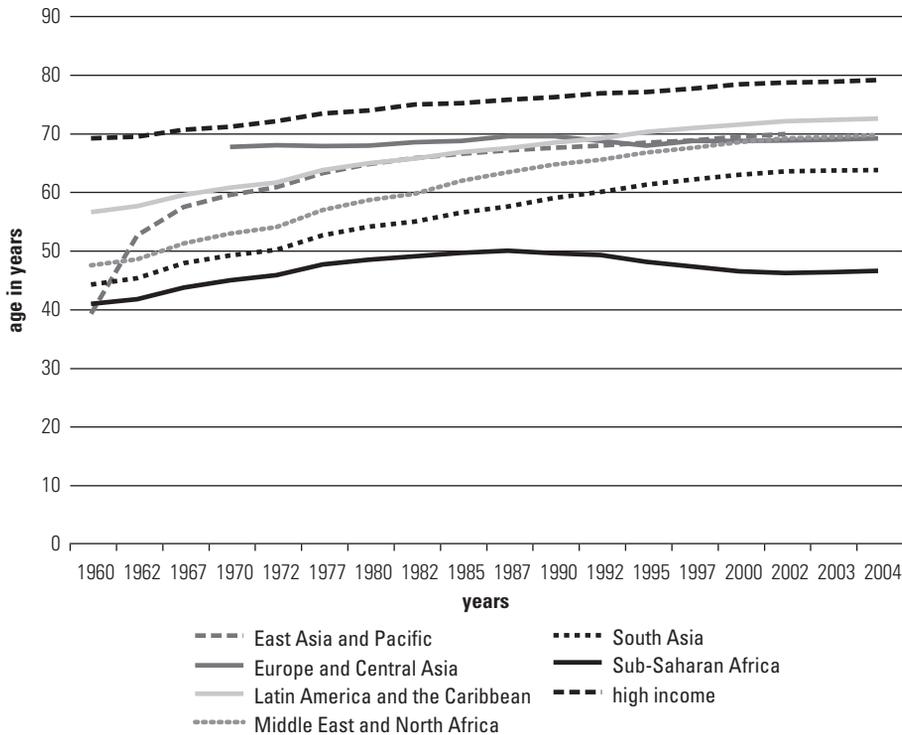
Figure 3.1: Adult Mortality 1960–2002, by Region

Source: World Bank.

Note: Adult mortality rate is the probability of dying between the ages of 15 and 60 (that is, the probability of a 15-year-old dying before reaching age 60, if subject to current age-specific mortality rates between those ages).

HIV/AIDS often has major economic and social impacts on the households it strikes through the loss of income and the costs of care (both financial costs and the opportunity cost of otherwise productive time allocated to care). Families with a chronically ill member tend to reduce food consumption, sell assets, and borrow money. Children's school attendance may go down, because children need to take care of sick adults or households can no longer afford to send their children to school. HIV/AIDS may also affect income inequality within countries. Even if the infection were randomly assigned across income groups, it would still have a greater impact on the poor, because they rely more heavily on labor as source of income and have lower savings and assets. If AIDS reduces the pace of economic growth, the poor will more likely be affected because of their vulnerability to bad economic times.

Figure 3.2: Life Expectancy at Birth, 1960–2004, by Region



Source: World Bank.

Although there is a growing consensus that HIV/AIDS is related to growth and poverty (Haacker 2004), the channels and causality and the short- versus long-term issues associated with the disease remain unclear. Are impoverished areas a fertile ground for the development and spread of infectious diseases? Or do infectious diseases impoverish people?

Young (2005) claims that the AIDS epidemic will improve living standards; other researchers (Corrigan, Gloom, and Mendez 2005; Bell, Devarajan, and Gersbach 2004) reach the opposite conclusion. In fact, demographic factors (such as the age structure, gender, and position of the family member who becomes ill or dies) and other characteristics (such as socioeconomic, religious, and cultural characteristics; political leadership; and timing) affect the impact of HIV/AIDS on development.

This chapter discusses the main channels through which HIV/AIDS is associated with development outcomes, with special attention to Sub-Saharan

Africa. It is intended to provide policy makers and practitioners with a brief overview of the theoretical and empirical economic literature.

The chapter is organized as follows. The next section presents the main theoretical channels. The following section examines the empirical evidence. The last section presents some concluding remarks and policy recommendations.

How May HIV/AIDS Affect Development? Main Theoretical Channels

HIV/AIDS affects development through a variety of channels. These channels include savings and investments, fertility, health conditions, effects on children, effects on labor costs, and fiscal effects, each of which is considered below.

Savings and investments

Shorter life expectancy and a lower probability of survival affect individuals' consumption, saving, and investment decisions. The lower the probability of survival, the lower the private benefits of long-term investment (such as formal education), because the returns to human capital accrue over much of adult life. A shortened expected life time horizon reduces the incentives to accumulate capital and affects economic competitiveness through lower levels of human and physical capital investments. (It may also increase the willingness to engage in risky behavior.) Countries with high mortality rates can thus be expected to invest less in physical and human capital and have higher interest rates than countries with lower mortality rates. They may therefore grow more slowly in the long run.

Empirical evidence indicates that putting mortality into standard growth models slows the rate at which poor countries' capital-labor ratio and per capita income converge to those of richer countries, possibly preventing convergence altogether. A drop in adult mortality may cause a switch from a (Malthusian) equilibrium in which population keeps up with production shifts to a pro-growth equilibrium in which families are smaller and human capital investment higher (Kalemli-Ozcan 2002).

The savings/investment channel is probably particularly relevant for households and countries that can make choices between capital accumulation

and consumption. This is not often the case of the poor, who tend to allocate most of the resources and income they earn on consumption.

Fertility

During a demographic transition, mortality falls as a result of better medical technologies, better hygiene, and better access to medical care (all of which are usually a function of income per capita income); subsequently fertility declines. Where child mortality is high, parents tend to have a large number of children to try to ensure that some of them survive. In a theoretical framework in which parents gain both old age support and “companionship” utility from their children, an exogenous increase in the rate at which children survive to become productive adults can shift the economy from a low-growth, high-fertility equilibrium to a high-growth, low-fertility equilibrium.

Lower rates of child mortality increase the returns from investing in their education and reduce fertility, freeing up resources that can be invested in education; lower rates of adult mortality tip the scales in the trade-off between the quantity and quality of children in favor of quality. A reduction in child mortality is thus likely to lead to lower fertility and higher human capital investment. The reduction in fertility can be expected to affect not only capital investment but also per capita income growth, by reducing population growth. The demographic dividend that results from the demographic transition eventually leads the economy to potentially high growth rates by increasing the share of the working-age population and reducing the dependency ratio.

Health conditions

Poor health slows economic growth by increasing early mortality and reducing labor productivity. It reduces the time horizon of economic agents and leads them to engage in short-sighted behavior; it gives them fewer incentives to save and invest. There is theoretical support for a bidirectional relationship between health and poverty, which may lead to a poverty trap. In countries that cannot afford sanitation and medical care, more people are unproductive and die young. Mortality encourages and foments conflict, political instability, and unrest, which are among the most important determinants of low growth and poverty in Africa (Ndulu and others 2007; Easterly and Levine

1997). If low growth implies fewer shareable resources, there is a causal chain between health conditions, death, conflicts, growth, and poverty, which may drive the economy to a poverty trap. The magnitude of these effects will depend heavily on the levels of morbidity and premature adult mortality.

Effects on children

AIDS in the family may prevent children from enrolling in school or cause them to be taken out of school to care for sick family members. The decline in school enrollment and attendance has detrimental impacts on growth, because it weakens the accumulation of human capital at the individual and national levels and weakens the generation to generation accumulation of human capital. Both of these factors are likely to slow long-term growth. The destruction of stocks of skills and human capital reduces both short- and long-term growth prospects.

The loss of one or both parents to AIDS is likely to make children more vulnerable than other children. It can therefore affect growth through the human capital accumulation channel. As orphaned children are likely to earn less and possess less capital as adults, they will invest less in their own children's education. Thus the deleterious impacts of AIDS can be transmitted over generations, with strong potential effects on long-run growth and income distribution. The higher the proportion of orphans, the larger the impact on growth.

Effects on labor costs

HIV prevalence is particularly high among men 20–49, who are in their most economically productive years; it is increasingly affecting young women as well (World Bank 2007). The morbidity and mortality effects of AIDS among these groups slow growth by reducing the labor supply, increasing wage rates, and raising the dependency ratio. The erosion of family savings caused by AIDS can reduce collateralization, making it difficult for individuals to borrow on credit markets.

AIDS reduces labor performance and raises training costs, because absenteeism caused by illness disrupts the production process and because sick workers need to be replaced. In highly affected countries, these extra costs are likely to discourage private foreign and domestic investments and job creation.²

The increasing scarcity of labor increases the value of women's time and their incentives to raise a family. This increases the short-run labor supply, which is beneficial for growth, but it may reduce the fertility rate and growth prospects in the long run.

Fiscal effects

AIDS potentially affects public finance and public services, because slower economic growth reduces the tax base and tax collection; increases demand for public services (because of higher dependency ratios); stresses usually underfunded and understaffed public health care systems; reduces the capacity of governments (because of absenteeism by and the death of civil servants); and may have significant direct budgetary costs (associated with providing antiretroviral therapy and treating opportunistic infections). AIDS also causes absenteeism by and mortality of teachers and other education staff, affecting both the quantity and quality of education. As fewer resources are available for public investments and improvements of public services, the potential for growth falls and the incidence of poverty increases.

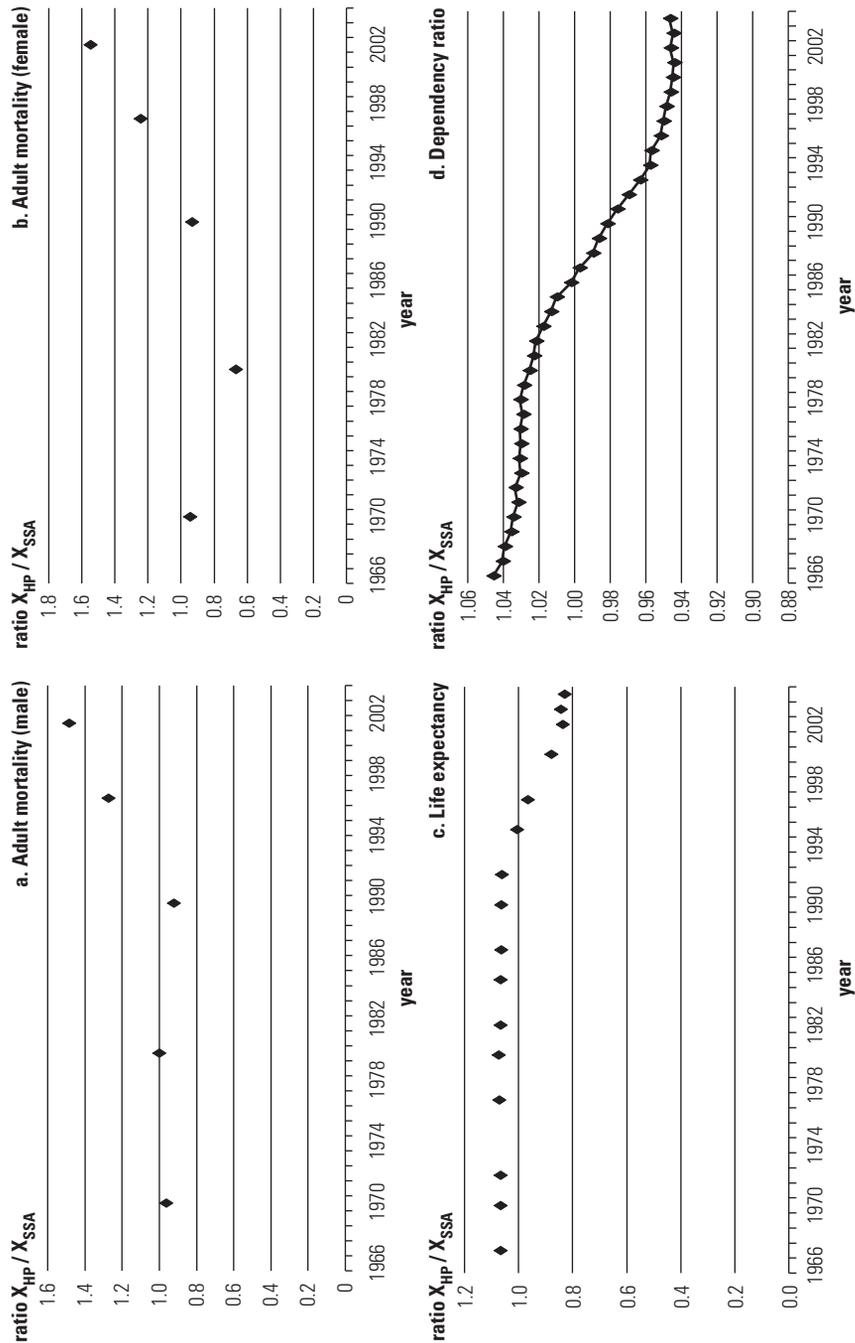
Empirical Evidence

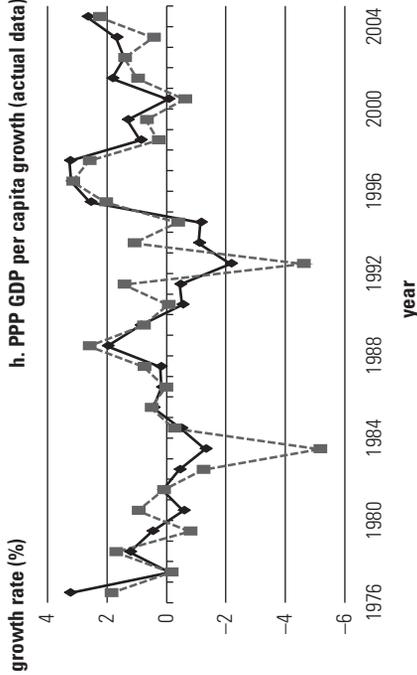
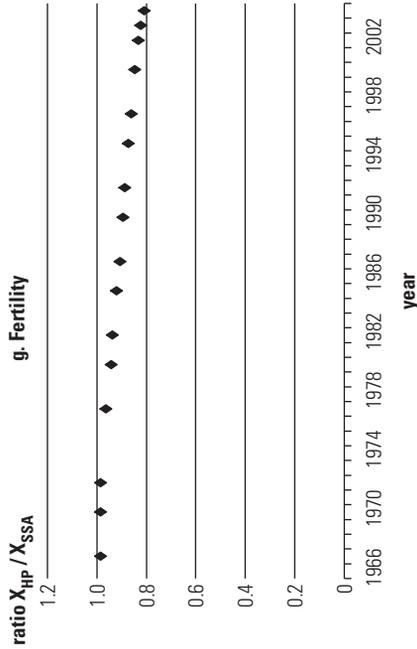
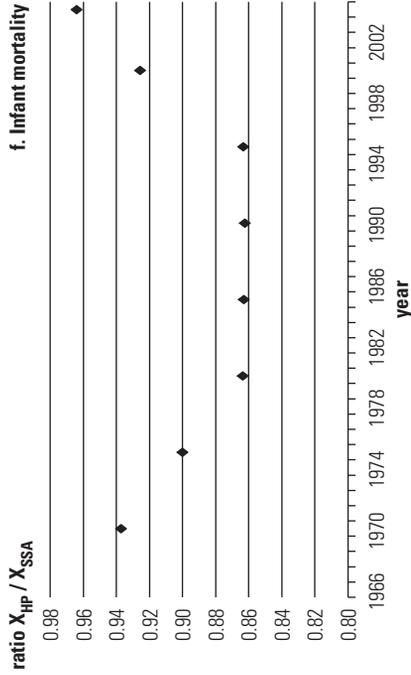
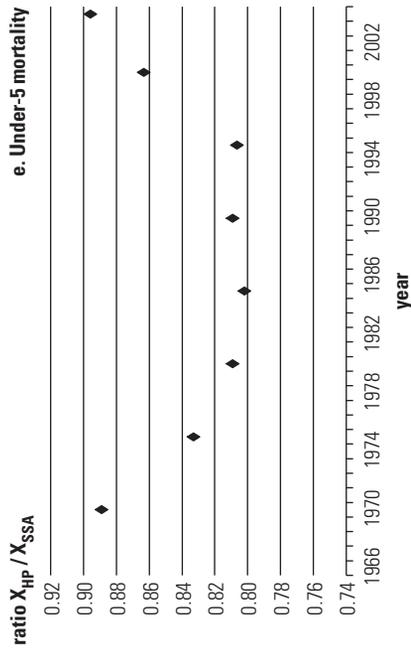
This section examines some basic development indicators in high-prevalence countries. It then reviews the empirical literature.

Development indicators

Selected economic and social indicators in high-prevalence countries are compared with those observed in Sub-Saharan Africa using the ratio X_{HP}/X_{SSA} , where X_{HP} is the mean of indicator X in high-prevalence countries and X_{SSA} is the mean of indicator X in Sub-Saharan Africa. After having diminished slightly in relation to the Sub-Saharan African benchmark, adult male mortality increased abruptly between 1990 and 1996 (figure 3.3, panel a), continuing to rise until the early 2000s. Adult female mortality has increased since at least 1981: in the early 2000s it was about 60 percent higher than the benchmark; in 1981 it was about 40 percent below the benchmark (panel b).

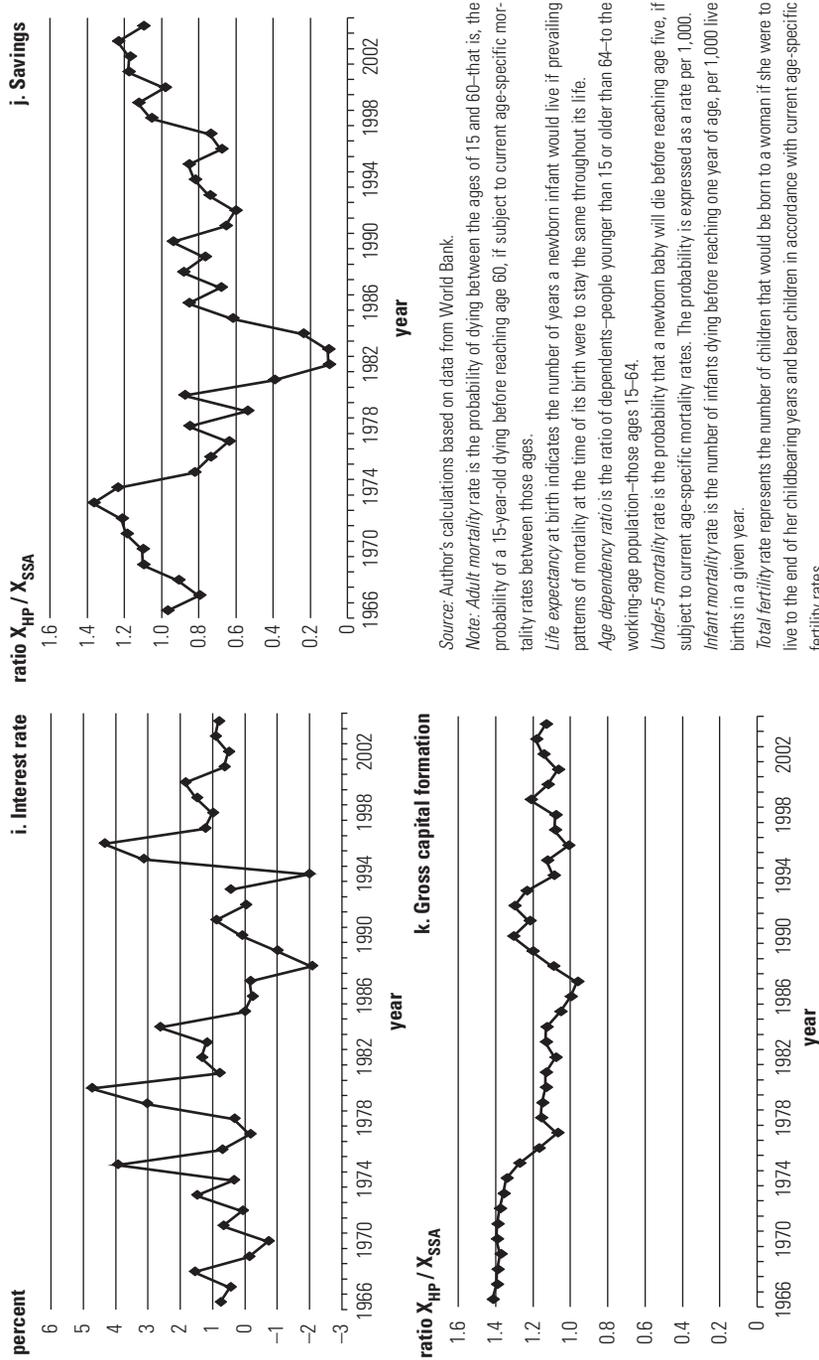
Figure 3.3: Ratio of Selected Development Indicators in Countries with High Prevalence of HIV/AIDS to Average Indicators in Sub-Saharan Africa





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Figure 3.3: Ratio of Selected Development Indicators in Countries with High Prevalence of HIV/AIDS to Average Indicators in Sub-Saharan Africa (*continued*)



Life expectancy fell significantly in the early 1990s in high-prevalence countries (panel c). The age dependency ratio also declined (panel d), stabilizing in the late 1990s at about 94 percent of the benchmark, down from about 105 percent in the 1960s. This change may be associated with the increase in adult mortality.

After decreasing significantly from the late 1990s, under-5 and infant mortality suddenly shifted upward between the mid-1990s and the early 2000s (panels e and f). AIDS may have contributed to the increase by impoverishing affected households, increasing parental mortality, reducing child care, and increasing child mortality among orphans. No change is observable in the long-term trend of fertility in high-prevalence countries (panel g).

Until the mid-1990s, economic growth was often higher in high-prevalence countries than in benchmark countries (panel h). Since then, the benchmark countries have outperformed high-prevalence countries. Part of the change may reflect the deleterious impacts of increasing mortality on growth. No changes are evident in patterns for interest rates (panel i), savings (panel j), or gross capital formation as share of GDP (panel k).

These indices suggest that HIV/AIDS is more likely to strongly affect human development indicators than to affect economic fundamentals. One possible reason is that factors such as adoption of labor-saving and other technologies and changes in preferences of economic agents toward savings and investments may smooth the impacts of HIV/AIDS on the economy.³ Moreover, if the poor, the sick, and the least skilled workers are more likely to die of AIDS (because of their more-limited resources, lack of access to treatment, and weaker health), the average productivity of individuals will rise.

These basic statistics suggest that it may be harder to determine the impacts of HIV/AIDS on aggregate economic variables than on human development indicators. Given that changes in the prevalence of and mortality from AIDS require behavioral changes by individuals, educational campaigns, adoption of new public policies, improved capacity and training of health staff, funding, and long-term treatment, among other factors, which usually move slowly, one should expect to see slow shifts in prevalence and mortality in Sub-Saharan Africa and therefore on economic variables as well.

Overview of the empirical literature

The empirical literature is rich but full of competing results. These differences probably reflect differences in sample sizes and geographic coverage of surveys; the demographic structure of countries; the time span of analyses, which usually does not allow the long-term effects of HIV/AIDS to be captured; the underlying theoretical assumptions of models; and identification problems and reverse causality. The fact that numerous channels through which HIV/AIDS affects growth are country specific (examples include leadership, public policy responses, and health sector capacity) and usually not captured by simple cross-country analysis suggests that country-specific studies are probably more appropriate for investigating the relationship between HIV/AIDS and development outcomes.

Effect on economic growth. Bloom and Mahal (1997) run cross-country regressions and find no statistically significant effect of HIV/AIDS on growth of GDP per capita; using a similar framework, Bonnel (2000) finds a significant negative effect. Over (1992), who also uses cross-country data, finds a reduction of 0.5 percent a year in per capita growth rates as a result of the epidemic. Papageorgiou and Stoytcheva (2004) find that an increase in the incidence of AIDS of 1 in 100,000 people is associated with a 0.004 percent reduction in income per worker. After instrumenting HIV/AIDS prevalence by national circumcision rates, Werker, Ahuja, and Wendell (2006) show that the epidemic has no effect on growth in African countries. These results are inconsistent with those of Corrigan, Gloom, and Mendez (2005), who find large negative effects of the epidemic on growth.

Bhargava and others (2001) and Bloom, Canning, and Sevilla (2004) provide strong evidence of a positive effect of health on economic growth. Ndulu and others (2007) find that the dependency ratio and life expectancy are the most influential variables associated with growth in African countries and that they explain most of the growth gap between Africa and other developing regions. Lorentzen, McMillan, and Wacziarg (2005) show that the coefficient of a Sub-Saharan African dummy in a growth model is about -1 . When they regress the same model with adult mortality included, the Sub-Saharan African dummy becomes statistically insignificant, meaning that adult mortality accounts for most or all of the growth shortfall experienced by the region.

The methodology proposed by Arbache and Page (2007) is used here to estimate the relationship between the increase in adult mortality in

Sub-Saharan Africa since 1990 and the probability of a country experiencing an economic collapse, defined as a period in which national growth is below the country's long-term average for at least six years. The results reveal that a 1 percent increase in mortality is associated with a 0.26 percent increase in the odds of economic collapse. Arbache and Page (2008) find that increase in life expectancy is positively associated with GDP per capita and economic growth in Sub-Saharan Africa and is inversely related to the volatility of growth in the region, which has deleterious effects on the most vulnerable groups. Kalemli-Ozcan, Ryder, and Weil (2000) find that a 1 percent reduction in mortality leads to about a 1 percent increase in schooling. Bell, Devarajan, and Gerbach (2004) find that mortality of young adults can lead to economic collapse because of the cumulative weakening of human capital that occurs through poor schooling of orphaned children (and the intergenerational effects of lower investment in human capital). Birdsall and Hamoudi (2004) find that a reduction of 10 years in life expectancy at birth in Sub-Saharan Africa is associated with a decline of 0.6 years in the average schooling attained by the affected cohort. Given that life expectancy fell by a decade or more in many African countries and that average schooling among young adults is just three to six years, the impact on growth would appear to be sizable.

Kalemli-Ozcan (2006) shows that HIV/AIDS prevalence in African countries affects total fertility rates positively and school enrollment negatively, adversely affecting economic development. Simulating the effects of HIV/AIDS on living standards using microdata from South Africa, Young (2005) finds that the epidemic increases the growth and welfare of future generations, largely as a result of its negative effect on population growth. Lorentzen, McMillan, and Wacziarg (2005) find that adult mortality increases fertility and reduces secondary enrollment and physical capital investment, reducing economic growth. They find that a 1 standard deviation increase in adult mortality is associated with a 0.8–1.4 percentage point decrease in growth. They also find that adult mortality accounts for most of the growth shortfall over the 1960–2000 period and that it is associated with more risky behavior.

Effect on inequality. Monasch and Boerma (2004) show that orphaned children are likely to receive 13 percent less education than nonorphans. Mason, Bailes, and Mason (2003) find that the share of underweight is higher among orphans, increasing poverty and adversely affecting the accumulation of

human capital at the national level. Booysen (2004) investigates a panel of 355 South African households and shows that the incidence of poverty is higher in households affected by HIV/AIDS (35 percent) than in those not affected by the disease (21 percent). He also finds that the income of households affected by HIV/AIDS is more likely to deteriorate and less likely to improve than that of other households. Using microdata from Botswana, Greener (2004) examines the impact of HIV/AIDS on poverty and inequality. He finds that most of the effects of the disease on poverty derive from the income shocks to households that lose the income of a member who dies from the disease. He also finds that the very poor are substantially more affected by AIDS than other households, partially because of the significant increase in the dependency ratio. Inequality was not found to change significantly as a result of AIDS. Greener suggests that this result may reflect effects working in opposite directions not captured by the model, thus masking the actual effect.

Concluding Remarks

Empirical controversies and data and technical issues notwithstanding, the HIV/AIDS epidemic seems to be associated with the weakening of various indicators; changes in mortality cut across all channels linking HIV/AIDS and development outcomes. The theoretical and empirical evidence suggests that high mortality affects the incentives to invest and save; erodes household savings and earnings; increases the age dependency ratio; reduces life expectancy; prevents children from attending school; reduces labor productivity; fuels conflicts; leads people to engage in short-sighted, risky behavior; and is associated with economic collapse. Ultimately, high mortality causes and reinforces poverty. Fighting HIV/AIDS and related diseases—a major cause of mortality in Sub-Saharan Africa—is therefore central for development, especially in countries strongly hit by the epidemic.

The long-run effects of AIDS are still not well understood, not only because the disease is still spreading, albeit at a more modest pace, but also because most of its macroeconomic, demographic, and fiscal impacts will be felt only over the coming decades. HIV/AIDS will therefore remain a major development issue for a long time, especially in Sub-Saharan Africa. Governments, with the support of the donor community, the private sector, and civil society, must remain engaged.

Notes

1. This relation does not hold within the region, because some of the richest countries in the region are also among those with highest HIV prevalence, for example, Botswana, South Africa, Lesotho, Swaziland, and Namibia.
2. In Mozambique, laws oblige employers to share the treatment costs of infected employees.
3. The Lucas critique—named after Robert E. Lucas, Jr.—claims that it is naive to try to predict the effects of a change in economic policy entirely on the basis of relationships observed in historical data, especially highly aggregated historical data, because if parameters of models are not structural (that is, not policy invariant), they necessarily change whenever policy (the rules of the game) changes. Policy conclusions based on those models are therefore potentially misleading. The Lucas critique cannot be neglected when assessing and modeling the impacts of HIV/AIDS on the economy.

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Demographic and Socioeconomic Patterns of HIV/AIDS Prevalence in Africa

Kathleen Beegle and Damien de Walque

A large body of literature examines the relationship in Africa between demographic and socioeconomic variables on the one hand and HIV infection on the other (for reviews of this literature, see Wojcicki [2005], Glick [2007], and Hargreaves and Glynn [2002]). Among the issues addressed are the associations between HIV status and variables including education status, income (wealth or poverty), residency, age, marriage, and empowerment. Understanding the prevalence—and where possible the incidence—patterns of HIV/AIDS with respect to demographic and socioeconomic characteristics is crucial for developing programs and policies to combat HIV/AIDS. With new and expanded data sets, researchers are increasingly able both to measure HIV status and to collect detailed socioeconomic variables for the same individuals in population-based samples, thus enabling more-detailed analyses than were previously feasible.

Rather than review this vast literature, this chapter looks more closely at the methods and unusual evidence from the existing body of work. The first section discusses some of the methodological issues that confront empirical studies of the relationship between socioeconomic status and HIV.¹ The second section discusses some of the misconceptions about HIV/AIDS in Sub-Saharan Africa that persist in the literature and popular media despite accumulating evidence to the contrary. The last section provides some concluding remarks.

Methodological Issues

Researchers face a number of challenges in studying the relationship between demographic and socioeconomic status outcomes and the prevalence of HIV. This section examines issues related to the measurement of outcomes of interest, the construction of socioeconomic indicators, the design of appropriate samples, and the modeling of the correlates of HIV.

Measuring outcomes

For empirical work, understanding the correlates of HIV—a medical condition that is not easily detected or self-diagnosed—requires collecting data in ways that differ from those traditionally used. Customary sources for information on socioeconomic status (household surveys) rarely include medical testing for any health condition or information on risky behaviors correlated with HIV. Sources of information of HIV prevalence and sexual behaviors (such as antenatal clinics and other sentinel surveillance sites) tend to collect minimal information on only the basic demographic status of individuals, such as age and gender. In the rare cases in which a data set offers both detailed demographic and socioeconomic status variables and includes measures of HIV status, samples are small or specialized, making it difficult to generalize the findings to the overall population. Important exceptions are the Demographic and Health Surveys (DHS) data sets.

Lack of data on individuals' socioeconomic and HIV status may have resulted in continued speculation about the relationship between the two. As a result of the advent of population-based surveys with both socioeconomic status (at least basic indicators of that status) and HIV status, such as the DHS program, the past several years have seen a large increase in the number of empirical studies of this relationship.²

Collecting information on the HIV status of individuals in household surveys is difficult, for a variety of reasons, including costs; logistics (especially before the development of rapid tests methods, including dried blood spot rather than venous blood samples); and human subjects' considerations. As a result, researchers often substitute measures of the proximate determinants of HIV for actual HIV status. These measures include behaviors that are biologically associated with risk of HIV, including risky behaviors (not using condoms, having multiple partners) and circumcision status. Mishra and others (2007) and Boerma and Weir (2005) discuss the application of

the proximate determinants approach, which has been adapted from the study of fertility by demographers, to the study of HIV.³

Identifying the socioeconomic status–HIV link using risk behaviors rather than actual HIV status is potentially problematic in ways that differ from those faced by demographers studying fertility. This is because observational data on behaviors and the prevalence of HIV are not always consistent with what is known about how HIV is contracted.

For example, clinical trials on the efficacy of circumcision in preventing HIV reveal that circumcised men are less likely to contract HIV (Auvert and others 2005; Williams and others 2006). But in some countries the opposite relationship holds: in Malawi the incidence of HIV in 2004 is estimated at 13.2 percent among circumcised males and 9.5 percent among uncircumcised males (NSO and ORC Macro 2005; Poulin and Muula [2007] present similar findings based on other data from Malawi). In Cameroon, the incidence of HIV in 2003 is estimated at 4.1 percent among circumcised and 1.1 percent among uncircumcised males (INS and ORC Macro 2004). In Ethiopia, the difference in HIV status between circumcised and uncircumcised males is negligible (0.9 percent among circumcised and 1.1 percent among uncircumcised males) (CSA and ORC Macro 2006).

As HIV in Africa is spread primarily through heterosexual contact, lack of condom use and multiple partners should, all else equal, be associated with higher prevalence. Yet in Kenya, HIV prevalence is higher among men who used a condom the last time they had paid sex (8.0 percent) than among men who did not (6.4 percent) (CBS, MOH, and ORC Macro 2004); it is much higher among men who had two partners in the past 12 months (9.7 percent) than among men who had three or more partners (3.3 percent). Among women in Cameroon who used a condom during their last sexual encounter in the past 12 months, HIV prevalence is slightly higher (7.5 percent) than among women who did not (7.0 percent) (INS and ORC Macro 2004).

These seemingly anomalous results, which are inconsistent with biological truths, reflect the fact that risky behaviors are not undertaken in isolation. Risky behaviors can reflect a person's perception of risk; whether a man uses a condom when paying for sex may depend on his assessment of his partner's risk of being infected with HIV. These apparent paradoxes may also reflect the difficulty of collecting accurate self-reported information on risky behaviors (Adams, Trinitapoli, and Poulin 2007; Gersovitz 2005) and measuring trends in these behaviors, especially when concepts, perceptions, and attitudes as well as the wording of survey questions change (Glick 2007).

The relationship between socioeconomic status and risky behaviors does not necessarily shed light on the relationship between socioeconomic status and HIV status.⁴ Sexual behaviors, at least in isolation, are not necessarily substitutes for measuring HIV status.

Defining socioeconomic status

Socioeconomic status is a multidimensional, context-specific concept that is not measured consistently across household surveys (Bollen, Glanville, and Stecklov 2001). The same problem affects studies on the link between socioeconomic status and HIV. Because studies of this link are limited largely to the DHS data sets, the lack of consistency with which different studies define socioeconomic status is not an issue. The focus here is therefore on three potential problems of interpretation.

First, consider the interpretation of education as a measure of socioeconomic status. Education encompasses many underlying factors that influence its relationship with HIV status. The link between education and HIV may reflect the fact that on average people with less education earn less, have less access to information about safer sex, live in more remote areas, and are less physically mobile than people with more education. Second, the asset index approach (developed by Filmer and Pritchett [1999]), which is often applied to DHS data in lieu of detailed income or consumption measures, closely approximates the ranking of households based on consumption (which underlies the poverty definition in the first MDG) in specific settings but not necessarily everywhere (Filmer and Scott 2007). The extent to which there is a congruence of rankings of households between the asset index and consumption affects how one interprets the asset index (as a good or weak proxy for poverty, for example). Third, terms such as *wealth*, *poverty*, and *income* are often used interchangeably to describe the asset index (see, for example, Mishra and others 2007), which may not reflect current income or even current poverty status (Filmer and Scott 2007).

Sample design

The wide variation in HIV prevalence both across and within African countries, especially the low prevalence in some countries, requires alternatives to random sample designs (or the traditional two-stage random designs used by most household surveys, including the DHS). About two-thirds of the

population in Sub-Saharan Africa reside in countries with prevalence of less than 5 percent (see appendix table A.1). Among the 18 poorest countries in Sub-Saharan Africa (countries with gross national income [GNI] per capita of \$350 or less), the prevalence of HIV in 11 of them (comprising more than 70 percent of this population of 324 million) is less than 5 percent. Even in high-prevalence countries, substantial regional variation exists. In the northeastern province of Kenya, for example, none of the DHS sample of men ($N = 48$) or women ($N = 60$) tested positive for HIV (CBS, MOH, and ORC Macro 2004). To ensure sufficient sample sizes, researchers often use purposive sample designs, which makes it difficult to generalize results.

Modeling the correlates of HIV

The study of socioeconomic status and HIV often entails analysis of survey data to produce correlations or, depending on the data and techniques, identify causal relations. The relationship identified between indicators of socioeconomic status and HIV status (or proximate measures) depends on the models used. The least complex approach is to examine bivariate relations, but bivariate correlations between a single indicator of socioeconomic status and HIV can produce misleading results, in part because of the multiple underlying factors that any one socioeconomic status measure captures.

Consider simple examples from Ethiopia and Kenya (table 4.1). Among national samples of women in Ethiopia and men in Kenya, there appears to be a positive relation between education and HIV infection. However, by simply dividing the sample into rural and urban areas, this relationship

Table 4.1: HIV Prevalence in Ethiopia and Kenya, by Schooling and Residence

GROUP	NO SCHOOLING	AT LEAST SOME PRIMARY	POST PRIMARY
Ethiopia: Women 15–49			
All	1.0	2.5	5.5
Urban	8.2	8.2	7.2
Rural	0.5	1.1	0.4
Kenya: Men 15–49			
All	2.5	4.7	5.0
Urban	10.0	10.6	5.5
Rural	1.1	3.6	4.8

Source: CSA and ORC Macro 2006; CBS, MOH, and ORC Macro 2004. Table reports the percent of each gender, age, and education group who are HIV positive.

disappears. The change reflects the fact that HIV infection in Africa is higher in urban areas, where education levels of adults are also higher. Thus the positive correlation between education and HIV status suggested by the first rows for both countries in table 4.1 is driven entirely by the fact that people in urban areas are both more likely to be HIV-positive and more educated; education does not appear to be causally related to HIV infection. Consequently, how one interprets the link between education and HIV depends critically on how the correlation is modeled. As Hargreaves and Glynn (2002, p. 496) note, “Crude, unadjusted analyses can give misleading results.”

A second example of the difficulty in studying the education–HIV prevalence gradient is drawn from early in the epidemic in Uganda. Data from Round 1 (1989/1990) of the General Population Cohort of the Medical Research Council in rural Uganda reveal how the education–HIV gradient depends on how other covariates are factored into it. The mean of the marginal effects indicates that more-educated adults appear to be more likely to be HIV-positive than less-educated adults (table 4.2). The point estimate of the marginal effects suggests that, compared with the baseline of no education, having some primary education increases the probability of being infected by 2.9 percentage points and having some secondary education increases the risk by 5.5 percentage points. The second column of table 4.2 introduces age dummies in the regression. Controlling for age, the positive relationship between education and HIV infection actually disappears: the coefficients on the education category dummies lose their significance. This result reflects the fact that HIV prevalence is concentrated in age groups (20- to 40-year-olds) in which the proportion of better-educated adults is relatively high.⁵ The correlation between HIV prevalence and the fraction of individuals with secondary education is very strong across age groups, confirming this interpretation (figure 4.1).

This discussion emphasizes the importance of moving beyond bivariate and simple multivariate analyses to examine how demographic and socioeconomic status indicators relate to HIV prevalence. Of course, one needs to be cautious about overcontrolling for other factors: as de Walque (2006) and Hargreaves and Glynn (2002) note, “overadjusted” analyses may have masked some true associations. In their review of studies on the link between education and HIV status, Hargreaves and Glynn (2002) exclude studies they define as overadjusted (although they are not entirely clear on what this constitutes); they include studies with behavioral factors (such as multiple partners, condom used, and other proximate determinants of HIV) as covariates. Wojcicki

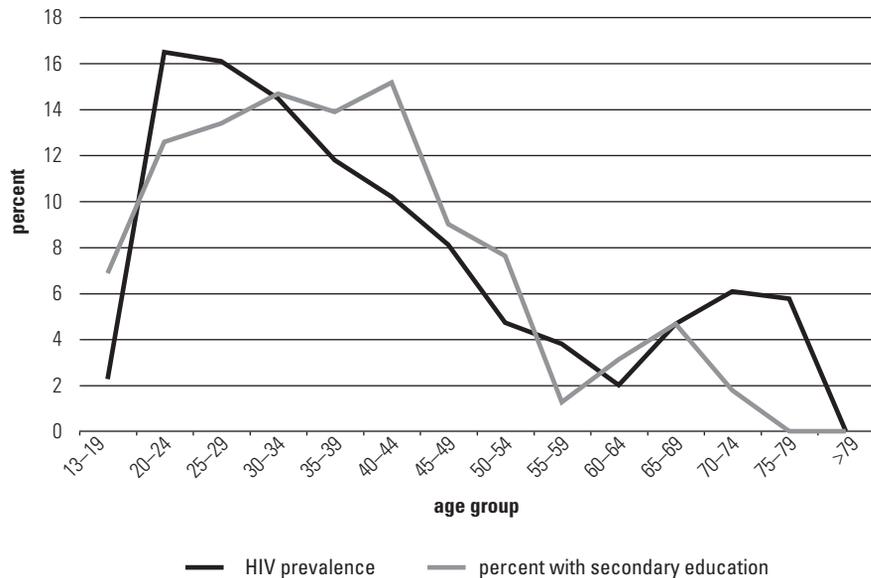
Table 4.2: HIV Prevalence among Adults 18 and Older in Uganda, 1989–90

DEPENDENT VARIABLE: HIV POSITIVE	(1)	(2)
Primary (1–7 years)	0.029 (2.12)	–0.009 (0.53)
Secondary (8+ years)	0.055 (2.60)	0.009 (0.39)
Male	–0.009 (0.82)	0.015 (1.02)
Married	–0.019 (1.40)	–0.003 (0.16)
Previously married	–0.003 (0.15)	0.061 (1.99)
Protestant	–0.003 (0.17)	0.001 (0.06)
Muslim	–0.039 (2.68)	–0.062 (2.65)
House mixed materials	–0.045 (3.59)	–0.024 (1.44)
House hard materials	–0.023 (1.44)	–0.007 (0.35)
Mobility	0.022 (1.72)	0.013 (0.82)
Age dummies	No	Yes
Number of observations	2,852	2,601
Observed probability	0.102	0.102
Pseudo R^2	0.018	0.066

Source: MRC General Population Cohort 1989/90 (round 1), as cited in de Walque (2003).

Note: Logit estimation. Marginal effects, taken observation by observation and averaged over the sample, are presented. Robust z-stat in parentheses. Omitted dummies are no education, female, single, and Catholic. The type of housing materials (soft roof and house, mixed or hard roof and house) serves as a proxy for wealth. The indicator for mobility takes the value 1 if the individual goes more than once a year outside the country. The sample size decreases when age dummies are included since at very old age nobody is HIV positive.

(2005) advises against including behavioral (or choice) variables related to sexual behaviors as right-hand-side variables, because they are a function of the socioeconomic status and demographic variables of interest. Overadjustment can also pertain to other covariates that may mediate the “true” effects of other covariates of interest (Hargreaves and Glynn 2002). To capture the “true” effect of education on HIV status, for example, one might consider excluding occupation variables among the covariates, as occupations are determined by education.

Figure 4.1: HIV Prevalence and Share of Population with Secondary Education, by Age Group, 1989–90

Source: de Walque 2003.

Note: Secondary education is grades 8–13 or above.

(Un)Established Links between Socioeconomic Status and HIV

Misconceptions about the HIV epidemic have the potential to stall or impede efforts to prevent and treat the disease, as Shelton (2007) notes. Despite the accumulation of evidence, many misconceptions persist.

Poverty

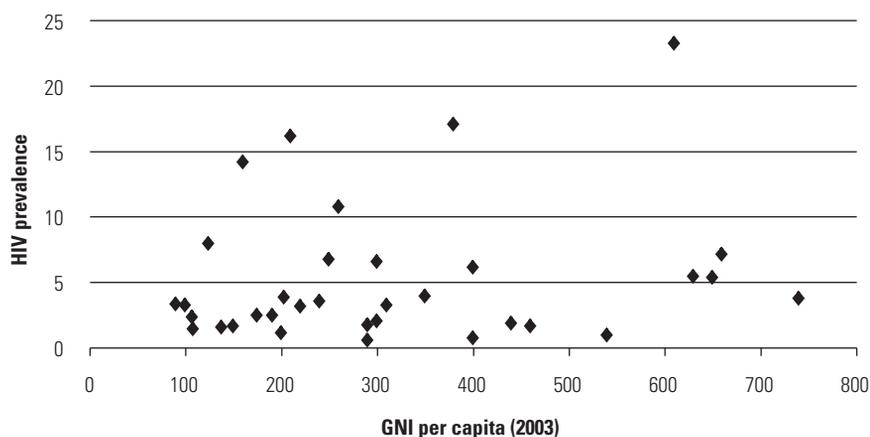
To what extent is poverty to blame for the AIDS epidemic? Globally, the countries hardest hit by the AIDS epidemic are poor; within Sub-Saharan Africa, however, the hardest hit countries are relatively richer.⁶ In Zimbabwe the decline in HIV prevalence has been attributed to the large decline in economic growth (Timberg 2007) (although this relation has not been established empirically).

Despite the lack of evidence (as noted by Gillespie, Kadiyala, and Greener [2007]; Wojcicki [2005]; Shelton, Cassell, and Adetunji [2005]; and Glick [2007]), poverty continues to be associated with the epidemic

(see, for example, Fenton [2004]). This work considers the “downstream” impact of AIDS on poverty and inequality, as well as the “upstream” impact of poverty and inequality on the epidemic itself (Piot, Greener, and Russell 2007). Often, these analyses rely on cross-country data, which suffer from the problems seen in bivariate correlations. Within Sub-Saharan Africa the relation between HIV prevalence and income (poverty) is not clear at the country level (figure 4.2).

A number of compelling arguments have been made that would support the notion that poverty causes AIDS. A simplistic reason underpinning this view is that health and disease exposure are usually positively correlated with poverty: richer people live longer, are in better health, and are less exposed to the deadliest diseases in low-income countries (diarrheal diseases, malaria, and so forth). This argument is faulty because HIV/AIDS is contracted very differently from other contagious diseases. Indeed, it is associated with behaviors and characteristics that are often associated with higher income (lower poverty), such as more concurrent partners, geographic mobility, and urbanization. Glick (2007) characterizes these traits as those that are a direct function of wealth (for example, increased demand for partners) and those that are correlated with wealth (such as residence and population density). Even if there were evidence that the effect of wealth on

Figure 4.2: GNI per Capita and HIV Prevalence among 34 Sub-Saharan African Countries



Source: World Bank 2005–2007; UNAIDS 2006.

Note: Excludes countries with GNI per capita above \$1,000 (Swaziland, Namibia, South Africa, Botswana, and Mauritius) and countries with missing data for HIV prevalence (Cape Verde, São Tomé and Príncipe, the Seychelles, and Liberia).

HIV is not direct but indirect, increases in wealth or income that can be affected by policies cannot easily be disassociated from the “correlation” effect. Increasing opportunities for income earning likely result in more mobility and urbanization, both of which are associated with HIV.

Early marriage

An alarming demographic trend in developing countries has been the steadily increasing percentages of adolescents and women who are HIV-positive. These patterns have been identified as reflecting marriage patterns and risk. Clark, Bruce, and Dude (2006) argue that early marriage by females presents an important risk factor for HIV infection that is generally not being addressed and that could be contributing to the increase in HIV among this relatively large segment of the population (almost a third of girls ages 10–19 in developing countries marry before their 18th birthday).

Using data from 22 DHSs conducted in Africa and Latin America and the Caribbean, Clark, Bruce, and Dude (2006) conclude that four factors increase the vulnerability of young brides to HIV infection:

- Marriage dramatically increases the frequency of unprotected sex for most young brides. In almost all of the countries studied, the proportion of females ages 10–19 reporting having had unprotected sex in the past week was higher among those who were married than those who were not.
- Many young brides marry older men, who are more likely to be HIV-positive, because of their increased window of sexual activity. Young brides are also more likely to be second or third wives in polygamous marriages. They have little power to ensure their husbands have only one partner, inside or outside marriage.
- Young brides often have less education than older brides, as well as less exposure to media, both important sources of information about HIV.
- Because of the age and education gaps between young brides and their husbands, young married girls and women have little possibility of using the most commonly promoted HIV prevention techniques of abstaining from sex or using condoms.

Based on these hypothesized pathways, the authors conclude that young married females are at significant risk for HIV infection. Few prevention efforts are targeted at these girls and women. Though the context for each country demands tailored policy approaches, Clark, Bruce, and Dude (2006) suggest that efforts to delay early marriage and to make sex within marriage safer by increasing HIV testing, promoting condom use, and reducing spousal age differences may help address the problem of HIV infection among this group of young women.

Although it seems reasonable to posit that females who marry young are at relatively high risk of contracting HIV, the actual prevalence of HIV among young wives remains unknown. In determining policy approaches and prevention efforts, it is important to determine whether the rate of HIV infection among young married adolescents is indeed as high as or higher than that of other women their age who are sexually active but unmarried.

Clark (2004) documents the increased risk of HIV infection for young married females by comparing prevalence data among the partners of young married females and the boyfriends of unmarried females the same age. She reports that in Kenya 30.0 percent of male partners of young wives are HIV-positive, while only 11.5 percent of partners of unmarried females the same age are seropositive. In Zambia, 31.6 percent of partners of young wives and 16.8 of partners of unmarried females the same age are HIV-positive (Bruce and Clark 2004).

Clark (2004) shows that HIV infection rates peak among married women ages 15–24 before gradually declining. In contrast, the HIV infection rates for married men peak at ages 30–34. These are generally the ages when women and men marry. She also shows that the HIV prevalence rate is significantly higher among married women and men than among unmarried, sexually active women and men the same age. She finds that being married raises the risk of being HIV-positive by 75 percent among sexually active women ages 15–19. All of Clark's findings suggest that early marriage is a risk for contracting HIV. Her data, however, are limited to a small sample in two countries.

Bongaarts (2006) draws the opposite conclusion. His analysis, based on DHSs in Ghana and Kenya and on cross-country comparisons, suggests that late marriage and a long interval between first sex and first marriage are risk factors for HIV infection.

Data from the first five DHSs that include HIV testing for a nationally representative sample of the adult population and much larger sample sizes allow the risks early marriage poses for HIV infection to be assessed (table 4.3). The data sets are from Burkina Faso (2003), Cameroon (2004), Ghana (2003), Kenya (2003), and Tanzania (2003–04), five countries with different HIV/AIDS epidemics. The five data sets include very similar variables, allowing easy comparisons across countries. The questionnaire content of the DHS is similar to that used by Clark, Bruce, and Dude (2006).

The relationship between the HIV infection rate, the dependent variable, and the marital status of women under the age of 24 is examined by dividing the data into three groups of women by age: 15–19, 20–24, and 15–24. The women are further divided into two groups: one that includes all women in an age range, the other that includes only women who self-report being sexually active. Restricting the analysis to sexually active women allows a more natural comparison of the riskiness of sexual activity inside and outside marriage. Looking at all women allows the sexual debut dimension to be integrated. In addition to marital status (ever married versus never married), the control variables included in the regressions are: years of education; dummies for age, urban location, ethnicity (not available in Tanzania), religion, region, and wealth index; and one interaction between ever married and being in a polygamous union.

For 15- to 19-year olds, early marriage seems to be protective of HIV infection in Burkina Faso, among both all women and self-reported sexually active women; ever having been married carries a statistically significant negative coefficient. In the other four countries, the coefficients on ever being married are not statistically significant. For women ages 20–24, early marriage seems to be protective for women in Burkina Faso and Ghana.

Marriage seems to be associated with a higher risk for HIV infection in women ages 15–19 in Cameroon, in women ages 20–24 in Tanzania, and in the pooled group of women ages 15–24 in both countries. The coefficient on marriage is not significant when the sample is limited to women who self-report as being sexually active.

Overall, except in Cameroon, these results do not support the hypothesis, advanced by Clark (2004), that early marriage increases the HIV risk for women. Getting married at an early age does not seem to put young married

Table 4.3: Early Marriage as a Determinant of HIV-Positive Status among Women Who Have Been Married, by Age Group, Selected Countries

	BURKINA FASO		CAMEROON		GHANA		KENYA		TANZANIA	
	ALL	SEXUALLY ACTIVE	ALL	SEXUALLY ACTIVE	ALL	SEXUALLY ACTIVE	ALL	SEXUALLY ACTIVE	ALL	SEXUALLY ACTIVE
Age 15–19										
Ever married	-0.0168** [0.0072]	-0.0347** [0.0167]	0.0251* [0.0147]	0.0140 [0.0221]	0.0236 [0.0158]	0.0188 [0.0158]	0.0192 [0.0241]	0.0430 [0.0281]	0.0121 [0.0165]	0.0195 [0.0201]
Number of observations	945	425	1274	743	1011	388	732	314	1255	605
R ²	0.04	0.10	0.06	0.11	0.06	0.10	0.10	0.15	0.05	0.07
Age 20–24										
Ever married	-0.0655* [0.0354]	-0.0849* [0.0465]	0.0172 [0.0236]	-0.0127 [0.0291]	-0.0234* [0.0127]	-0.0355** [0.0165]	0.0236 [0.0254]	0.0094 [0.0315]	0.0342* [0.0207]	0.0231 [0.0230]
Number of observations	755	716	1062	1001	897	764	681	580	1182	1102
R ²	0.10	0.10	0.09	0.11	0.05	0.06	0.18	0.19	0.06	0.07
Age 15–24										
Ever married	-0.0299** [0.0132]	-0.0573** [0.0240]	0.0238* [0.0126]	0.0099 [0.0172]	-0.0038 [0.0101]	-0.0125 [0.0125]	0.0279 [0.0182]	0.0258 [0.0218]	0.0234* [0.0128]	0.0206 [0.0152]
Number of observations	1700	1141	2336	1744	1908	1152	1413	894	2437	1707
R ²	0.04	0.07	0.07	0.08	0.03	0.04	0.12	0.14	0.05	0.05

Source: Analysis based on the DHS. Burkina Faso: INSD and ORC Macro (2004), Cameroon: INS and ORC Macro (2004), Ethiopia: CSA and ORC Macro (2006), Ghana: GSS, NMIMR, and ORC Macro (2005), Kenya: CBS, MOH, and ORC Macro (2004), Tanzania: NBS and ORC Macro (2005).

Notes: Robust standard errors in brackets.

* significant at 10%; ** significant at 5%.

women at any greater risk of contracting HIV than women their age who do not get married.

Except in Burkina Faso, marriage does not seem to protect women against HIV either. Young women who get married face the same (high) risk of contracting HIV as women who get married later. It is therefore important that this group of women not be ignored in prevention efforts and policies.

The diverging results across the five countries may reflect cultural differences or different levels of the epidemic in each country. HIV prevalence is higher in Cameroon and Tanzania, the only two countries in which marriage appears to be a risk factor for some groups of women, than in Burkina Faso, the only country in which marriage appear to be protective.

Discordant couples

Recent research on discordant couples (couples in which only one partner is HIV-positive) in five countries—Burkina Faso, Cameroon, Ghana, Kenya, and Tanzania—yields two findings that challenge conventional notions about HIV transmission (de Walque 2007). First, in at least two-thirds of HIV-positive couples, only one partner is HIV-positive. Second, in many such couples only the woman is positive. These findings have very important implications for HIV prevention policies. This section extends the work of de Walque to include several new DHSs that included HIV testing (Côte d'Ivoire, Ethiopia, Guinea, Lesotho, Malawi, Niger, Rwanda, Senegal, and Zimbabwe).

A pervasive, if unstated, belief is that males are by and large responsible for spreading the infection among married and cohabiting couples (see UNAIDS/UNFPA/UNIFEM 2004). HIV prevention policies should take into account the fact that partners who are not yet HIV-positive are an important target group and that women are almost as likely to transmit the infection to their uninfected partners as men are.

In 9 out of 13 countries studied, less than one-third of couples directly affected by HIV are concordant positive (both partners are HIV-positive; table 4.4).⁷ The figure is 42 percent in Malawi, 44 percent in Rwanda, 53 percent in Zimbabwe, and 59 percent in Lesotho.⁸ This finding suggests that expanding prevention efforts to include partners of HIV-positive individuals—by promoting joint voluntary counseling and testing among

Table 4.4: Discordance in HIV Status among Cohabiting Couples
(percent)

HIV STATUS OF COUPLE	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES	ALL COUPLES
	BURKINA FASO 2003 (n = 2,157)		CAMEROON 2004 (n = 2,105)		ETHIOPIA 2005 (n = 2,480)		GHANA 2003 (n = 1,825)		GUINEA 2005 (n = 1,851)		
Concordant negative	96.90	<i>n.a.</i>	92.57	<i>n.a.</i>	97.97	<i>n.a.</i>	95.84	<i>n.a.</i>	98.09	<i>n.a.</i>	
Concordant positive	0.45	14.83	2.35	31.68	0.28	13.83	0.91	22.05	0.35	18.37	
Discordant male	1.69	54.92	2.42	32.61	0.76	37.95	1.67	40.26	0.92	48.62	
Discordant female	0.93	30.24	2.65	35.69	0.97	48.20	1.56	37.68	0.62	32.99	
	CÔTE D'IVOIRE 2005 (n = 1,250)		KENYA 2003 (n = 1,086)		LESOTHO 2004 (n = 652)		MALAWI 2004 (n = 1,297)		NIGER 2006 (n = 2,035)		
Concordant negative	93.26	<i>n.a.</i>	89.06	<i>n.a.</i>	66.90	<i>n.a.</i>	83.17	<i>n.a.</i>	98.87	<i>n.a.</i>	
Concordant positive	1.21	18.00	3.64	33.36	19.53	58.99	7.07	42.04	0.17	15.37	
Discordant male	2.07	30.82	2.84	26.01	8.96	27.06	5.63	33.48	0.57	51.65	
Discordant female	3.44	51.17	4.44	40.62	4.62	13.95	4.11	24.47	0.37	32.97	
	RWANDA 2005 (n = 2,140)		SENEGAL 2005 (n = 1,197)		TANZANIA 2003-04 (n = 2,214)		ZIMBABWE 2005-06 (n = 1,847)				
Concordant negative	96.12	<i>n.a.</i>	98.72	<i>n.a.</i>	89.52	<i>n.a.</i>	72.51	<i>n.a.</i>			
Concordant positive	1.69	43.69	0.45	(*)	2.59	24.79	14.59	53.12			
Discordant male	1.38	35.71	0.44	(*)	4.39	41.95	7.62	27.75			
Discordant female	0.79	20.59	0.37	(*)	3.48	33.24	5.25	19.12			

Source: Analysis based on the DHS. Burkina Faso: INSD and ORC Macro (2004), Cameroon: INS and ORC Macro (2004), Ethiopia: CSA and ORC Macro (2006), Côte d'Ivoire: INS and ORC Macro (2006), Ghana: GSS, NMIMR, and ORC Macro (2005), Guinea: DNS and ORC Macro (2006), Kenya: CBS, MOH, and ORC Macro (2004), Lesotho: MOH, BOS, and ORC Macro (2005), Malawi: NSO and ORC Macro (2005), Niger: INS and Macro International Inc. (2007), Rwanda: INSR and ORC Macro (2006), Senegal: Ndiaye and Ayad (2006), Tanzania: NBS and ORC Macro (2005), Zimbabwe: CSO and Macro International Inc. (2007).

Notes: *n.a.* = not applicable. (*) = based on number of observations to low (<25) for meaningful statistics. The data are weighted with the sample weights given by the data provider.

Concordant negative means that both partners are HIV negative, concordant positive means that both are HIV positive, discordant male means that only the man is HIV positive and discordant female means that only the woman is HIV positive.

couples, for example—may help prevent further transmission (Allen and others 2003).

In 9 of the 13 countries studied, the fraction of HIV-affected couples in which only the females are positive exceeds 30 percent. The figure is 48.2 percent in Ethiopia and 51.0 percent in Côte d'Ivoire. This figure is lower, but still sizable, in Malawi (24 percent), Rwanda (21 percent), Zimbabwe (19 percent), and Lesotho (14 percent), the same countries in which the proportion of concordant positive couples is higher. These findings challenge the notion that males are the primary channel for HIV transmission from high-risk groups to the general population; they also contradict self-reports of sexual behavior by females.

Within cohabiting couples, self-reported sexual intercourse outside the union during the previous 12 months is generally much lower among women than men. In Burkina Faso, for example, it is 0.7 percent for women and 8.7 percent for men. In Tanzania, it is 4.1 percent for women and 22.0 percent among men. These figures should be viewed with some caution, however, as substantial reporting biases in self-reported sexual behavior among both men and women have been reported (Gersovitz 2005; Gersovitz and others 1998).

De Walque (2007) explores alternative explanations for the sizable portion of discordant couples in which only the woman is HIV-positive. These include polygyny (marriage to several wives), bias in the coverage of HIV testing in the survey, and unions or infections before the current union. For the most part, these possibilities do not explain the data in Burkina Faso, Cameroon, Ghana, Kenya, or Tanzania.

To exclude most cases of infections before the current union, the sample is limited to couples in which the woman had been in only one union for 10 years or more (table 4.5). In five countries, the number of HIV-positive couples who had been in the same union for at least 10 years is too small for meaningful statistical analysis. In the other countries the proportion of discordant female couples decreases, but not very substantially. The proportion of discordant female couples in Côte d'Ivoire, Cameroon, and Kenya still exceeds 30 percent of HIV-positive couples. It is 20–30 percent in Burkina Faso, Malawi, and Tanzania and 10–20 percent in Zimbabwe, Rwanda, and Lesotho.

Comparison between tables 4.4 and 4.5 suggests that infection before marriage may explain some, but not all, of the cases of couples in which only the woman is HIV-positive. In many of the countries studied, HIV infection

Table 4.5: Discordance in HIV Status among Couples in Which the Woman Was Never Married Before and Has Been in the Union for 10 Years or More (percent)

HIV STATUS OF COUPLE	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES	ALL COUPLES	INFECTED COUPLES
	BURKINA FASO 2003 (n = 1,002)	CAMEROON 2004 (n = 748)	ETHIOPIA 2005 (n = 1,112)	GHANA 2003 (n = 812)	GUINEA 2005 (n = 956)					
Concordant negative	97.01	<i>n.a.</i>	99.29	97.00	98.73					<i>n.a.</i>
Concordant positive	0.48	16.17	0.21	1.05	0.38					(*)
Discordant male	1.70	57.09	0.31	1.35	0.80					(*)
Discordant female	0.79	26.73	0.17	0.59	0.08					(*)
	CÔTE D'IVOIRE 2005 (n=458)	KENYA 2003 (n = 482)	LESOTHO 2004 (n = 269)	MALAWI 2004 (n = 439)	NIGER 2006 (n = 951)					
Concordant negative	94.21	92.24	72.01	86.87	98.94					<i>n.a.</i>
Concordant positive	0.51	3.21	15.61	6.42	0.16					(*)
Discordant male	2.35	44.48	9.23	4.00	0.84					(*)
Discordant female	2.90	50.31	3.15	2.69	0.04					(*)
	RWANDA 2005 (N = 939)	SENEGAL 2005 (N = 516)	TANZANIA 2003-04 (N = 784)	ZIMBABWE 2005-06 (N = 716)						
Concordant negative	96.18	<i>n.a.</i>	90.79	74.92	<i>n.a.</i>					
Concordant positive	1.53	40.25	3.20	11.67	46.58					
Discordant male	1.69	44.48	3.97	9.11	36.37					
Discordant female	0.58	15.26	2.02	4.27	17.04					

Source: Analysis based on the DHS. Burkina Faso: INSD and ORC Macro (2004), Cameroon: INS and ORC Macro (2004), Ethiopia: CSA and ORC Macro (2006), Côte d'Ivoire: INS and ORC Macro (2006), Guinea: DNS and ORC Macro (2006), Kenya: CBS, MOH, and ORC Macro (2004), Lesotho: MOH, BOS, and ORC Macro (2005), Malawi: NSO and ORC Macro (2005), Niger: INS and Macro International Inc. (2007), Rwanda: INSR and ORC Macro (2006), Senegal: Ndiaye and Ayad (2006), Tanzania: NBS and ORC Macro (2005), Zimbabwe: CSO and Macro International Inc. (2007).

Notes: *n.a.*= not applicable. (*): based on number of observations to low (<25) for meaningful statistics. The data are weighted with the sample weights given by the data provider. The sample excludes couples where the female has been in successive marriages as well as unions with duration of less than 10 years. Concordant negative means that both partners are HIV negative, concordant positive means that both are HIV positive, discordant male means that only the man is HIV positive and discordant female means that only the woman is HIV positive.

before the union does not explain the sizable proportion of discordant female couples. That proportion is difficult to explain unless women are also sexually active outside the union.

Sexual intercourse among women outside marriage (or the cohabiting union) may be more common than reported. Even if it is infrequent, women may be more vulnerable to infection during such encounters, if, for example, they are less likely to use condoms than unmarried women or married men. Sexual intercourse outside the union increases women's vulnerability to HIV. Designing prevention efforts for this population of women will not be easy, given the culture of silence around women's sexuality in many African countries and the stigma attached to people, particularly women, living with HIV/AIDS. Efforts nevertheless need to be made, as ignoring the role female sexual activity outside the union plays in the transmission of the epidemic would be a disservice to women.

Conclusion

Two important messages emerge from the results presented in this chapter. First, there is a need to continue to improve the evidence base on the link between demographic and socioeconomic variables and HIV/AIDS. The introduction and scaling up of antiretroviral therapy (ART) in most African countries profoundly affects the dynamics of the epidemic and has the potential to modify the links between demographic and socioeconomic variables and HIV. If ART is available for specific groups (such as wealthier or more urban populations), the prevalence of HIV will shift, controlling for changes in incidence. By reducing AIDS-related mortality, ART modifies the link between HIV prevalence and incidence, reinforcing the need for accurate measures of incidence (through, for example, panel or cohort studies including HIV tests), as the best indicator of the current state of the epidemic.

Second, even with improved data sources, it is difficult to generalize results across countries. As the results presented here and in other studies based on DHS data sets show, few consistent and significant patterns of prevalence by socioeconomic and demographic variables are evident.

Table A.1: Prevalence and Number of People Infected with HIV in Sub-Saharan Africa, by Country, 2005–07

COUNTRY	HIV PREVALENCE	POPULATION (MILLIONS)	PERCENT OF TOTAL POPULATION AMONG THE COUNTRIES LISTED, BY COUNTRY AND HIV PREVALENCE OUT OF 100%	
			LESS THAN 5 PERCENT	AT LEAST 5 PERCENT
Angola	3.7	13.5	1.9	
Benin	1.8	6.7	1.0	
Botswana	24.1	1.7		0.2
Burkina Faso	2.0	12.1	1.7	
Burundi	3.3	7.2	1.0	
Cameroon	5.4	16.1		2.3
Central African Republic	10.7	3.9		0.6
Chad	3.5	8.6	1.2	
Congo, Dem. Rep. of	3.2	53.2	7.6	
Congo, Republic of	5.3	3.8		0.5
Côte d'Ivoire	7.1	16.8		2.4
Eritrea	2.4	4.4	0.6	
Ethiopia	1.4	68.6	9.8	
Gabon	7.9	1.3		0.2
Gambia, The	2.4	1.4	0.2	
Ghana	2.3	20.7	3.0	
Guinea	1.5	7.9	1.1	
Guinea-Bissau	3.8	1.5	0.2	
Kenya	6.1	31.9		4.6
Lesotho	23.2	1.8		0.3
Madagascar	0.5	16.9	2.4	
Malawi	14.1	11.0		1.6
Mali	1.7	11.7	1.7	
Mauritania	0.7	2.8	0.4	
Mauritius	0.6	1.2	0.2	
Mozambique	16.1	18.8		2.7
Namibia	19.6	2.0		0.3
Niger	1.1	11.8	1.7	
Nigeria	3.9	136.5	19.5	
Rwanda	3.1	8.4	1.2	
Senegal	0.9	10.2	1.5	
Sierra Leone	1.6	5.3	0.8	
Somalia	0.9	9.6	1.4	
South Africa	18.8	45.8		6.5
Sudan	1.6	33.5	4.8	
Swaziland	33.4	1.1		0.2

(continues on the following page)

Table A.1: Prevalence and Number of People Infected with HIV in Sub-Saharan Africa, by Country, 2005–07 (*continued*)

COUNTRY	HIV PREVALENCE	POPULATION (MILLIONS)	PERCENT OF TOTAL POPULATION AMONG THE COUNTRIES LISTED, BY COUNTRY AND HIV PREVALENCE OUT OF 100%	
			LESS THAN 5 PERCENT	AT LEAST 5 PERCENT
Togo	3.2	4.9	0.7	
Tanzania	6.5	35.9		5.1
Uganda	6.7	25.3		3.6
Zambia	17.0	10.4		1.5
Zimbabwe	20.1	13.1		1.9
Total		699.3	66	34

Sources: UNAIDS (2006, HIV prevalence); World Bank (2005–07, population estimates).

Notes: Excludes Cape Verde, Comoros, Djibouti, São Tomé and Príncipe, Seychelles, Equatorial Guinea, and Liberia.

Notes

1. In a similar approach, Beegle and De Weerd (2008) examine the methodological issues involved in the study of the impact of HIV on socioeconomic outcomes.
2. For a discussion of some of the concerns about national, population-based household surveys that include HIV testing (which relate to nonresponse rates), see García-Calleja, Gouws, and Ghys (2006).
3. This approach is drawn from the seminal work of Bongaarts (1978) on the proximate determinants of fertility to understand fertility patterns. These determinants include the exposure risk of conceiving, usually measured by cohabitation; use of contraceptives; rates of abortion; pathological sterility; and postpartum infecundability.
4. Knowledge about HIV does not necessarily translate into behaviors associated with prevention (see, for example, Booyens and Summerton [2002]); knowledge about one's own status may not affect the propensity to buy condoms (Thornton 2005).
5. In an earlier study of risk factors for HIV, Nunn and others (1997) found a positive association between education and HIV seropositivity, but the result was not robust when corrected for age.
6. The analysis of economic growth and HIV/AIDS tends to study the impact of HIV/AIDS on economic growth (growth in GDP per capita) using cross-country regressions, neoclassical growth models, or computable general equilibrium models, rather than the impact of poverty or economic status on national estimates of the prevalence of HIV/AIDS (Haacker 2004).
7. In Senegal, the number of infected couples is too low to perform a meaningful statistical analysis.

8. Three of these countries (Malawi, Zimbabwe, and Lesotho) have the highest overall HIV prevalence of the 13 countries studied, suggesting that the probability that both partners are infected rises as the epidemic diffused widely in the population.

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HIV/AIDS and Social Capital in a Cross-Section of Countries

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Social capital refers to the norms and networks that enable collective action. Although the concept of social capital is frequently used in vague ways in a large part of the social sciences literature, the basic idea is that elements such as trust, social norms, and social networks make groups or organizations work more efficiently. A growing number of researchers have attempted to quantify the influence of social capital on economic development. Furthermore, several authors have linked the HIV/AIDS pandemic to social capital (see, for instance, Gaffeo [2003]). They note that factors related to the disease—including stigma, discrimination, and the costs posed by care for the ill and orphans—put pressure on and erode social capital.

The HIV/AIDS epidemic represents a significant barrier to development on a number of dimensions. The implications of the disease in terms of productivity, human capital, savings, and fiscal policy have been subject to significant empirical scrutiny. This chapter fills a gap by assessing and confirming the empirical importance of the impact of the disease on social capital, highlighting an additional channel that needs to be taken into account in the policy debate. It uses cross-country data to attempt to quantify the impact of the HIV/AIDS epidemic on social capital. It estimates reduced-form regressions of the main determinants of social capital identified in the literature, using national levels of trust from the World Values Survey as a proxy for social capital. It appears to be the first attempt to evaluate this question empirically.

The chapter is organized as follows. The first two sections examine the links identified in the literature between social capital, development, and HIV/AIDS. The third section describes the data used for the cross-country regressions, presents the results obtained from the estimation exercises for a sample that includes both developing and industrial countries, and reports on the robustness of the results obtained. The last section provides some concluding remarks.

Links between Social Capital and Development

Most definitions of social capital identify three key components: trust, social networks, and social norms. These elements form the foundation of the mechanisms through which social capital reduces uncertainty and transaction costs, discourages opportunistic behavior, fosters cooperation, and increases the efficiency of markets and organizations, thus spurring economic development. These outcomes increase growth in various ways.

Routledge and von Amsberg (2003) present a theoretical model in which social capital affects economic growth by facilitating cooperative trade. Zak and Knack (2001) present a general equilibrium model with heterogeneous agents and moral hazard to determine how trust varies across societies. They show that trust depends on the social, economic, and institutional (formal and informal) context in which transactions occur. In particular, social heterogeneity and the quality of institutions to punish cheaters affect trust levels, with trust stronger in homogeneous and egalitarian societies. In their set-up, trust enhances growth by reducing the costs of transactions. Societies can get stuck in low-trust poverty traps.

As far as the empirical evidence on the link between social capital and development is concerned, Knack and Keefer (1997) using cross-country data find that trust and civic norms are significantly related to economic growth and investment. Knack (2002) finds that social trust leads to better governance. Zak and Knack (2001) test the predictions of their model (described above) by extending the Knack and Keefer sample using later waves of the World Values Survey that include a number of developing countries. They corroborate the conclusion that trust affects economic growth. Beugelsdijk and others (2004) perform a robustness analysis of the relationship between trust and economic growth. They conclude that the Zak and Knack results are highly robust in terms of statistical significance

of the estimated coefficients and reasonably robust in terms size of the estimated effects.

Another strand of the literature links social capital with financial development by identifying high levels of trust as one of the main determinants of financial depth. Measuring social capital through blood donation and electoral participation, Guiso, Sapienza, and Zingales (2004) conclude that this variable is significant in explaining financial development. Nonetheless, Sabatini (2006) argues that indicators such as blood donation and electoral participation are arguably outcomes of social capital rather than a measure of social capital itself. Garretsen, Lensink, and Sterken (2004) also show that societal norms and culture help explain differences in cross-country financial development. Their indicators for social norms are obtained from survey data about the values of people working in local subsidiaries of IBM in more than 50 countries.

Durlauf (2002) and Sabatini (2006) discuss in detail the challenges of analyzing social capital empirically, identifying in particular the flaws in studies linking social capital to economic growth. Some indicators commonly used are measures of outcomes of social capital rather than social capital itself. Others rely on subjective perceptions that depend on the economic, social, and historical context of the individuals being surveyed. Moreover, technical econometric difficulties, such as identification problems, reverse causality, and measurement error, abound in the analysis of the links between social capital and various outcomes of interest.

Social Capital and HIV/AIDS

Researchers have explored a number of links between HIV/AIDS and economic performance. In addition to the direct impacts of the disease on mortality, labor productivity, and household savings (as a result of increased health expenditures), HIV/AIDS contributes to the persistence of poverty by affecting not only the stock but also the accumulation of human capital.¹ Bell (2004) calibrates an overlapping generations model for South Africa taking into account the fact that when parents die, their children are threatened by financial distress and lack of care, which in turn may lead to increases in the incidence of child labor and reductions in school enrollment and attendance. They predict that the average annual family income could be up to 23,000 rand lower by 2050 as a result of AIDS. Bell, Bruhns, and Gersbach (2006)

perform a similar exercise for Kenya. They conclude that by 2040, GDP per adult will be 11 percent less than it would have been in the absence of AIDS.

Based on her study of a panel of African countries, Kalemli-Ozcan (2006) concludes that HIV/AIDS raises the total fertility rate and reduces school enrollment rates. She argues that her results are consistent with theoretical models of precautionary demand for children in a high-mortality environment that predict that parents will choose to have more children and provide each child with less education. HIV/AIDS thus helps reverse the fertility transition and decrease the accumulation of human capital, leading to significant long-run impacts on welfare.

Moreover, the fact that people living with HIV/AIDS often face stigma and discrimination is of crucial importance (Gaffeo 2003). Zak and Knack (2001) show that discrimination reduces trust. There thus seems to be an indirect link between HIV/AIDS and development, as the pandemic may be associated with increases in discrimination, which may reduce economic performance.

A number of researchers argue that HIV/AIDS also places a considerable burden on traditional networks and coping mechanisms for addressing economic shocks, particularly for orphans and sick people. Foster (2006), for instance, argues that governments have been slow to react to the orphan crisis in Sub-Saharan Africa, which is intimately linked to the epidemic; as a result, families and communities must bear most of the costs. This strain on social networks could erode social capital and even lead to the disintegration of existing mechanisms for addressing shocks.

Haacker (2004) posits that HIV/AIDS affects a country's social and economic institutions, which in turn affects economic development. He argues that the epidemic contributes to deteriorating security at the individual, community, and national level as governments' capacities are eroded, leading to increased crime and instability. Haacker also suggests that the epidemic could increase the vulnerability of a country to civil war.

Campbell, Williams, and Gilgen (2002) investigate a different causal relation by focusing on the impact of social capital on health issues in a South African mining community. They test the hypothesis that people who are members of voluntary community or associations are less likely to have HIV than people who are not. They find mixed results that vary across age and gender.

HIV/AIDS is thus likely to affect social capital through three separate channels: stigma and discrimination, the burden it poses on traditional

social networks, and increased insecurity. Determining how large this effect is allows one to assess the importance of the indirect channels through which HIV/AIDS affects the development process.

The Empirical Model

A set of regressions was run to determine the effect of HIV/AIDS on social capital (for a description of the data and their sources, see annex table 5A.1). The main dependent variable in the regressions is a measure of social capital obtained from cross-country data on national levels of trust from the World Values Survey (see <http://www.worldvaluessurvey.org/>). Based on a nationally representative sample, this survey provides a measure of trust given by the percentage of the population that answers “yes” to the question: “In general, do you think that most people can be trusted?” against the alternative (“You can’t be too careful when dealing with people”). Data from the latest waves of the survey, which includes six Sub-Saharan African countries (only Nigeria and South Africa were available in previous surveys), are used (see annex table 5A.2).

This particular measure of social capital has been subject to a number of criticisms. One concern is the fact that it reflects individual perceptions of society and fails to take into account the social and historical context in which those perceptions are formed. Sabatini (2006) also argues that better-educated persons and people who live in urban areas are usually overrepresented in the World Values Survey. Another concern is that different respondents may have different interpretations of the survey question.

Temple (1998) proposes an alternative aggregate measure of social capital, which he refers to as a “social capability” index. This index assesses a “society’s suitability for institutional and economic development.” This measure was constructed in the early 1960s, however, and is therefore not suitable for the purpose at hand. The literature proposes several other empirical proxies for social capital (see Sabatini [2006] for a critical survey), including participation in voluntary associations. These proxies could not be used here, because they are not widely available across countries, are outcomes rather than indicators of social capital, and suffer from other shortcomings as well.

Data were collected on a number of determinants of trust, including HIV prevalence rates; governance indexes; measures of the quality of institutions (in particular regarding the control of corruption); and measures of

social distance, such as income inequality and ethnic and linguistic fractionalization. Measures of educational achievement were also included as determinants of trust, following Alesina and La Ferrara (2002). Using individual-level data for the United States, they find that “successful people” (defined in terms of income and educational achievement) tend to trust more.

In some specifications the log of initial GDP (as measured by Dollar and Kraay [2003]) is also used as a possible determinant of trust. In the moral hazard model of Zak and Knack (2001), trust is decreasing with wealth (because investors have more incentives to monitor brokers’ behavior to protect their wealth) and increasing in wages.² Following this logic, the impact of the log of initial GDP (the proxy for those two economic factors at the national level) on trust is ambiguous.

Preliminary empirical analysis

A number of econometric difficulties arise in cross-country regressions of the determinants of national levels of social capital as proxied by trust, resulting in problems in terms of bias and the consistency of estimates obtained. Several of the variables considered below suffer from measurement error problems. In particular, it is well known that the quality of the data on HIV prevalence rates is poor. Although a number of recent Demographic and Health Surveys (DHS) have collected more accurate and reliable data on prevalence rates, particularly in Africa, the cross-country availability of such data is very limited. In addition, the dependent variable (trust) was obtained from survey data, which are problematic for the reasons discussed earlier. Once again, lack of data availability for a large number of countries precludes the use of more reliable measures.

Omitted variables could present another serious potential problem. An attempt was made to control for the different determinants of trust identified in the literature; statistical tests were presented to diagnose model misspecification in order to mitigate for the possibility that third factors are determining the relations obtained between HIV and social capital.

Perhaps a more troublesome possibility concerns the endogeneity of HIV prevalence rates to national levels of trust. An attempt was made to mitigate this problem by ensuring that control variables are predetermined: whenever possible, values for periods before the World Values Surveys (WVS) took place were included. The next section also presents results

from instrumental variables regressions in which HIV prevalence is instrumented by national circumcision rates.

Another potential source of problems is the presence of multiple regimes and nonlinearities in the relations studied. This problem is likely, given that the sample includes a number of transition (former socialist) economies. All of these caveats need to be borne in mind in interpreting the results.

Table 5.1 presents the results of a number of ordinary least squares (OLS) regressions, including the log of trust as the dependent variable, as specified in the following expression:

$$\log(\text{Trust}_i) = \alpha + \beta \log(\text{HIV}_i) + Y_i' \gamma + \varepsilon_i.$$

The first two terms on the right-hand side refer to the constant and the log of HIV prevalence; Y_i is a vector containing other explanatory variables of trust; and ε_i is a random error term. The coefficient β , which measures the effect of HIV prevalence on trust, is of particular interest here. The correlation matrix for the regressors as well as a number of descriptive statistics are presented in annex table 5A.3.

With the possible exception of the variables measuring institutional quality, the correlations are not so high as to impair obtaining estimates of the separate impact of the regressors. A number of interesting observations can be made from the examination of the 10 specifications (table 5.1). One is the fact that in most specifications HIV prevalence has a negative and statistically significant effect (at conventional levels) on trust.³

Specification (4), for instance, includes HIV prevalence, the rule of law index constructed by Kaufmann and others (2006), and data on ethnic fractionalization from Alesina and others (2003) as explanatory variables. As expected, the estimated coefficients for both HIV prevalence and fractionalization present negative signs, although the sign on fractionalization is not statistically significant.⁴ The rule of law index presents a positive and statistically significant coefficient. The results from this regression thus indicate that levels of trust are lower in countries with higher HIV prevalence.

Because the data are expressed in logarithmic form, the coefficient estimates can be interpreted as elasticities indicating how sensitive trust is to increases in HIV prevalence. The results imply that a 1 percent increase in HIV prevalence would result in a 0.65 percent decrease in trust (or alternatively, that a 1 standard deviation increase in prevalence will lead to about a 2 percent decline in trust). The diagnostic statistics suggest that the results

Table 5.1: HIV/AIDS and Social Capital OLS Estimates

CONTROL VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
HIV prevalence	-0.963*** (0.229)	-0.779*** (0.179)	-0.694*** (0.171)	-0.652*** (0.198)	-0.835*** (0.295)	-0.369* (0.211)	-0.363* (0.219)	-0.337* (0.200)	-0.327 ^a (0.209)	-0.369* (0.207)
Control of corruption		0.048*** (0.012)								0.037 ^b (0.023)
Rule of law			0.052*** (0.012)	0.050*** (0.011)	0.056*** (0.012)	0.045*** (0.011)	0.064*** (0.016)	0.043 (0.029)		
Government effectiveness									0.049** (0.022)	
Ethnic fractionalization				-0.024 (0.053)						
Linguistic fractionalization					0.055 (0.053)					
Gini coefficient						-0.119** (0.050)	-0.150*** (0.046)	-0.133*** (0.052)	-0.142*** (0.054)	-0.13*** (0.052)
Educational achievement							-0.052 ^a (0.032)			
Initial income								0.003 (0.027)	-0.005 (0.023)	0.007 (0.023)
Constant	0.246*** (0.013)	0.229*** (0.013)	0.223*** (0.013)	0.232*** (0.020)	0.205*** (0.016)	0.641*** (0.178)	0.833*** (0.172)	0.673** (0.293)	0.766*** (0.264)	0.643** (0.281)
N	79	78	78	78	76	75	64	72	72	72
R-squared	0.068	0.267	0.289	0.290	0.303	0.340	0.395	0.355	0.371	0.352
RESET	0.419	0.010	0.038	0.043	0.027	0.045	0.080	0.181	0.697	0.076

Source: Author's calculations.

Notes: Dependent variable is generalized level of trust from VWS. Numbers in parenthesis are robust standard errors.

a. This coefficient is significant at the 11 percent level.

b. This coefficient is significant at the 12 percent level.

*, **, and *** denote statistical significance at the 10, 5, and 1 percent level respectively. N denotes the number of observations included (varies according to data availability). RESET refers to p-values for Ramsey's RESET misspecification test. Ho is that the model is not misspecified.

obtained in this specification should be interpreted with caution, however, because the null hypothesis that the model is not misspecified is not rejected at the 1 percent level (although it is rejected at the 5 percent level).

Specifications (8)–(10) regress trust on HIV prevalence, different measures of institutional quality, the Gini coefficient for income inequality (as a proxy for social distance), and the log of initial income.⁵ Diagnostic statistics for these regressions present more satisfactory results in terms of model specification than the earlier regressions. As predicted by the theories discussed above, the Gini coefficient seems to negatively affect trust (greater income inequality reduces trust), whereas government effectiveness and control of corruption increase levels of trust (the coefficient for the rule of law index in specification [8] is positive but not statistically significant).

The HIV prevalence variable has a negative coefficient, ranging in size from -0.327 in specification (9) to -0.369 in specification (10). These figures can be interpreted as elasticities, indicating that a one standard deviation increase in HIV prevalence will lead to a 1 percent decline in trust, controlling for other determinants of social capital.

Overall, the regressions provide some empirical support to the idea that HIV/AIDS has a statistically and economically significant deleterious effect on social capital. This is an additional channel through which the epidemic constrains development in some parts of the world, including Sub-Saharan African. These findings are subject to a number of caveats, including the possibility that the estimates are subject to endogeneity bias. In the next section, several experiments are performed to assess whether conclusions change fundamentally when the specifications are varied along various dimensions.

Robustness of the results

As Beugelsdijk and others (2004) argue, robustness is a multidimensional concept that cannot be analyzed using a single indicator. The term is used here to refer to the degree to which results are sensitive to changes in the explanatory variables used, to changes in the sample composition, and to the use of different econometric techniques. This section focuses on the statistical significance and the size of the estimated effect of HIV prevalence on trust.

Using a smaller set of countries and different fractionalization measures than used here, the literature on the determinants of trust across

countries suggests that trust may be a quadratic function of ethnic and linguistic homogeneity. Zak and Knack (2001) argue that the rationale for these results is that in settings with a large number of small groups, no single group represents much of a threat to others. According to them, the effective social distance is greatest at an intermediate range of the fractionalization measure.

Specifications (11) and (12) control for HIV prevalence, rule of law, ethnic fractionalization and its square, and linguistic fractionalization and its squared value (table 5.2). The results are qualitatively similar to those obtained in the previous section. The fractionalization measures remain statistically not significant, but the rule of law variable and HIV prevalence coefficient are significant at the 1 percent level and present the expected signs. Nevertheless, the RESET test rejects the null hypothesis of no omitted variables for those models.

Subsequently, in specifications (13) and (14) the sample is limited to developing countries in order to check whether considering only this subsample changes the results previously obtained. The results show that most regressors are no longer statistically significant, although HIV prevalence continues to present a negative and significant elasticity. The estimate indicates that a 0.5 percent reduction in social capital is associated with a 1 percent increase in HIV prevalence. The diagnostic statistics do not detect model misspecification, but the results should nevertheless be interpreted with caution given the sample size of just 49 observations.

The fact that HIV prevalence may be endogenous to social capital is taken into consideration by instrumenting for this variable using national data for male circumcision rates obtained from WHO (2007) and Drain and others (2006). The strategy of using circumcision rates as an instrument for HIV has been employed in a number of other studies, including those by Kalemli-Ozcan (2006) and Werker, Ahuja, and Wendell (2006), in light of medical evidence that male circumcision substantially reduces the risk of HIV transmission. These studies instrumented for HIV using circumcision rates in the context of regressions for total fertility rates, school enrollment and economic growth, however, not social capital.

Specifications (15) and (16) are two-stage least squares regressions of trust on HIV prevalence, measures of institutional quality (control of corruption and rule of law respectively), and the Gini coefficient in which HIV prevalence is instrumented by circumcision rates. All the explanatory variables are statistically significant and present the expected signs. The

Table 5.2. Sensitivity Analysis

CONTROL VARIABLES	(11) OLS	(12) OLS	(13) OLS	(14) OLS	(15) ^F TSL	(16) ^F TSL	(17) ^F TSL	(18) OLS	(19) OLS
HIV prevalence	-0.747*** (0.274)	-0.834*** (0.321)	-0.470** (0.222)	-0.511** (0.231)	-0.447** (0.220)	-0.376* (0.220)	-0.458 (0.381)	-0.043 (0.218)	0.008 (0.205)
Control of corruption					0.049*** (0.011)		0.044*** (0.012)		
Rule of law	0.048*** (0.011)	0.056*** (0.012)	-0.015 (0.033)			0.050*** (0.012)			
Government effectiveness				0.001 (0.026)					
Law & order (ICRG)								-0.003 (0.014)	
Voice & accountability									-0.027 (0.035)
Ethnic fractionalization	-0.250 (0.172)								
Linguistic fractionalization		0.058 (0.139)							
EF or LF Squared	0.284 (0.219)	-0.003 (0.180)							
Gini coefficient			-0.066 (0.050)	-0.064 (0.051)	-0.118** (0.054)	-0.119** (0.053)	-0.293*** (0.074)	-0.212*** (0.070)	-0.168*** (0.055)
Initial income			0.003 (0.029)	-0.006 (0.025)				0.045** (0.020)	0.066** (0.030)
N	78	76	49	49	70	70	26	60	73
R-squared	0.307	0.303	0.111	0.106	0.372	0.371	0.572	0.369	0.340
RESET	0.012	0.078	0.412	0.746				0.099	0.000

Source: Author's calculations.

Note: Dependent variable is national level of trust from WWS. All regressions include a constant term (always statistically significant), which was not reported to save space. Numbers in parenthesis are robust standard errors.

a. Those specifications are two-stage-least squares (TSLS) regressions instrumented by circumcision rates or settler mortality as specified in the main text.

*, **, and *** denote statistical significance at the 10, 5, and 1 percent level respectively. N denotes the number of observations included. RESET refers to p-values for Ramsey's RESET misspecification test. Ho is that the model is not misspecified.

estimated elasticities for the instrumented HIV coefficient are -0.447 and -0.376 , which are similar in size to those obtained from OLS in the previous section. Addressing the endogeneity issue thus does not substantially alter the conclusions already reached. Nevertheless, there is a relatively high likelihood that circumcision rates are endogenous to national trust levels for religious or cultural reasons. Circumcision rates may thus be an inadequate instrument in this case, as this variable may be related to trust.

In addition, an important strand of the literature on the impact of institutions on economic development is adopted here through the use of the log of settler mortality as an instrument for institutional quality, as suggested by Acemoglu and others (2001). Specification (17) is a two-stage least squares regression of trust on HIV prevalence (instrumented by circumcision rates), control of corruption (instrumented by settler mortality), and the Gini coefficient. The coefficient estimates obtained for all controls variables have the expected signs and are similar in size to those obtained in previous regressions. The Gini coefficient and the control of corruption variable are statistically significant at conventional levels, whereas HIV prevalence is not. These results should be interpreted with care given the very small sample size (data are available for 26 countries only).

How do different proxies for the institutional quality variables affect the results? Specification (18) is similar to models (8)–(10) but includes the national average for the law and order index constructed by the International Country Risk Guide for 1960–95 as a proxy for institutional quality. The HIV coefficient and the law and order coefficient are not statistically significant in this case. The Gini coefficient survives as highly significant, and initial income has a positive and significant coefficient. Nevertheless, because of data availability, the sample size is smaller than some of the previous specifications. In addition, the RESET test rejects the null hypothesis of no omitted variables at the 10 percent level (but not at the 5 percent level).

Moreover, specification (19) considers a model including the voice and accountability index constructed by Kaufmann and others (2006) as a proxy for institutional quality. In this case, neither the HIV prevalence coefficient nor the voice and accountability coefficient are statistically significant. Nevertheless, the Gini coefficient and the coefficient for initial income nonetheless present the expected negative signs, although the

RESET test strongly indicates that this specification may suffer from omitted variables bias.

Overall, one can conclude that given the limitations in quality and availability of data, the conclusion obtained in the previous section—that higher HIV prevalence is associated with lower social capital—is maintained. Diagnostic statistics are not satisfactory for the specifications in which the HIV coefficient is not significant, hence these results should be considered with caution. Only results deemed representative are reported; a number of additional specifications were estimated (by ordinary and two-stage least squares), combining the explanatory variables in several ways. The results were not substantially different from the ones reported, in terms of either statistical significance or the size of the coefficients.

Conclusion

The cross-country analysis presented here provides some empirical support to the notion that HIV/AIDS has deleterious effects on social capital at the national level. The preferred specifications suggest elasticities of social capital to HIV prevalence on the order of -0.33 to -0.37 . The empirical estimates predict that if one moves from a country with relatively low HIV prevalence, such as Estonia, to a country with relatively high prevalence, such as Uganda, one observes a decrease in social capital of about 2.5 percent. When one performs a similar exercise for Zimbabwe, where the epidemic has reached catastrophic proportions, the decline in social capital exceeds 8 percent. The estimates suggest that measures of social distance—such as the Gini coefficient for income inequality and measures of control of corruption, rule of law, and government effectiveness—are also likely to be important determinants of social capital.

The findings reported are subject to several caveats and are affected by problems of data availability, measurement error, omitted variables, and limitations of econometric techniques. Nonetheless, the negative impact of HIV prevalence on social capital is reasonably robust to changes in explanatory variables, estimation methods, and sample composition. The empirical results presented here support the validity of efforts underway to address the potentially large social impacts of the HIV/AIDS epidemic.

Annex

Table 5A.1: Overview of Data and Sources

SERIES	DESCRIPTION/NOTES	SOURCE
HIV prevalence	Log of (1+HIV prevalence) in 2003. Alternative measures include most recent data from UNAIDS Web site and data from the U.S. Census Bureau from 1990–98 or earliest available thereafter.	World Bank's World Development Indicators (WDI), UNAIDS, U.S. Census Bureau World Values Survey
Trust	Percent of valid respondents answering that most persons can be trusted. Latest available data, but also estimates performed with earliest available data for each country and averages over different survey waves. Expressed in logs.	
Control of corruption	Value of estimate for 1996 or earliest available data.	Governance Matters V dataset by Kaufmann, Kraay, and Mastruzzi (2006)
Rule of law	Value of estimate for 1996 or earliest available data.	Governance Matters V dataset by Kaufmann, Kraay, and Mastruzzi (2006)
Government effectiveness	Value of estimate for 1996 or earliest available data.	Governance Matters V dataset by Kaufmann, Kraay, and Mastruzzi (2006)
Voice and accountability	Value of estimate for 1996 or earliest available data.	Governance Matters V dataset by Kaufmann, Kraay, and Mastruzzi (2006)
Ethnic fractionalization		Alesina and others (2003)
Linguistic fractionalization		Alesina and others (2003)
Gini coefficient	Average for the period 1980–1997 or earliest available data thereafter. Expressed in Logs.	WDI
Educational achievement	Years of education for the population aged 25 and over in 1985 or earliest available data thereafter. Expressed in logs.	Barro and Lee (2001)
Settler mortality	Expressed in logs.	Acemoglu, Johnson, and Robinson (2001)
Male circumcision prevalence rate		Drain and others (2006) and WHO (2007)
Law and order	Average score 1960–1995.	International Country Risk Guide (ICRG)
Initial income	Log of real per capita GDP in 1985, US\$ at PPP.	Dollar and Kraay (2003)

Source: See above for overview sources.

Table 5A.2: Countries Included in Regressions

Albania	Republic of Korea
Algeria	Latvia
Argentina	Lithuania
Armenia	Luxembourg
Australia	Macedonia
Austria	Malta
Azerbaijan	Mexico
Belarus	Moldova
Belgium	Morocco
Bangladesh	The Netherlands
Bosnia	New Zealand
Brazil	Nigeria
Bulgaria	Norway
Canada	Pakistan
Chile	Peru
Colombia	The Philippines
Croatia	Poland
Czech Republic	Portugal
Denmark	Romania
Dominican Republic	Russian Federation
Ecuador	Saudi Arabia
Egypt, Arab Rep. of	Serbia and Montenegro
El Salvador	Singapore
Estonia	Slovak Republic
Finland	Slovenia
France	South Africa
Georgia	Spain
Germany	Sweden
Ghana	Switzerland
Greece	Turkey
Hungary	Tanzania
Iceland	Uganda
India	Ukraine
Indonesia	United Kingdom
Iran	United States
Ireland	Uruguay
Israel	Venezuela, R. B. de
Italy	Vietnam
Japan	Zimbabwe
Jordan	

Source: Author.

Table 5A.3: Correlation Matrix and Descriptive Statistics

	INITIAL INCOME	RULE OF LAW	CONTROL OF CORRUPTION	GOVERNMENT EFFECTIVENESS	HIV PREVALENCE	SCHOOL ATTAINMENT	GINI COEFFICIENT	ETHNIC FRAC.	LINGUISTIC FRAC.
Initial income	1.00								
Rule of law	0.86	1.00							
Control of corruption	0.83	0.97	1.00						
Government effectiveness	0.86	0.97	0.95	1.00					
HIV prevalence	-0.31	-0.17	-0.11	-0.17	1.00				
School attainment	0.65	0.60	0.58	0.59	-0.25	1.00			
Gini coefficient	-0.24	-0.31	-0.28	-0.26	0.38	-0.43	1.00		
Ethnic frac.	-0.45	-0.47	-0.46	-0.40	0.27	-0.37	0.45	1.00	
Linguistic frac.	-0.38	-0.21	-0.20	-0.14	0.34	-0.25	0.15	0.62	1.00

VARIABLE	OBS	MEAN	STD. DEV.	MIN	MAX
Ethnic frac.	80	0.356	0.228	0.002	0.930
Ling. frac.	79	0.313	0.266	0.002	0.923
School	68	1.785	0.488	0.507	2.460
HIV	79	0.010	0.031	0.000	0.200
Trust	81	0.237	0.112	0.028	0.510
Law	80	0.442	1.021	-1.205	2.169
Corruption	80	0.377	1.050	-1.200	2.238
Government	80	0.518	1.060	-1.217	2.505
Gini	76	3.554	0.246	3.073	4.081

Source: Author's calculations.

Notes

1. For a comprehensive review of the literature on the economic effects of HIV/AIDS, see Haacker (2004).
2. The intuition here is that wages are considered to be the opportunity cost of investigating a broker in the model. If this cost is high, there are more incentives to trust the broker.
3. In specification (9) the impact is significant only at the 12 percent level, which may be acceptable given the small sample size.
4. Zak and Knack (2001) also fail to find a statistically significant linear relation between trust and ethnic heterogeneity.
5. Specification (7) indicates that the measure of educational achievement has a negative coefficient that is significant only at the 11 percent level in a regression that also controls for HIV prevalence, rule of law, and income inequality (as measured by the Gini coefficient).

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Fiscal Space and the Sustainability of HIV/AIDS Programs in Sub-Saharan Africa

Antonio C. David

HIV/AIDS is currently a high-priority issue on the global agenda, addressed explicitly in the MDGs. According to UNAIDS (2006b), annual funding for HIV/AIDS programs in low- and middle-income countries increased from \$300 million in 1996 to \$8.3 billion in 2005, with an estimated \$10 billion available for funding in 2007. This amount fell well short of the \$18 billion needed to fight the epidemic in developing countries in 2007.

In this context, countries in Sub-Saharan Africa experienced rapid increases in funding from international donors directed toward HIV/AIDS programs. Such a scale-up in international efforts to combat the epidemic is warranted—and, some would argue, long overdue. It nevertheless raises important issues about macroeconomic management in aid-receiving countries and the effectiveness of public policy initiatives in different sectors.

In particular, the issue of how to finance the expenditures needed to fight HIV/AIDS in a fiscally sustainable manner over extended periods of time has gained prominence in recent years. This chapter addresses this question. UNAIDS estimates that in 2005 international aid accounted for about 69 percent of world resources available to fight the epidemic in low- and middle-income countries. The reliability of this major source of funding in the medium and long term is a major concern, because HIV/AIDS is likely to remain a significant development constraint for at least another decade.

An additional issue relates to how to ensure that those resources are spent effectively. The economics literature has emphasized the importance of

complementarities between public expenditures in health and other sectors in order to increase effectiveness in achieving desired health outcomes (Gupta, Verhoeven, and Tiongson 2002).

The analysis of fiscal space and sustainability issues is inherently country specific given the role played by local institutions and local characteristics in determining outcomes. This chapter therefore presents a detailed analysis of three Sub-Saharan African countries: Botswana, Ethiopia, and Malawi.

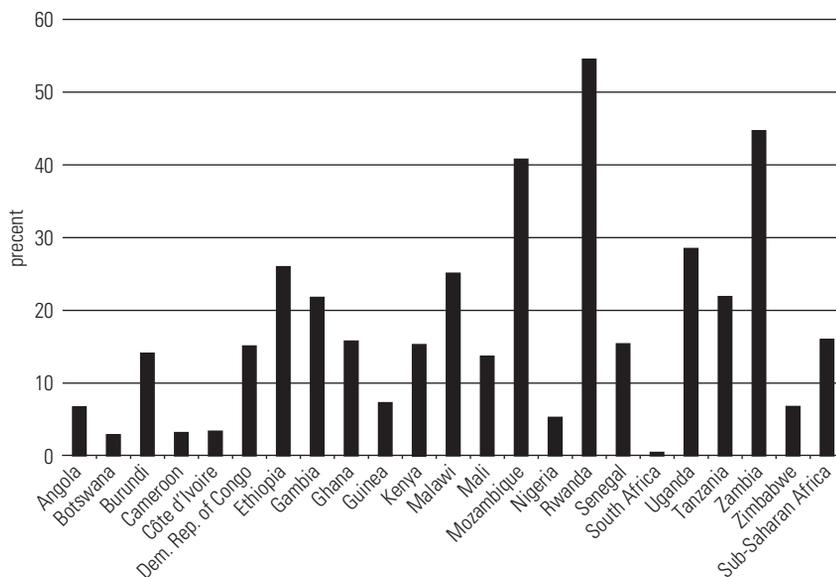
The chapter is organized as follows. The next section describes the financing of HIV/AIDS-related expenditures and the effects of large aid flows on recipient countries. The second section examines fiscal space issues and questions related to the financial sustainability of HIV/AIDS programs in Africa from a regional perspective. The third section presents case study simulations for Botswana, Ethiopia, and Malawi that assess the adequacy of their financing for HIV/AIDS programs. The last section provides some concluding comments.

Financing HIV/AIDS Expenditures and the Challenges of Scaling Up Aid

Funding for expenditures related to HIV/AIDS in Sub-Saharan Africa comes from domestic public and private sources, including out-of-pocket expenditures by households and the private sector; bilateral and multilateral international organizations; the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFTAM); and international foundations, such as the Bill & Melinda Gates Foundation, and other private sector sources. Most countries in the region still rely heavily on external assistance to finance their HIV/AIDS programs, aid that tends to be volatile. On average, externally funded expenditures accounted for 16 percent of total health expenditures in the region in 2003, but this figure masks substantial disparities across countries (figure 6.1).

Economic theory suggests that there should be some type of market failure to justify the allocation of public funds. In the case of the HIV/AIDS epidemic, the presence of asymmetric information problems and externalities implies that the decentralized market equilibrium will be inefficient, clearly warranting public intervention. Moreover, if future generations may benefit from “investment” in HIV/AIDS prevention and treatment, the current generation should not bear the entire burden of the investment; the

Figure 6.1: External Resources as a Percentage of Total Health Expenditures in Selected Countries in Sub-Saharan Africa, 2003



Source: WHO national health accounts database.

returns may justify some borrowing against future income to finance current expenditures.

The evolving nature of the epidemic and available treatment in recent years bring to the forefront the issue of HIV/AIDS as a chronic disease that requires long-term treatment—and, therefore, long-term expenditure commitments—by African governments. Hence there is a clear mismatch between the volatile (short-term) character of aid flows and the long-term nature of expenditure commitments. The long-term incremental costs associated with HIV/AIDS that require financing include extra staff and the associated resources needed to train, attract, and retain them, as well as the added costs of maintaining hospitals and other fixed assets.

The significant scale-up of international aid for HIV/AIDS programs recently observed poses challenges for policy makers in the receiving countries from a macroeconomic as well as a microeconomic/health systems management perspective. Consider first the “Dutch disease” problem—the possibility that large inflows of foreign aid lead to excessive real exchange rate appreciation, which harms the export sector and leads to a deterioration

of the current account. Dutch disease occurs if the expenditures linked to aid flows lead to increases in the relative price of nontradable goods. This is a concern for HIV/AIDS spending if the bulk of expenditures is not geared toward imported goods, such as drugs. There may be some counterbalancing effects of increased aid flows, such as increases in productivity that could compensate for pressures on the real exchange rate. It thus seems that a priori the impact of increased aid flows on the real exchange rate is ambiguous and should be determined empirically, arguably on a country-by-country basis.

Gupta and others (2005) review the empirical literature on the impact of aid flows on the real exchange rate in Sub-Saharan Africa. They fail to find overwhelming evidence confirming the Dutch disease story. If Dutch disease effects are occurring, they may have important fiscal implications for developing countries that rely on taxes and royalty revenues from exports, which are likely to decline if exports become less competitive.

Large inflows of foreign aid also have implications for monetary policy, because they lead to an increased supply of foreign currency. Increased spending related to scaled-up aid may also result in inflationary pressures on the domestic economy. In this context, Heller and others (2006) argue that in order to successfully manage the scaling up of aid flows, governments need to effectively coordinate fiscal, exchange rate, and monetary policy.

The capacity to absorb increased external resources depends on a number of constraints. African countries present clear bottlenecks and logistical shortcomings as far as the supply of relevant drugs or more generally health services are concerned. In addition, the concentration of large funds in a small number of sectors may lead to distortions in labor markets, particularly in settings in which the number of individuals possessing the relevant skills is limited. This may lead to large increases in relative wages and crowding-out effects.

Large inflows of aid also put pressure on the institutional capacity of developing countries (Lewis 2005). Can countries in Sub-Saharan Africa deal with the increased scope for corruption associated with the large inflows of HIV/AIDS-related external aid? Countries in the region are ranked among the worst in the world in terms of institutional quality or corruption. The rapid increase in the availability of funds thus poses serious risks, highlighting the need for efforts to effectively track the use of resources to avoid leakages and inefficiencies. Large aid flows may negatively affect institutional capacity by reducing pressures to raise revenues

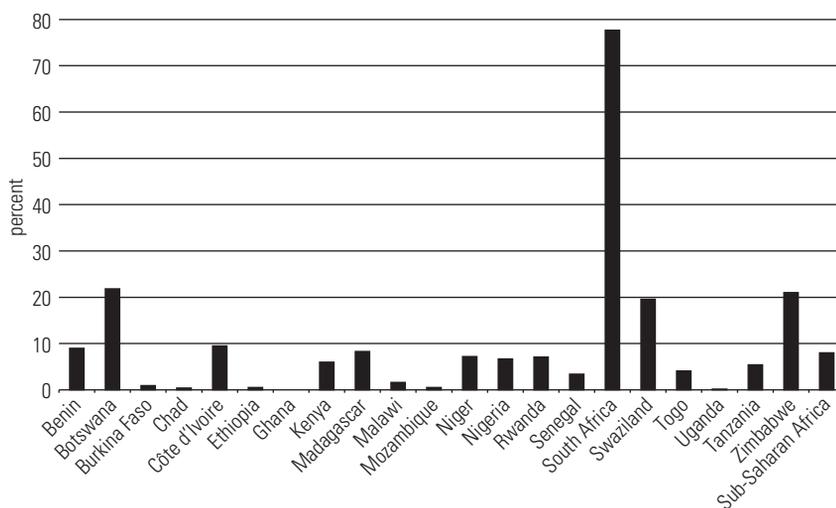
domestically and to undertake necessary reforms, particularly in the area of governance.

It is also necessary to consider the role of insurance schemes in funding treatment and care to fight the epidemic. The availability of private health insurance varies widely across countries in Sub-Saharan Africa. Except in South Africa, private prepaid plans account for a relatively small percentage of private expenditures in health (the regional average for 2003 was just 8 percent) (figure 6.2). Hence there seems to be scope for expanding this source of finance.

Improvements in private insurance would help finance the fight against HIV/AIDS, but they would not resolve the problems of access and exclusion of poorer groups that tend to characterize those systems, thus reducing their effectiveness in tackling vulnerability. Another crucial concern refers the need for an appropriate regulatory framework to ensure that private health insurance schemes function effectively and efficiently. The level of institutional capacity to do so varies widely across the region.

Funding to combat the epidemic could be made available through public insurance schemes, such as the publicly managed scheme of risk pooling

Figure 6.2: Expenditures by Private Prepaid Plans as a Percentage of Private Expenditures on Health in Selected Countries in Sub-Saharan Africa, 2003



Source: WHO national health accounts database.

known as the Singapore model of catastrophic insurance. Public schemes are vulnerable to corruption and governance problems, however. Furthermore, there are often pressures to divert surpluses accumulated in good years rather than use them to build reserves. Those pressures were recently illustrated by the problems faced by Ghana's health insurance scheme.

Fiscal Space, Sustainability, and HIV/AIDS Programs

Heller (2005) defines *fiscal space* as the space in a government's budget that allows it to provide resources for desired purposes without jeopardizing sustainability. In light of the numerous and diverse pressing development needs of Sub-Saharan Africa, policy makers are concerned about how to create fiscal space to fulfill those needs.

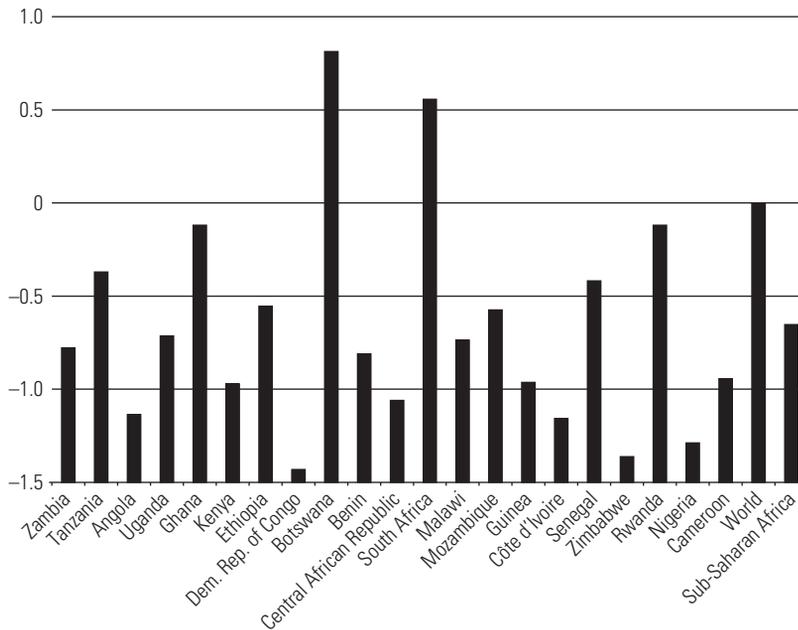
The literature identifies a number of ways to create fiscal space. The mix of available measures that would be most effective in increasing fiscal space depends on country-specific circumstances and it is difficult to obtain generalized policy prescriptions at the regional level. One possible measure is to reallocate expenditures. This can be done by changing expenditure priorities or cutting unproductive ones. Although this seems an efficient and simple way to increase resources available for HIV/AIDS-related programs, there are several practical constraints to the adoption of this strategy. One needs to consider, for instance, the nature of the country's budget composition in order to assess whether there is enough flexibility to reallocate large amounts of resources in a discretionary manner. In fact, in a number of Sub-Saharan African countries, a large share of government expenditures goes toward the payment of wages or interest on debt, components that are difficult to affect in the short run. Policy makers also need to bear in mind the political economy implications of reallocation. The dynamics of groups subject to free-rider problems usually result in a situation in which some interest groups are able to block efficient reallocation of resources, even if society as a whole stands to gain from it. The literature on the persistence of inefficient institutions caused by political economy considerations is vast and amply illustrated with historical examples (see, for instance, Acemoglu and Robinson [2002]).

An additional potential source of fiscal space stems from enhanced governance, such as reductions in leakages and improved efficiency in spending. Efforts to combat corruption could play a major role in this strategy.

There seems to be scope for increasing fiscal space through this avenue in the region, as suggested by the fact that a significant number of countries still present scores on control of corruption indicators below the global average (figure 6.3).

Moreover, increasing domestic revenue collection efforts is also a possible strategy. Several Sub-Saharan African countries have relatively low tax bases, a fact that highlights the pressing need for tax reform and improvement in governments' capacity to effectively increase tax revenues. This strategy raises political economy issues as well as issues of equity and efficiency. The implications of reforms for incentives to the private sector need to be taken into account, so that neither economic growth nor overall equality indicators are adversely affected. Policy makers must also bear in mind that a number of developing economies have large informal sectors, whose activities are by definition not taxed. The capacity to integrate the informal segment of the economy seems to be crucial for this strategy to be successful.

Figure 6.3: Control of Corruption Indicators in Selected Sub-Saharan African Countries, 2006



Source: Kaufmann, Kraay, and Mastruzzi 2007.

Fiscal space can also be created through increased government borrowing. When considering this option, policy makers should assess whether the social returns from borrowing compensate the costs of doing so (interest rates, opportunity cost, and so forth). In addition, one also needs to assess the sustainability of increased borrowing given current debt levels and future paths for fiscal policy. In the case of the HIV/AIDS epidemic, this analysis presents a number of difficulties, especially regarding the uncertainty surrounding appropriate measures of the economic benefits and costs over extended time periods. As previously noted, empirical estimates of the impact of HIV/AIDS on economic growth vary widely, both across and within countries.

If efforts to combat the epidemic could boost growth and future fiscal revenue, as a number of studies posit, this fact should be incorporated in the fiscal sustainability analysis. Haacker (2006) argues that successful HIV/AIDS programs could induce fiscal savings in public and social expenditures. Successful efforts in prevention could result in substantial declines in treatment costs in the future, thereby affecting sustainability. In any case, the debt burden that a country can support in a sustainable way is likely to depend on the quality of its institutions and policies. In fact, the World Bank/International Monetary Fund debt sustainability analysis framework presents thresholds for the debt burden that vary depending on the Country Policy and Institutional Assessment (CPIA) index (Goldsbrough 2006).

Seigniorage (the monopoly rents the state obtains from being the sole provider of legal tender) can also be a potential source of fiscal space. Nonetheless, there are a number of caveats to using this strategy. In Sub-Saharan Africa, the relatively low level of monetization of a number of economies limits the scope for this source of revenue. More importantly, using seigniorage to create fiscal space can have deleterious effects on the credibility of monetary policy and threaten economic stability, with adverse effects on the poorest segments of society. The International Monetary Fund (2005) estimates that seigniorage revenues consistent with low inflation rates in low-income countries would be in the order of 0.5–1.0 percent of GDP a year.

A fundamental problem to be considered when analyzing the expansion of programs to fight the HIV/AIDS epidemic is the necessity for medium-term strategies in order to ensure their sustainability and the capacity to honor commitments, particularly regarding “universal” access to treatment. In fact, a large proportion of the increased resources destined to fight the

epidemic present very short maturities. The Presidency's Emergency Plan for AIDS Relief (PEPFAR), for instance, is programmed annually; the GFTAM works over a two- to five-year horizon. Mismatches arise because capital investments, such as the construction of hospitals and other infrastructure, and maintenance costs must be paid for over the long run, when funds may not be available.¹

Moreover, the scale-up in treatment, prevention, and mitigation imply commitments for wages, training, drugs, and other expenditures that are recurrent in nature and extend beyond the horizon of most of the sources of external assistance available. In addition to the volatility and unpredictability of international aid, other key risks to fiscal sustainability include potential increases in real interest rates, constraints on adjustments to the public sector's primary balance, and the unexpected realization of contingent liabilities.

There is also significant uncertainty regarding the future costs of treatment, as drug resistance risks associated with scale-up efforts increase. Second-line therapy is still prohibitively expensive for most countries, and there is no guarantee of rapid future reductions in the prices of these drugs. Hence the size of the fiscal burden associated with increased access to treatment in the medium to long term is far from clear.

In theory, resources should be allocated so that the financial returns generated by additional spending cover the costs. Nevertheless, in the health sector it is frequently difficult to assess whether the additional expense is justified in this way, because there is considerable uncertainty about the economic impact of health spending in general and the level and timing of financial returns. This definition of the concept of sustainability thus seems too narrow to fruitfully guide policy decisions.

The social costs and benefits need to be carefully analyzed (internalizing externalities and coordination problems that arise from the perspective of individuals) in order to increase the effectiveness of policy interventions. Haacker (2006) lists a number of costs and benefits of highly active antiretroviral therapy (HAART) that are frequently overlooked in the public debate. Considerations must include not only the costs of drugs, human resources, health facilities, and infrastructure but also the benefits in terms of gains in productive capacity; postponement of treatment costs; saved costs of treatment of opportunistic infections; increased fiscal revenue; positive, indirect, long-term macroeconomic benefits; and increased individual welfare.

The epidemic can simultaneously cause an increase in the demand for government services (particularly in health) and a reduction in public revenues. This may occur as the tax base decreases and also possibly through the negative effects of the epidemic on long-run output. Haacker (2004) argues that as the tax base declines, so does the net present value of tax revenues, making it increasingly difficult for governments to service their debt. Furthermore, HIV/AIDS augments the cost of public service by increasing attrition (turnover), absenteeism, and the cost of training new staff. Hence HIV/AIDS puts enormous strains on public finances. The disease also imposes indirect fiscal costs, as Haacker highlights, including orphan support and disbursements of pension schemes benefits, also possibly through the negative effects of the epidemic on long-run output.

In this context, the major concern seems to be how to finance additional spending and the scale-up of efforts to fight the epidemic without endangering macroeconomic stability over the long run. One component of the solution involves securing more-reliable aid flows and additional long-term commitment from donors. Securing such long-term aid commitments may diminish incentives to increase the effectiveness of aid, however, as moral hazard and opportunistic behavior arise.

Heller and others (2006) provide suggestions on how countries may be able to protect themselves against the adverse effects of scaled-up aid. One strategy is to hold reserves, given that current levels of aid for some countries are high relative to the historical average. Nevertheless, this strategy may have negative political implications, if the reasons for holding the reserves are not well understood by stakeholders in both donor and receiving countries. Cost-saving innovations could also contribute to improving the sustainability prospects for HIV/AIDS-related programs. Lewis (2005) discusses the cost-effectiveness of nongovernmental organizations in service delivery, citing the example of minimally trained health workers in Haiti.

Country Case Studies

Simulations for two scenarios—a baseline scenario and a low-case scenario—are presented for three countries. The baseline scenario presents the resource requirements if coverage is extended to meet government and UNAIDS targets. The low scenario assumes that coverage of HIV/AIDS-related services stays at the level indicated in the most-recent data. As is usually the case in

simulation exercises, the results tend to vary significantly according to the assumptions made, hence we will try to be as explicit as possible about those assumptions and their justifications. In addition, the costs do not cover all the interventions deemed to be desirable to fight the epidemic due to data availability issues; therefore they do not constitute comprehensive estimates of the required costs.

HIV prevalence was projected using the Estimates and Projection Package (EPP) model for generalized epidemics developed by UNAIDS (the model can be downloaded from www.unaids.org). The software estimates the time trend of HIV prevalence by fitting (maximum likelihood) an epidemiological model to the sentinel surveillance data for HIV prevalence. The model takes into account the start year of the epidemic, the force of infection, the initial fraction of the adult population at risk, and a behavioral adjustment parameter (parameter set at 100, that is, not declining, considered to be “reasonable” by UNAIDS).

The demographic projections were obtained using the Spectrum and the AIDS Impact Model (AIM) software packages². The first package was used to make general demographic projections based on data from the United Nations statistical division. The latter package allows us to estimate future numbers of infections, AIDS cases and AIDS deaths, given assumptions about the future course of adult HIV prevalence (which were obtained from the simulation described above using the EPP model). The model also estimates the number of orphans due to AIDS deaths using data from DHS surveys, such as the percentage of women who never marry.

Subsequently, we use the Resource Needs for HIV/AIDS Model (RNM)³ to estimate the resource requirements for prevention, treatment, and orphan support. Because of constraints related to data availability on the costs of a number of interventions in the country, we could not consider the whole (desirable) policy package to fight the epidemic. One should note that we assumed constant returns to scale when increasing interventions and assumed that the costs remain constant over the period of the projection. Thus, we ignore technological innovation or other shocks that might affect the costs of programs either positively or negatively in the future.

Botswana

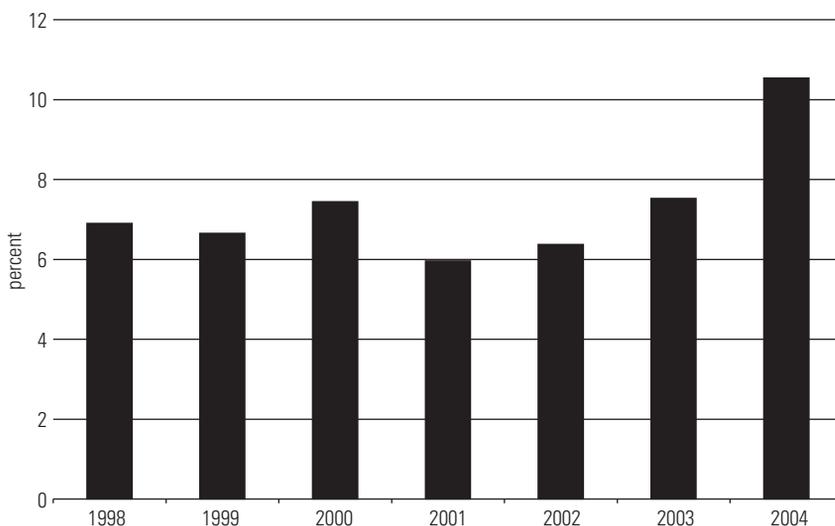
HIV prevalence in Botswana remains among the highest in the World. UNAIDS (2006a) estimates that the amount of national funds spent by

the government of Botswana from domestic sources for HIV/AIDS went from US\$69.8 million in 2001 to US\$165 million in 2005. According to UNAIDS (2006b), 85 percent of those in need of ART in 2005 were actually receiving it. This means that Botswana has already achieved what is considered to be universal access to ART. Botswana is a middle-income country that is not heavily dependent on external funds to finance its health expenditures. Externally funded expenditure represented less than 2.2 percent of total health expenditures in the country in 2004, according to WHO national health accounts data.

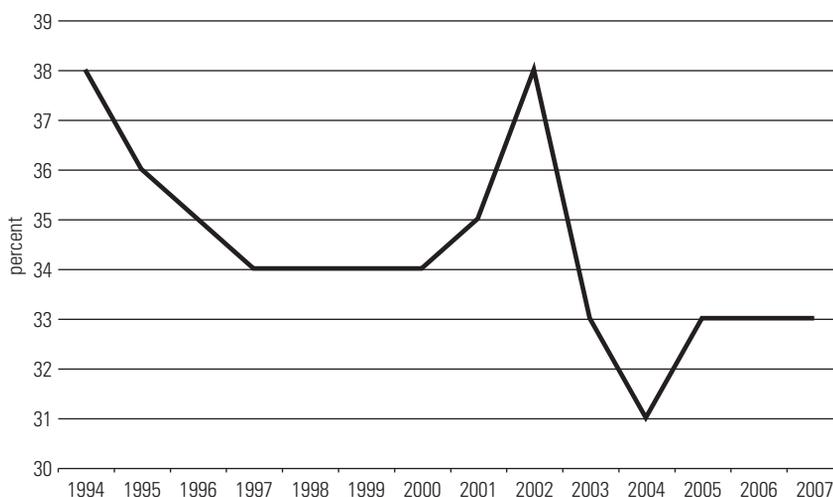
Furthermore, government expenditures on health in this country represented just over 10 percent of total government expenditures in 2004, as depicted in figure 6.4. Hence, the burden of national health expenditures met by government funds could arguably be expanded. The crucial issue is whether there is scope to reallocate expenditures toward HIV/AIDS-related activities.

The government wage bill amounts to about a third of the recurrent budget and is likely to remain at that level according to World Bank projections for 2007 (figure 6.5). In addition, tax revenues are currently just

Figure 6.4: Government Expenditures on Health as a Percentage of Total Government Expenditures in Botswana, 1998–2004



Source: WHO national health accounts database.

Figure 6.5: Government Wage Bill as Share of Recurrent Budget in Botswana, 1994–2007

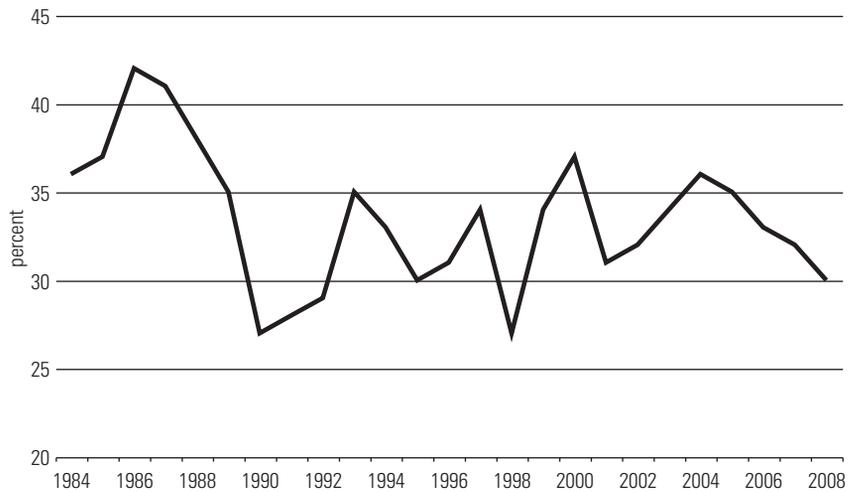
Source: World Bank Africa database.

over 35 percent of GDP and this ratio is projected to decline in the near future, as indicated in figure 6.6. Thus, those indicators suggest limited scope for reallocating expenditures toward HIV/AIDS prevention, treatment, care, and mitigation and for increasing the tax burden to finance those activities.

Furthermore, when one considers the ratio of debt to GDP for Botswana, one can note that it is low compared to other middle-income countries and it seems to present a declining trend for the near future according to World Bank projections, as depicted in figure 6.7. Therefore, Botswana could explore this avenue to increase the fiscal space for HIV/AIDS-related expenditures, if the country reckons that the returns from doing so are larger than the costs. The relatively strong capacity to repay its debt is confirmed by the low and declining debt service to export ratio observed in the period from the late 1990s to 2003 (figure 6.8). We will attempt to assess the adequacy of funding in the period from 2007 to 2013, given current goals and commitments. The current National HIV/AIDS Strategy for Botswana covers the period from 2003 to 2009. The time series for HIV prevalence and projections were obtained from UNAIDS and the EPP. The demographic projections were obtained

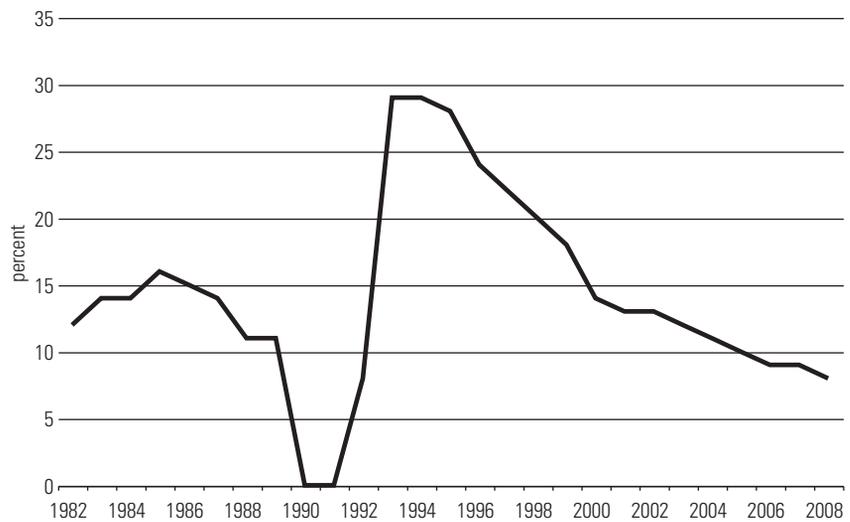
The Changing HIV/AIDS Landscape

Figure 6.6: Tax Revenue as a Percentage of GDP in Botswana, 1984–2008

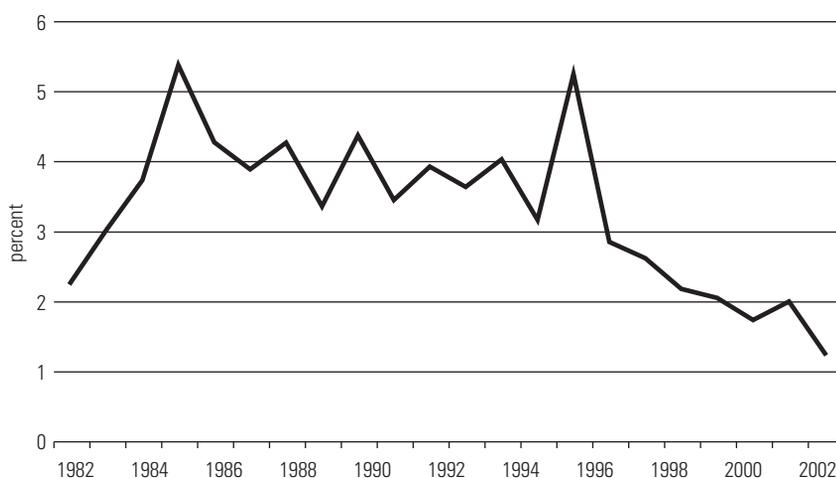


Source: World Bank Live Database.

Figure 6.7: Botswana: Central Government Debt-to-GDP Ratio, 1982 to 2008



Source: World Bank Live Database.

Figure 6.8: Debt Service as a Percentage of Exports in Botswana, 1982–2003

Source: World Bank Live Database.

using Spectrum and the AIM software packages. The RNM model was used to estimate the resource requirements and an exchange rate of 4.69 Pulas per US\$ was used whenever necessary.

Data on unit costs and coverage rates were obtained from government sources, Stover and Fahnestock (2006) and the UNAIDS Web site. Additional relevant socioeconomic data were gathered from World Bank databases. We assumed that the average cost of treatment per person per year is P7,383 (approximately equivalent to US\$1,574) in line with Masha (2004). The estimates for resource needs under the two scenarios are presented in tables 6.1 and 6.2.

One should note that the “treatment and care” category accounts for the bulk of resource needs estimates in both scenarios. This occurs partly due to lack of data for several prevention and mitigation interventions for Botswana, thus precluding the accurate inclusion of such interventions in the estimation, and because of the relatively higher cost of treatment in this middle-income country. In addition, there are not large discrepancies between the two conjectures, since Botswana has already achieved “universal” access to treatment according to UNAIDS data, as discussed previously; therefore significant scale-up of efforts for this type of intervention are not

The Changing HIV/AIDS Landscape

Table 6.1: Resource Needs in Botswana under the Baseline Scenario, 2007–13
(millions of dollars)

PREVENTION	2007	2008	2009	2010	2011	2012	2013
Youth	0.77	0.92	1.08	1.65	1.69	1.73	1.77
Workplace programs	3.67	3.73	3.78	3.82	3.86	3.91	3.95
Condom provision	0.92	0.94	0.95	0.96	0.97	0.98	0.99
VCT	1.48	1.50	1.52	1.55	1.57	1.59	1.61
PMTCT	0.22	0.24	0.27	0.29	0.32	0.34	0.37
Blood safety	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Total	7.11	7.37	7.63	8.31	8.45	8.59	8.73
Treatment and care							
ART	120.55	142.19	162.26	179.11	193.99	206.77	219.30
Total	120.55	142.19	162.26	179.11	193.99	206.77	219.30
OVC support							
School expenses & child care	1.11	1.63	2.59	3.66	3.89	4.08	4.23
Overall total	128.77	151.19	172.48	191.09	206.33	219.44	232.26

Source: Author's own calculations.

Table 6.2: Resource Needs in Botswana under the Low Scenario, 2007–13
(millions of dollars)

PREVENTION	2007	2008	2009	2010	2011	2012	2013
Youth	0.77	0.79	0.81	0.82	0.84	0.86	0.88
Workplace programs	3.67	3.73	3.78	3.82	3.86	3.91	3.95
Condom provision	0.92	0.94	0.95	0.96	0.97	0.98	0.99
VCT	1.48	1.50	1.52	1.55	1.57	1.59	1.61
PMTCT	0.22	0.22	0.23	0.23	0.23	0.23	0.24
Blood safety	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Total	7.11	7.22	7.32	7.42	7.52	7.62	7.72
Treatment and care							
ART	120.56	142.20	162.26	179.12	193.99	206.77	219.30
Total	120.56	142.20	162.26	179.12	193.99	206.77	219.30
OVC support							
Orphanage + school expenses	1.11	1.14	1.21	1.28	1.36	1.43	1.48
Overall total	128.77	150.55	170.79	187.82	202.88	215.82	228.50

Source: Author's own calculations.

planned. Overall, in order to meet its commitments in terms of coverage and targets, Botswana would need to spend around US\$129 million in 2007, increasing to US\$190 million by 2010 and US\$232 million by 2013.

Bollinger and Stover (2006) point out that items that were not included in the projections above, such as administration, management, monitoring and evaluation as well as advocacy could add approximately 7 percent to the costs of the programs every year. Table 6.3 outlines international funding availability to Botswana, stating amounts committed and already disbursed (when available). Prospects in terms of sustainability of expenditures seem to be better when compared to the two subsequent cases, considering the fact that the government of Botswana has spent in 2005 around US\$ 165 million from domestic sources on its HIV/AIDS program. There is also indication that PEPFAR commitments will be expanded to around US\$ 93 million yearly in 2008 and 2009. Other important sources of funding not stated in the table below confirm the positive outlook in terms of resource availability, including for instance, the African Comprehensive HIV/AIDS Partnership (ACHAP), where an estimated US\$113 million are still available from the original grant to finance HIV/AIDS related expenditures in the country.

Nonetheless, Botswana will need to sustain its domestic as well as international resource gathering efforts to finance the fight against the disease. As discussed earlier in the section, from a domestic perspective, re-allocation/increased efficiency of expenditures could be an avenue for achieving this objective and there also seems to be some space for

Table 6.3: Commitments of International Resources for Fighting HIV/AIDS in Botswana, as of December 2006
(millions of dollars)

SOURCE	START DATE	TOTAL BUDGET	ALREADY DISBURSED	AMOUNT UNDISBURSED
GFTAM	Jul-2004	18.6 ^a	9.0	9.6 ^a
IBRD	2007/2008	50.0 ^b	N.A.	50.0 ^b
PEPFAR	2004	24.3	N.A.	N.A.
PEPFAR	2005	51.8	N.A.	N.A.
PEPFAR	2006	54.9	N.A.	N.A.
PEPFAR	2007	76.2	N.A.	N.A.
Total		275.9	9.0	59.6

Source: GFTAM Web site, PEPFAR Web site, World Bank.

Note: IBRD = International Bank for Reconstruction and Development.

a. The GFTAM's Round 2 grant was recently cancelled because of poor performance; undisbursed amounts will not be available.

b. Expected amount.

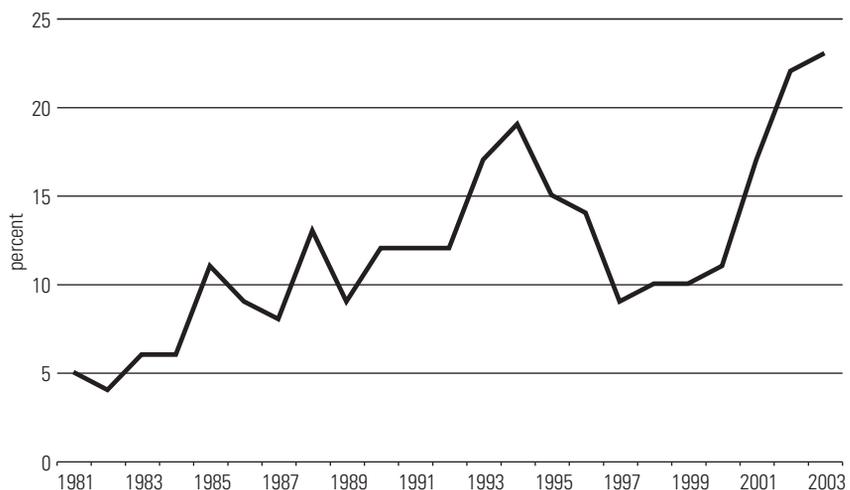
increased indebtedness. Crucially, the performance of aid resources already available should be improved in order to avoid cancellations, such as the one that recently occurred for the second round Global Fund Grant.

Ethiopia

Estimates of HIV prevalence in Ethiopia vary significantly according to location. As documented in MHO/HAPCO (2006), overall prevalence in urban areas of the country in 2005 was estimated at 10.5 percent; whereas the figure for rural areas was 1.9 percent. This resulted in a national prevalence rate of 3.5 percent, when adjusting for population sizes according to that source. UNAIDS (2006b) reckons that 278,000 people in the country needed ART in 2005 and 20,477 were actually receiving it, which implies a coverage rate of 7 percent.

Figure 6.9 depicts net official development assistance as a percentage of GDP for this country. Ethiopia seems to be heavily dependent on foreign assistance and official development assistance (ODA) has also proved to be quite volatile in the period from 1981 to 2003. In fact, when one considers the Ethiopian health sector as a whole, this dependency on external

Figure 6.9: Net Official Development Assistance as a Percentage of GDP in Ethiopia, 1981–2003



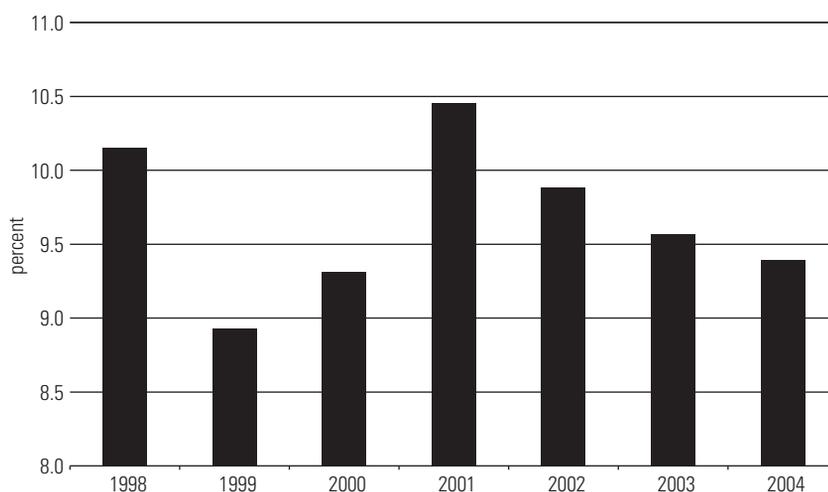
Source: OECD/DAC database.

assistance is still apparent, as WHO core health indicators data show that over 20 percent of total health expenditure has been financed by external funds since 2001.

In what concerns fiscal space for additional expenditures on HIV/AIDS, figure 6.10 shows that government expenditures on health represented less than 10 percent of total government expenditures in 2004, indicating some scope for reallocation. Nonetheless, the very high share of wages in the recurrent budget shows limitations on the flexibility within the budget for changing expenditure priorities. One should note that wages represented about 43 percent of the recurrent budget in 2004 according to World Bank data (figure 6.11).

Figure 6.12 shows tax revenue as a percentage of GDP for Ethiopia from 1981 to 2005, using data from the World Bank's Live Database. One should note that tax revenue represented about 13 percent of GDP in 2005, which is not considered a high level for a low income country (see Heller [2005]). Therefore it seems that there is some scope to increase efforts to raise tax revenue in this country to finance HIV/AIDS-related expenditures. As far as the scope for additional borrowing is concerned, the ratio of central government debt to GDP was 89 percent in 2005 and has been declining in the

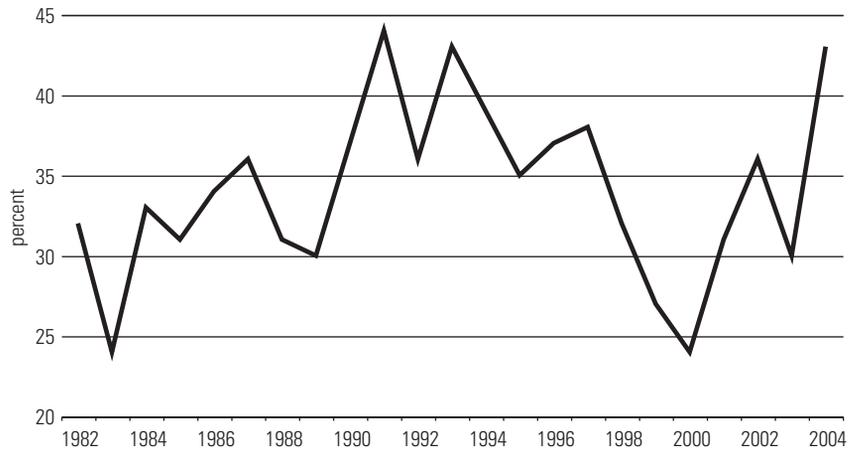
Figure 6.10: Government Expenditures on Health as Percent of Total Government Expenditures in Ethiopia, 1998–2004



Source: WHO national health accounts database.

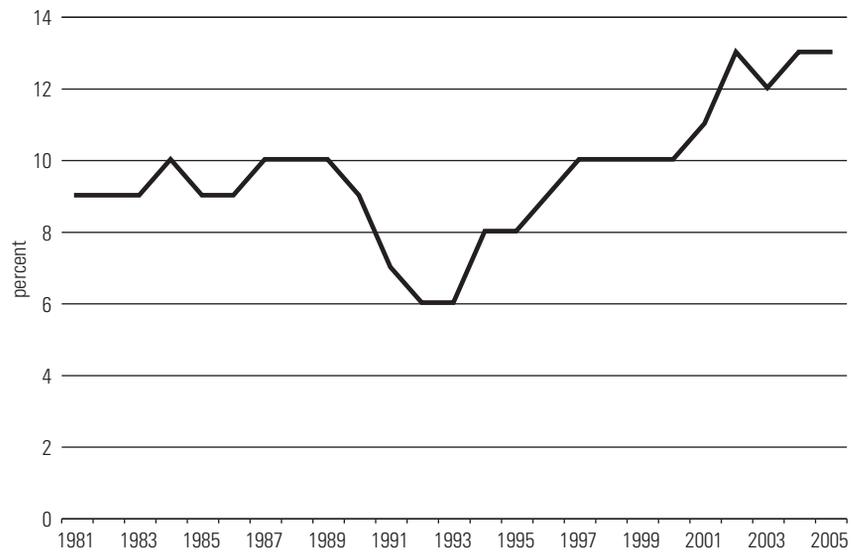
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Figure 6.11: Government Wage Bill as Share of Recurrent Budget in Ethiopia, 1982–2004



Source: World Bank Africa database.

Figure 6.12: Tax Revenue as a Percentage of GDP in Ethiopia, 1981–2005

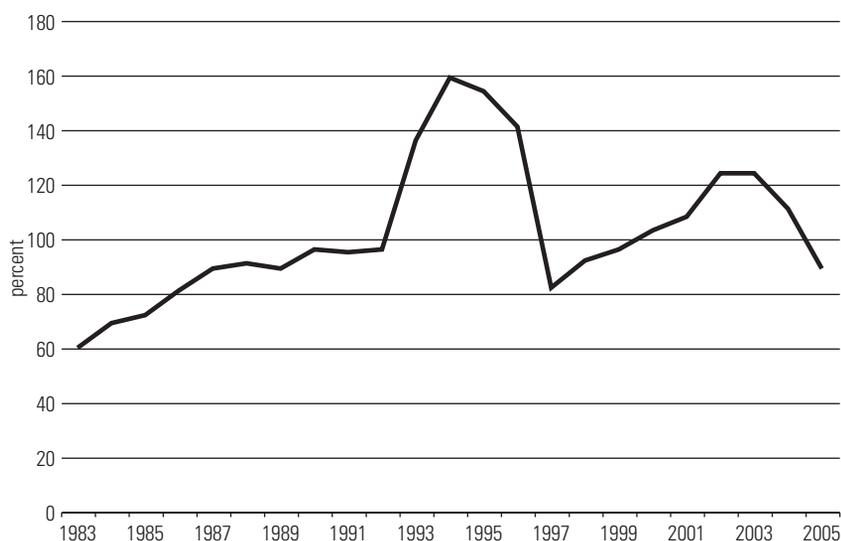


Source: World Bank Live Database.

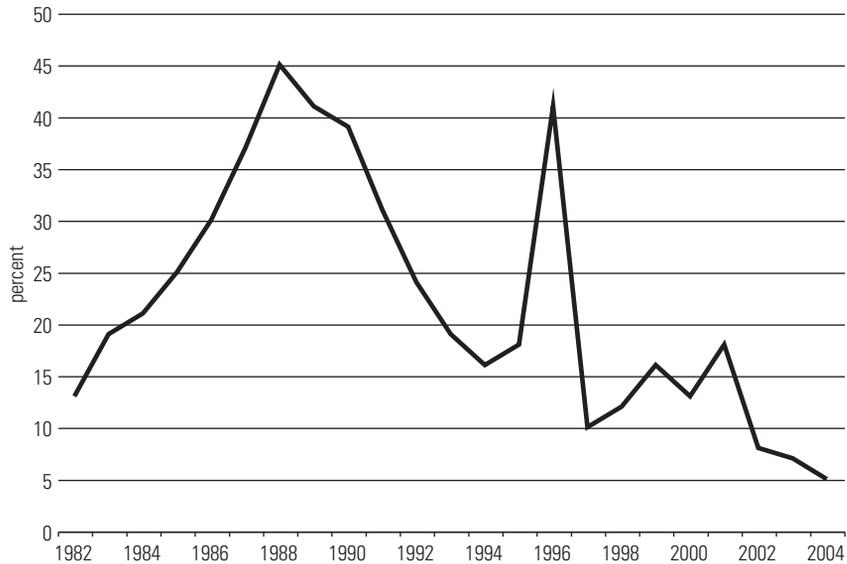
past few years (figure 6.13). This value still seems high when compared to other developing countries. The debt service to exports ratio has been declining since 2001, indicating some improvement in the capacity of the country to repay its debt obligations (figure 6.14).

We will assess the adequacy of funding in the period from 2007 to 2013 to meet the estimated resource needs for HIV/AIDS programs in Ethiopia, given the current goals and commitments toward prevention, treatment, and care. The current National HIV/AIDS Strategy covers the period from 2004 to 2008 and the estimated budget needs for those four years were around Br 6 billion or approximately US\$690 million. As in the previous section, we will present simulation results from the baseline and low scenarios assuming full scale-up and no change in coverage rates respectively. The time series for HIV prevalence and projections were obtained from an application for Ethiopia of the GOALS model by the Futures Institute. The demographic projections were obtained using Spectrum and the AIM software packages. The RNM model was used to estimate the resource requirements for prevention, treatment, and orphan support and an exchange rate of Br 8.7 per US\$ was used whenever necessary.

Figure 6.13: Central Government Debt-to-GDP Ratio in Ethiopia, 1983–2005



Source: World Bank Live Database.

Figure 6.14: Debt Service as a Percentage of Exports in Ethiopia, 1982–2004

Source: World Bank Development Data Platform database.

Data on unit costs and coverage rates were obtained from government sources, the Futures Institute, Stover and Fahnestock (2006), and the UNAIDS Web site. Additional relevant socioeconomic data were gathered from the World Bank databases. Data on casual sex acts covered with condoms were obtained from the DHS, but we were unable to find data on STIs, hence we excluded them from the simulation exercise. We also excluded mass media campaigns due to lack of data on costs. We assumed a unit cost of US\$455 for first line ARV treatment for the first six months and US\$359 annually. Non-ART care and prophylaxis was assumed to cost US\$427 per person per year. In addition, we were also able to estimate the resource needs for palliative care with unit cost data provided by the Futures Institute estimated to be US\$112 for adults. The Futures Institute also provided data on costs per child supported (US\$250 per year) that we used to estimate resource needs for orphans and vulnerable children in terms of school expenses and child care.

The estimates for resource needs under the two scenarios are presented in the tables 6.4 and 6.5. Overall, in order to meet its commitments in terms of coverage and targets, Ethiopia would need to spend on prevention, treatment

Table 6.4: Resource Needs in Ethiopia under the Baseline Scenario, 2007–13

(millions of dollars)

PREVENTION	2007	2008	2009	2010	2011	2012	2013
Youth	68.81	62.74	56.19	49.22	41.85	34.11	26.06
Workplace programs	4.50	4.64	4.79	4.94	5.09	5.24	5.39
Condom provision	10.42	12.95	15.63	25.44	26.23	27.02	27.82
VCT	1.82	3.00	4.25	9.13	9.41	9.69	9.97
PMTCT	0.02	0.30	0.60	1.81	1.86	1.90	1.95
Blood safety	0.65	0.67	0.71	0.77	0.79	0.81	0.83
Total	86.22	84.31	82.17	91.32	85.22	78.77	72.02
Treatment and care							
ART	57.02	87.87	137.62	179.57	222.29	267.96	315.60
Non-ART care & prophylaxis	18.82	14.79	11.711	10.65	11.20	11.71	12.20
Palliative care	3.12	2.57	2.44	2.69	2.94	3.20	3.38
Total	78.96	105.23	150.17	192.92	236.44	282.87	331.18
OVC support							
School expenses & child care	8.88	38.27	102.01	173.39	183.88	194.37	204.66
Overall total	174.06	227.82	334.35	457.63	505.54	556.01	607.86

Source: Author's own calculations.

and mitigation approximately US\$174 million in 2007, increasing to US\$458 million by 2010 and US\$608 million by 2013. One should note since coverage rates for a number of interventions such as ART are very low at the moment, one can observe large discrepancies in some components when comparing the baseline and the low scenarios. Nonetheless, even if the status quo in terms of efforts to fight the epidemic is maintained during the projection period, our very rough estimates of basic resource needs would still amount to US\$159 million in 2010 and US\$158 million by 2013. Note that administration and other such costs are not included in either of the scenarios and are estimated to add 7 percent on top of total resource needs.

Table 6.6 outlines the current funding availability from the three major international donors for HIV/AIDS in Ethiopia, stating amounts committed and already disbursed in case the information is available. With the substantial resources scheduled to be available by PEPFAR for this country in 2007, it appears that current international resources are adequate to cover

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Table 6.5: Resource Needs in Ethiopia under the Low Scenario, 2007–13

(millions of dollars)

PREVENTION	2007	2008	2009	2010	2011	2012	2013
Youth	68.81	62.73	56.18	49.20	41.82	34.08	26.02
Workplace programs	4.49	4.63	4.77	4.92	5.06	5.21	5.36
Condom provision	10.41	10.75	11.09	11.43	11.78	12.13	12.48
VCT	1.82	1.88	1.94	2.00	2.06	2.12	2.18
PMTCT	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Blood safety	0.65	0.66	0.68	0.70	0.71	0.73	0.75
Total	86.20	80.68	74.68	68.27	61.46	54.29	46.82
Treatment and care							
ART	28.44	31.11	35.94	41.02	44.93	49.09	53.22
Non-ART care & prophylaxis	28.94	30.69	32.47	34.23	35.93	37.50	39.00
Palliative care	4.21	4.44	4.74	5.00	5.25	5.48	5.64
Total	61.59	66.24	73.15	80.25	86.10	92.08	97.87
OVC support							
School expenses & child care	8.73	9.47	10.19	10.89	11.57	12.22	12.84
Overall total	156.52	156.39	158.02	159.41	159.13	158.58	157.52

Source: Author's own calculations.

Table 6.6: Commitments of International Resources for Fighting HIV/AIDS in Ethiopia, as of

December 2006

(millions of dollars)

SOURCE	START DATE	TOTAL BUDGET	ALREADY DISBURSED	AMOUNT UNDISBURSED
GFTAM	Jan-2004	139.4	55.4	84.0
GFTAM	Sep-2004	17.4	8.1	9.2
GFTAM	Mar-2005	401.9	40.0	361.9
MAP 1 (WB)	2000	40.0	37.9	2.1
MAP 2 (WB)	2007	30.0	N.A.	30.0
PEPFAR	2004	48.1	N.A.	N.A.
PEPFAR	2005	83.7	N.A.	N.A.
PEPFAR	2006	115.3	N.A.	N.A.
PEPFAR	2007	241.8	N.A.	N.A.
Total		875.7	141.5	487.2

Source: GFTAM Web site, PEPFAR Web site, World Bank.

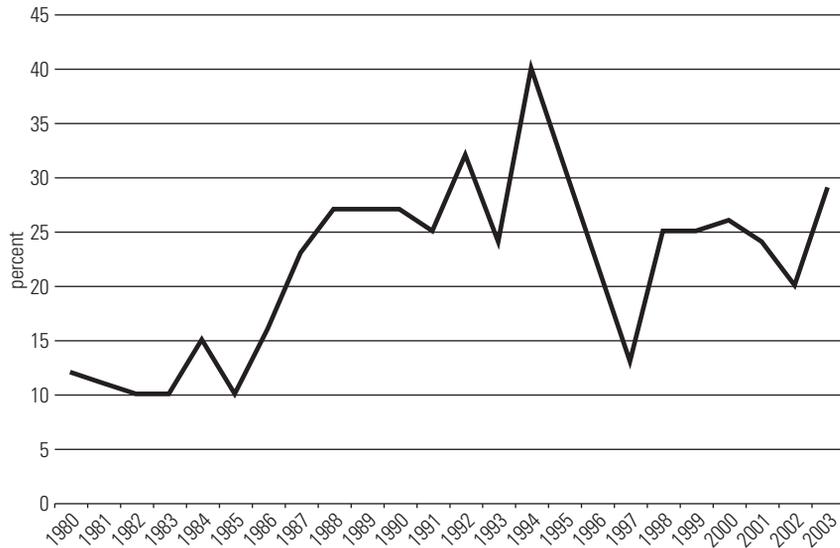
estimated needs until 2010 in the baseline scenario; nonetheless significant gaps may arise thereafter. Hence, the medium-term sustainability of HIV/AIDS programs in Ethiopia does not seem to be assured, despite the significant increase in funding in the last few years. Therefore, it is likely that the Ethiopian authorities will have to raise additional funds from bilateral and multilateral international donors as well as domestic sources to sustain efforts to prevent, treat, and mitigate HIV/AIDS. There does not seem to be much space for complacency in terms of assuring long-term financial commitments to fight the epidemic in this country.

Malawi

Malawi presents a generalized heterosexual HIV/AIDS epidemic that has important economic and welfare implications for the nation. According to UNAIDS (2006a), the amount of national funds spent by the Malawi government from domestic sources for HIV/AIDS went from US\$3.1 million in 2001 to US\$8.7 million in 2005. This fact depicts how HIV/AIDS can have substantial adverse effects as far as the government's fiscal situation is concerned. The epidemic drains scarce domestic resources compounding the constraints to development that the country faces.

UNAIDS (2006b) estimates that in 2005, 169,000 people in Malawi needed ART while 31,000 were actually receiving it. The country set a target of 80,000 in treatment for 2006 and 240,000 by 2010, which effectively means achieving universal access by that date. As we will see below, those commitments imply significant financial costs in the near future in the context of a country that is highly reliant on external aid. Figure 6.15 depicts that net ODA still represents a large share of Malawi's GDP. One should note the crucial fact that the figure also illustrates how volatile external assistance can be.

In fact, Malawi's health sector as a whole is heavily dependent on external assistance as indicated by the fact that the share of externally funded expenditures on total health expenditures has been in the range of 25 percent since 2001, according to data from the WHO's National Health Accounts Database. This dependence on external assistance and its volatility pose particular difficulties in the context of HIV/AIDS given that the continuity of commitments toward treatment, prevention, and mitigation is essential for a successful strategy to combat the epidemic. Excessive reliance on volatile external assistance could pose a threat to those programs.

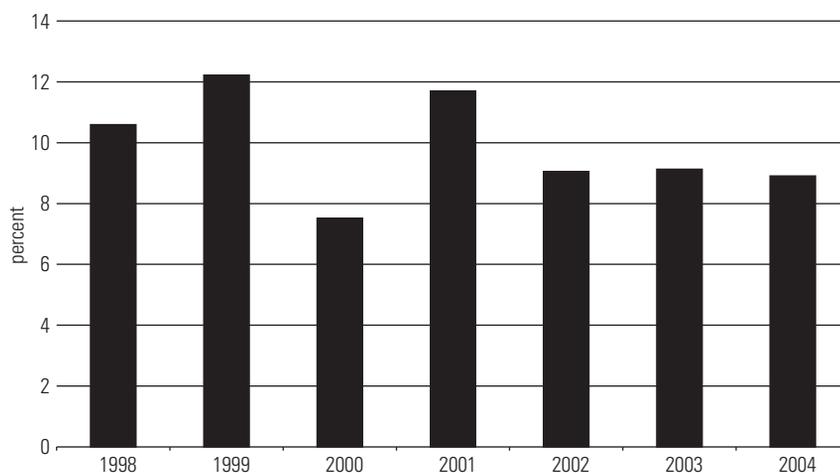
Figure 6.15: Net Official Development Assistance as a Share of GDP in Malawi, 1980–2003

Source: OECD/DAC database.

The vulnerabilities linked to the large share of external resources in health financing could be mitigated if the domestic private sector or the government increase the resources they devote to interventions that tackle HIV/AIDS. Thus, the importance of the fiscal space issues discussed previously is clear. We will briefly attempt to look at the available evidence to determine whether there is scope for increasing fiscal space for HIV/AIDS expenditures in the country. Figure 6.16 shows that the government spends less than 10 percent of its total expenditures on health. Hence, there seems to be some scope for reallocation, if HIV/AIDS is indeed considered to be a priority for government authorities. Nonetheless, one should bear in mind the caveats already discussed in terms of pursuing this strategy, particularly the political economy implications.

Another issue relates to the flexibility within the budget that government authorities possess to reallocate resources in light of the identified priorities. In general, items such as interest payments and wages are relatively outside the scope of discretionary reallocation decisions. Thus, if those items represent a large share of the recurrent budget, there would be limitations

Figure 6.16: Government Expenditures on Health as Percentage of Total Government Expenditures in Malawi, 1998–2004



Source: WHO national health accounts database.

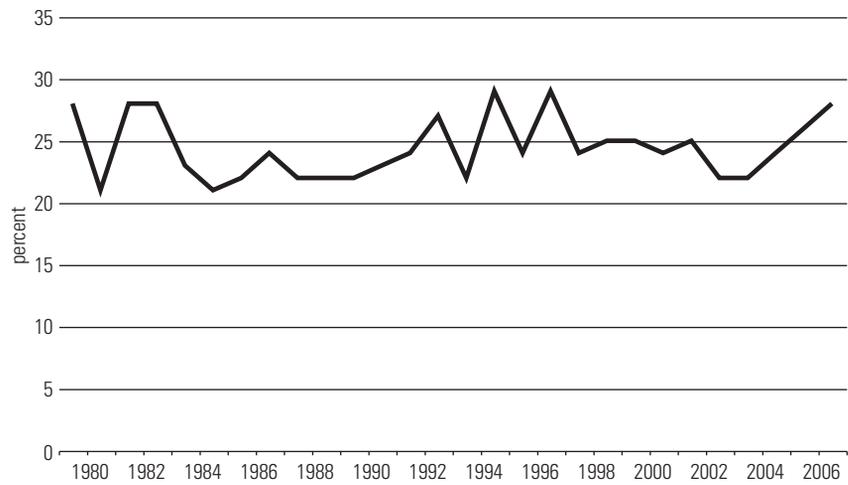
toward creating fiscal space through reallocation. Figure 6.17 depicts the wage bill in Malawi as a share of the recurrent budget in the period from 1980 to 2007 according to World Bank estimates. One should note that wages represented about 24 percent of the recurrent budget in 2005 and are expected to account for 28 percent of the budget in 2007. In addition, according to World Bank data, public expenditure on interest accounted to 22.4 percent of total public expenditures in 2004 and 17 percent in 2005.

Figure 6.18 shows tax revenue as a percentage of GDP in Malawi from 1980 to 2009, using data and projections from the World Bank's Live Database. One should note that tax revenue represented about 22 percent of GDP in 2005 and is expected to remain at 21 percent by 2009, which is already considered a high level for a low income country (see Heller [2005]). Therefore it seems that on top of the usual political economy difficulties in increasing fiscal space through this channel, in the case of Malawi, it seems that there is also limited scope to rapidly expand the tax base given the size of the economy.

Is there scope for additional borrowing to finance HIV/AIDS-related expenditures in Malawi? Figure 6.19 presents World Bank data and projections of the ratio of central government debt to GDP from 1993 to 2009. This ratio is frequently used as a basic measure of debt sustainability. One

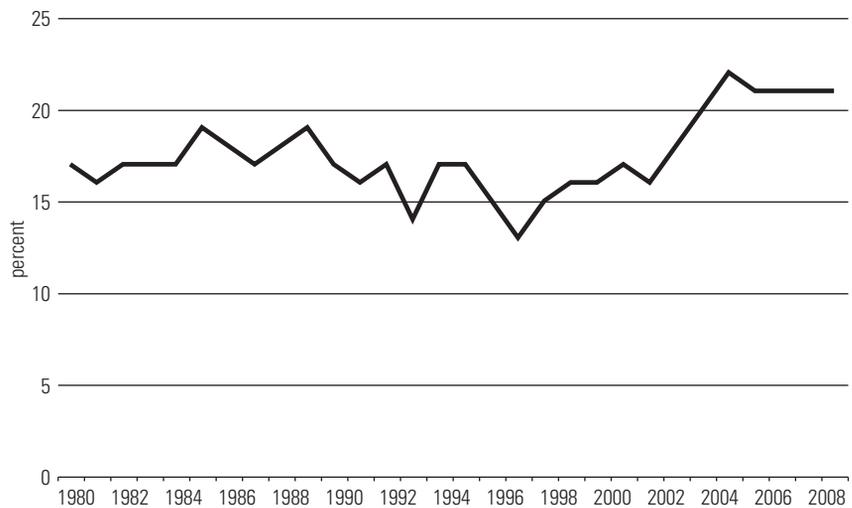
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Figure 6.17: Government Wage Bill as Share of Recurrent Budget, 1980–2007

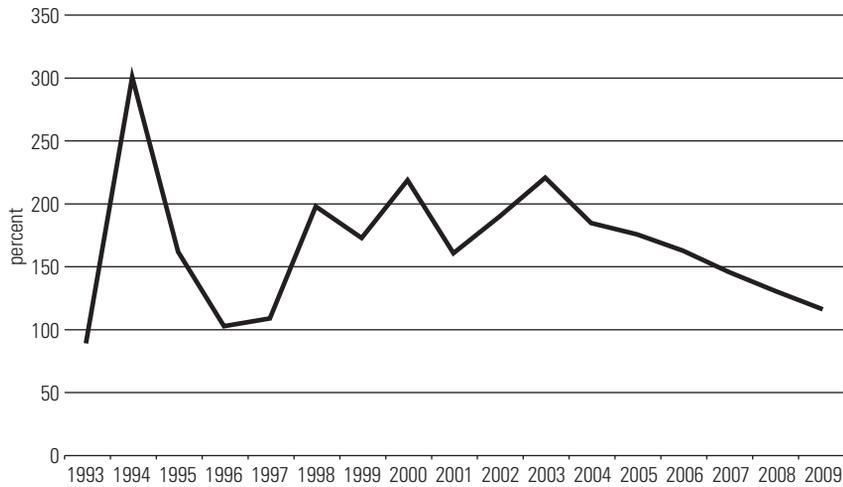


Source: World Bank Live Database.

Figure 6.18: Malawi: Tax Revenue as Percent of GDP, 1980–2009



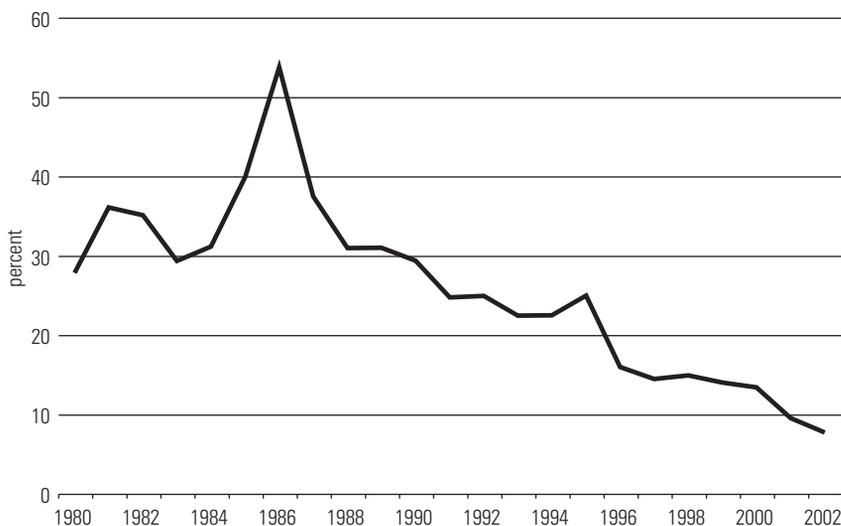
Source: World Bank Live Database.

Figure 6.19: Actual and Projected Central Government Debt-to-GDP Ratio in Malawi, 1993–2009

Source: World Bank Live Database.

can note a decline in the ratio from 2003 onwards, when it went from a value of 220 percent of GDP to a projected value of 116 percent of GDP by 2009. This ratio still seems high when compared to other developing countries. Additional indicators of debt sustainability confirm an improved situation in the last few years, but the scope for raising fiscal space through increasing debt is still limited. According to World Bank data, the debt service to government revenue ratio was 41.9 percent in 2003, 38.2 percent in 2004 and 19.1 percent in 2005. Another indicator of the capacity to repay debt widely used in the literature is the debt service to exports ratio, depicted for Malawi in figure 6.20 for the period from 1980 to 2002; one should note the steady decline since the mid-1990s.

Given the current goals and commitments of Malawi's government toward prevention treatment, and care in the framework of its efforts to combat the HIV/AIDS epidemic, we will assess the adequacy of funding in the period from 2007 to 2013 to meet the estimated resource needs. As far as the latter is concerned, we will present simulation results from two distinct scenarios. The baseline scenario presents the resource requirements, expressed in millions of US\$, if the coverage of services is extended to meet

Figure 6.20: Debt Service as a Percentage of Exports in Malawi, 1980–2002

Source: World Development Indicators database.

government and UNAIDS targets. The main sources for those targets are the Malawi National AIDS Commission, Stover and Fahnestock (2006) and the UNAIDS Web site. In the low scenario, we assume that coverage of HIV/AIDS–related services stays as it is at the present (latest available data). Throughout the exercise we use an exchange rate of MK109 per US\$ when necessary. Furthermore, in the baseline scenario, it was assumed that 75 percent of those in need of ART would have access to it by 2010, whereas this figure was kept at the value of 20 percent for the low scenario.

As far as prevention efforts are concerned, we were able to estimate resources for youth-focused interventions for which costs were obtained from government sources and coverage rates from Stover and Fahnestock (2006). The same holds for workplace programs, but in the baseline model we assumed coverage rates of 50 percent by 2010, in line with the targets set by UNAIDS. Data on casual sex acts covered with condoms were obtained from the 2000 DHS and targets set to 80 percent by 2010 for the same reasons outlined above. Unit costs per male condom distributed by the public sector were obtained from the government of Malawi. Figures on sexually transmitted infections (STIs) were obtained from the DHS and the cost per STI treated was estimated by the Ministry of Health. We assumed in the baseline scenario

that coverage in treatment would increase to 80 percent by 2010, in line with targets for Malawi obtained from the UNAIDS Web site. The Ministry of Health also provided cost data on voluntary counseling and testing, prevention of mother-to-child transmission, and screening units of blood for HIV.

We used government estimates for the cost of one previous mass media campaign and assumed that by 2010 Malawi would sponsor five campaigns per year, in line with UNAIDS targets. We assumed a coverage rate of 75 percent from 2010 onwards for ARV treatment at a unit cost of US\$455 for first line treatment for the first six months and US\$359 annually. Non-ART care and prophylaxis was assumed to cost US\$427 per person per year in line with values for other applications of the resource needs model to Sub-Saharan Africa.

To analyze the resource needs for orphans and vulnerable children in the case of Malawi, we were only able to obtain cost data for school expenses (average primary and secondary), estimated to be US\$14 per child per year by the Malawi government. An 80 percent coverage rate for those in need (considered to be those living below the poverty line) was assumed in order to obtain the resource estimates for Orphans and Vulnerable Children (OVC) support.

In the context of these assumptions regarding costs and the demographic projections undertaken, we were able to obtain estimates of the resource requirements under the two scenarios outlined previously. Those estimates are presented on the tables 6.7 and 6.8 below.

Overall, in order to meet its commitments, the Malawi government would need to spend on prevention, treatment, and mitigation around US\$61 million in 2007, increasing to US\$142 million by 2010, and US\$210 million by 2013. The largest single expenditure component under this scenario is ART. It represents around 45 percent of the resource needs in 2007 and 73 percent by 2013. In the low scenario, that is, keeping current coverage rates over the whole time span, total resource requirements would amount to US\$57 million in 2007, increasing to US\$76 million by 2010, and US\$95 million by 2013. ART continues to be the largest single component, accounting for 40 percent of the resource needs in 2007 and 57 percent by 2013. It is important to note once again that items not included in the projections, such as administration, management, monitoring and evaluation as well as advocacy could add approximately 7 percent to the costs of the programs every year.

The resource needs analyzed above should be compared with international commitments and the domestic availability of resources to give us an

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Table 6.7: Resource Needs in Malawi under the Baseline Scenario, 2007–13

(millions of dollars)

PREVENTION	2007	2008	2009	2010	2011	2012	2013
Youth	1.55	2.20	2.57	3.76	3.16	2.55	1.85
Workplace programs	1.12	2.85	4.68	12.08	12.40	12.72	13.05
Condom provision	3.81	5.64	7.56	15.05	15.49	15.93	16.39
STI management	1.85	2.53	3.21	5.93	5.93	5.94	5.94
VCT	1.18	1.36	1.55	2.21	2.28	2.34	2.41
PMTCT	2.00	2.02	2.08	2.17	2.24	2.29	2.34
Mass media	0.40	0.67	0.93	2.00	2.00	2.00	2.00
Blood safety	2.03	2.08	2.14	2.19	2.25	2.31	2.36
Total	13.94	19.34	24.72	45.40	45.74	46.07	46.35
Treatment and care							
ART	27.35	42.87	63.37	87.79	108.81	130.84	153.73
Non-ART care	16.74	12.16	9.90	6.31	6.48	6.68	6.89
Total	44.09	55.02	73.27	94.09	115.30	137.53	160.62
OVC							
School expenses	3.01	3.02	3.00	2.96	2.92	2.91	2.91
Overall total	61.05	77.38	100.99	142.46	163.96	186.51	209.87

Source: Author's own calculations.

Table 6.8: Resource Needs in Malawi under the Low Scenario, 2007–13

(millions of dollars)

PREVENTION	2007	2008	2009	2010	2011	2012	2013
Youth	1.64	1.68	1.73	1.78	1.83	1.89	1.96
Workplace programs							
Condom provision	3.04	3.13	3.22	3.31	3.41	3.51	3.61
STI management	1.85	1.85	1.85	1.85	1.85	1.85	1.86
VCT	1.18	1.21	1.24	1.27	1.30	1.34	1.38
PMTCT	2.00	2.00	2.05	2.10	2.15	2.20	2.25
Mass media	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Blood safety	2.02	2.07	2.13	2.18	2.23	2.28	2.33
Total	12.13	12.35	12.61	12.89	13.18	13.48	13.79
Treatment and care							
ART	22.50	26.65	32.98	38.98	44.42	50.23	56.05
Non-ART care	19.27	19.73	20.23	20.78	21.37	22.01	22.66
Total	41.78	46.38	53.21	59.76	65.79	72.24	78.72
OVC							
School expenses	2.99	3.00	3.00	3.01	3.01	3.01	3.02
Overall total	56.90	61.73	68.83	75.66	81.98	88.73	95.53

Source: Author's own calculations.

Table 6.9: Current Commitments of International Resources to Malawi for HIV/AIDS

(millions of dollars)

SOURCE	START DATE	TOTAL BUDGET	ALREADY DISBURSED	AMOUNT UNDISBURSED
GFTAM	Oct-2003	178.6	41.4	137.2
	Oct-2006	19	2.0	17.1
MAP (WB)	2003	37.6	23.7	13.9
PEPFAR	2004	14.5	N.A.	N.A.
PEPFAR	2005	15.2	N.A.	N.A.
PEPFAR	2006	16.3	N.A.	N.A.
PEPFAR	2007	18.9	N.A.	N.A.
Total		300.2	67.1	168.2

Source: GFTAM Web site, PEPFAR Web site, World Bank.

idea of the sustainability of the efforts to fight the HIV/AIDS epidemic in Malawi. Table 6.9 outlines the current funding availability from the three major international donors for HIV/AIDS, the Global Fund, PEPFAR and the World Bank, stating amounts committed and already disbursed in cases where the information is available.

The figures indicate that current international funding for HIV/AIDS-related expenditures will be adequate to meet the needs as estimated in the baseline scenario until 2010. After that point, it is likely that Malawi would need to raise additional revenue either from those international sources or from alternative sources such as other donors, domestic revenue, the private sector or a domestic health insurance mechanism. The Malawi government has committed to spending US\$2 million annually to the NAC. Hence, despite the increased availability of resources, the medium-term sustainability of programs of prevention, care, and mitigation of the impacts of HIV/AIDS does not seem to be assured for this country, even when we only consider rough estimates that arguably understate the real resource requirements.

Conclusion

In Sub-Saharan Africa, the scope for increases in fiscal space for HIV/AIDS expenditures through increased indebtedness and larger seignorage revenues is limited. Nonetheless, efforts to increase the tax base, improve the efficiency of expenditures, and reduce leakages linked

to corruption and poor governance appear more promising. Combating HIV/AIDS involves more than merely increasing the availability of financial resources. The improvement of management skills, institutions, and human resources is certainly a prerequisite for successfully combating the epidemic.

In practical terms, a complete assessment of the sustainability of HIV/AIDS programs should incorporate the possible effects of expenditures in boosting economic growth and therefore fiscal revenue over the medium- and long-term. In addition, those expenditures frequently lead to fiscal savings that need to be taken into account, such as the reduction in hospital expenditures associated with increased access to treatment. Despite the complexity involved in such sustainability analysis, a successful strategy to combat the epidemic requires medium- to long-term fiscal planning as the difficulties associated with the disease will persist over extended periods of time.

In this context, increased reliance on volatile external assistance seems risky. In general, it has been identified that international aid needs to be more stable and predictable (Eifert and Gelb 2005); this is even more relevant in the case of HIV/AIDS. It is crucial to assist countries in establishing consistent, reliable sources of long-term finance that will complement international aid, possibly through the establishment of national health insurance schemes or similar mechanisms that would require addressing other bidding constraints on development, such as the lack of institutional capacity and infrastructure bottlenecks.

Finally, given the nature of the epidemic, combating HIV/AIDS is a “global public good” and, therefore, also requires action and coordination at the international level. This includes raising financial resources to fight the epidemic, since the decentralized outcome would tend to underprovide funds because of free-rider problems and externalities. Therefore, the international community has a responsibility to assist sub-Saharan countries in effectively addressing this development challenge.

Notes

1. Given the volatility of aid flows and historical experience, this is likely to occur for a number of reasons, including “donor fatigue,” as the result of additional resource availability taking time to achieve results or public opinion interest shifting away from the HIV/AIDS issue in Africa.

2. The software packages and manuals giving further technical details are available to download at www.futuresgroup.com.
3. This software package and manual is also available to download at www.futuresgroup.com.

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PART III

POLICY CHALLENGES

The Financial Architecture of the Response to the HIV Epidemic: Challenges and Sustainability Issues

René Bonnel

Summary

Much has changed in the international aid architecture during the past 10 years. Unlike previous appeals, which went unheeded, the call for donors to step up their efforts led to an unprecedented increase in funding for the response to the HIV epidemic. HIV/AIDS expenditures financed by donors and the governments and households of affected countries rose from about US\$300 million in the mid-1990s to about US\$10 billion in 2007 (UNAIDS 2007a), an extraordinary increase by historical standards. The increase allowed a rapid expansion in the services offered to the most-affected households in low- and middle-income countries.

The rapid increase in funding has been associated with a substantial increase in the number of HIV/AIDS-specific global programs and a proliferation in the number of actors involved in delivering the response at the country level. This has led to duplication of institutions and overlap across programs, raising long-standing issues of country ownership, governance, and sustainability of programs over the longer term.

The main conclusion of this chapter is that the current “business” model is unsustainable. A large gap has opened between the pressing needs of people living with HIV and the funding available at global levels. In response the

global financial architecture for HIV is changing. On one hand, new global programs have emerged to mobilize funds for scaling-up of the response to the HIV epidemic and on the other hand new players such as philanthropic organizations and NGOs are starting to become as important as the more traditional aid agencies. The result is a fragmentation of financing associated with rising coordination and harmonization costs, poor governance of the AIDS financial response, and increased risk of misallocation of resources at country level. At the global level, a key challenge is improving coordination and harmonization of donor procedures for delivering financial support. At the country level, a key challenge is ensuring that a much larger proportion of the available financing reaches those who are the most in need of prevention, treatment, and care services.

So far most of the policy dialogue at the global level has been on how to better harmonize and coordinate donor assistance. While some results have been obtained, much bolder efforts are needed at country level. These efforts should target low-income, high-prevalence countries, which face the greatest needs and have the least capacity to manage large international financial inflows. Left unchecked, these inflows have the potential to destabilize already fragile governance systems. Faced with these challenges, countries should ensure that HIV/AIDS assistance is much better integrated into their normal planning and budgeting systems. Implementing these changes would require the following:

- *Enhancing the role of national HIV/AIDS strategic frameworks and annual action plans.* It is widely accepted that alignment of donor financial support with governments' priorities should occur by having national progress toward that goal, achieved by ensuring that national HIV/AIDS strategies are evidenced-informed, costed, and include a strong results framework that allows for the monitoring and evaluation of the programs. A key step toward this goal is the 2008 agreement between the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) and UNAIDS aimed at helping countries develop such strategies and ensuring that they meet minimum quality standards.
- *Changing the business model of global and other vertical programs.* While it is now widely recognized that the "emergency" approach to disbursing funds for HIV/AIDS programs no longer makes sense, the needed shift toward building systems that are owned by countries and fully consistent with their planning and budgeting systems has not taken

place rapidly enough. A key challenge is ensuring that the operations of vertical funds, such as those of the Global Fund and the Presidency's Emergency Plan for AIDS Relief (PEPFAR) are much better integrated into the institutional structures of recipient countries. An important step forward may be to provide support through a pooled fund that would be earmarked for use in implementing countries' national HIV/AIDS strategic frameworks. Providing funds in this manner would allow countries much greater flexibility in ensuring that all their priority programs are fully funded.

- *Increasing the indirect contribution of multilateral institutions to the response to HIV.* Vertical programs are best placed to mobilize financing on a large scale. However, international financial institutions have a comparative advantage in funding cross-cutting interventions and advising governments on the allocation of resources across sectors. These include: helping countries build the systems that are needed to effectively access and use available resources; strengthening the capacity of local governments to use resources effectively; and investing in building the social infrastructure (for example, health, education, social protection) that is crucial for expanding the response to HIV.
- *Increasing financing by governments.* Countries need to invest much more than they have in funding the development of the systems they need to manage the response to HIV. Such investment would put in place the key building blocks needed for the response to be sustainable over the long term. In particular, countries need (a) macroeconomic policies that better support the absorption of external aid; (b) public expenditure management systems that meet fiduciary standards and allow donor funds to be disbursed through government ministries and agencies; and (c) strengthened governance, especially at the community level. While strengthening government systems are critical, reinforcing the voice of local communities in monitoring the use of funds is even more important for preventing the misuse of funds.

This chapter addresses these issues. It starts by describing the new structure of external assistance and its implications for the response to HIV. It then proceeds to assess the costs and benefits of the proliferation of new programs and it concludes with proposals for moving forward and improving the current financial architecture.

The Response to HIV and the Mobilization of Resources

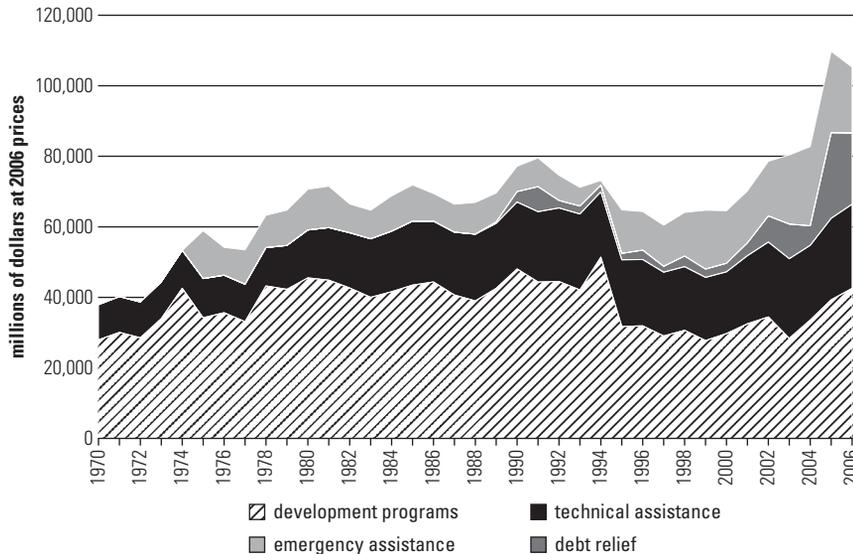
Since 1999, more than \$46 billion has been made available for fighting the spread of the HIV epidemic and improving the lives of people with HIV infection. Given its enormous size, it is not surprising that the funding of the response has recently attracted much attention. Unfortunately, the debate has not much concentrated on the reality behind these numbers. Has all this funding been really spent in an effective manner on HIV programs? Has the bulk of it benefited the people living with HIV? While it is difficult to trace the flows of funds, the answer is most likely to be “no.” The reality behind the new financial architecture of aid is one of enormous fragmentation, increasing management costs, and a strong risk of misallocating resources. This is discussed in the following sections, which begin by reviewing how international aid has evolved during the recent past.

Changes in the international development architecture since the 1960s

The 1960s saw the creation of an international development architecture that remained the mainstay of development assistance well until the late 1990s. It reflected a general consensus that development issues could best be addressed by having international aid agencies channel significant resources to developing countries. At the global level, international financial institutions such as the World Bank, regional development banks, and the United Nations system were entrusted with the task of mobilizing financial support from donors and transmitting these funds to developing countries, mainly for the purpose of financing the investment needs of government ministries and public enterprises. This country-based assistance remained the mainstay of aid donors throughout the 1970s and 1990s. Underlying it was a steady increase in official development assistance (figure 7.1).¹ About 70 percent of total official development assistance was provided through bilateral organizations, with the remainder channeled through multilateral organizations (IDA 2007).

Decreasing share for development aid. This system came under attack in the 1990s. Following a major decline in the mid-1990s that coincided with the end of the cold war, net official development assistance (ODA) began to rise again after 1998 and reached \$105 billion in 2006 (OECD online database 2008). When financial aid is mentioned, a common perception is that the purpose of aid is to finance development. But a large share of financial aid is used

Figure 7.1: Net Disbursements of Official Development Assistance to Developing Countries, 1970–2006



Source: Data extracted from OECD database.

for financing items such as debt relief, program administration costs, emergency, food assistance and technical assistance.² What remains is what is generally thought to be development aid namely funding for education, health, infrastructure as well as general budget support. Over time, the share accruing to projects and program support has declined. In aggregate, only about 63 percent of total official development assistance now goes to core development projects (IDA 2007), and the percentage is even lower in Sub-Saharan African countries, where the share of official development assistance allocated to programs and projects fell from 63 percent in 1990 to 41 percent in the 2000s (Sundberg and Gelb 2006). In absolute terms, aid for development projects has just now recovered the peak level it once reached in the early 1990s.

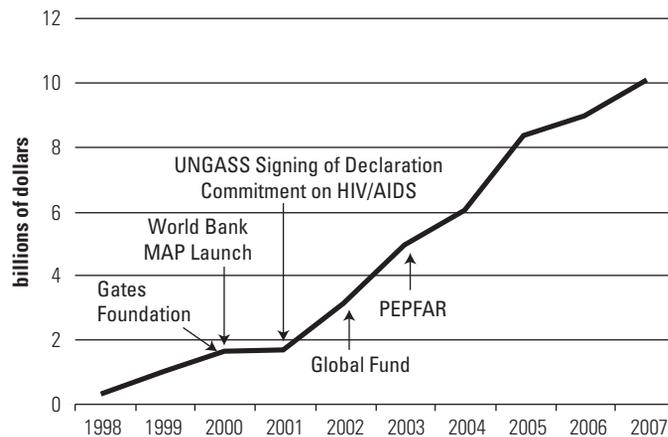
Faced with a declining share of aid for development projects, the international HIV/AIDS community reacted with strong dynamism. It led to a rapid increase in the availability of funds, which removed one of the key constraints that previously prevented the implementation of a comprehensive response. Key factors are a combination of new aid instruments and the emergence of new players.

Financial assistance for HIV/AIDS programs

Growing financial resources. Total annual resources for funding the response to HIV, including spending by households and governments of affected countries, are estimated to have increased from less than \$1 billion in 1999 to almost \$10 billion in 2007 (UNAIDS 2008) (figure 7.2). This increase in financial resources for HIV/AIDS programs is unprecedented.

What underlies this increase? The usual perception is that it was driven by donor assistance. Certainly donor funding has played a key role, but equally important has been the emergence of global initiatives and new philanthropic foundations that have drastically changed the landscape. In a rapidly globalizing world, these new programs have made a unique contribution in terms of mobilizing large amounts of funding for addressing global issues—something that country-focused programs of assistance cannot achieve. In addition, new players have emerged. One group consists of countries that have graduated from the ranks of developing countries and have now joined the ranks of donor countries. Another group is the private aid sector, consisting of foundations, private philanthropists and international NGOs. And a third group is formed by various international alliances of aid activists, which have played a key role in shaping the development agenda for HIV. Together these partners are rapidly changing the aid landscape.

Figure 7.2: Total Annual Resources Available for HIV/AIDS, 1998–2007



Source: UNAIDS (2008).

Note: UNGASS, United General Assembly Special Session on HIV/AIDS.

New initiatives. International assistance for HIV/AIDS programs first got a major boost from the launch of the World Bank Multi-Country HIV/AIDS Program (MAP) in 2000. The 2001 United General Assembly Special Session on HIV/AIDS (UNGASS) reinforced this momentum as it lent its political weight to the view that the HIV epidemic was a social and economic catastrophe that was reversing decades of hard-won social gains and creating millions of orphans. To prevent and reverse these outcomes, the United Nations called for the implementation of a comprehensive response, which was estimated to cost about \$9 billion by 2005.³ By implicitly endorsing the estimated cost of the response, UNGASS helped galvanize civil society opinion and political leaders in mobilizing new funding.

The results were clearly visible in the following years:

- In 2002, the Global Fund—a partnership between governments, civil society, the private sector, and affected communities—was created, with the explicit objective of becoming the main financial institution for mobilizing and disbursing funding for HIV programs.
- In 2003, PEPFAR was launched by the United States. PEPFAR rested on an initial pledge of \$15 billion over five years, designed to deliver a comprehensive response on a scale sufficient to reverse the course of the HIV epidemic.
- In 2005, the Gleneagles summit was convened. While not dedicated specifically to HIV, the promised increase in international aid (equivalent to an additional \$50 billion by 2010) implied that additional resources would be forthcoming for scaling up further the world response.
- In 2007, the leaders of the G-8 countries reaffirmed at Heiligendamm their pledges to increase aid by \$50 billion by 2010.

New bilateral donors. Until recently, members of the Development Assistance Committee (DAC), created in the 1960s by the Organisation for Economic Co-operation and Development (OECD), were the main providers of financial aid, accounting for 95 percent of all international aid (including AIDS funding). This picture is changing with new players entering the field. One new group consists of countries that have recently joined the group of middle-income countries. These include at least 10 non-DAC countries, which are providing significant amounts of financial assistance.⁴

The Republic of Korea plans to increase its development aid budget to \$1 billion by 2010, for instance, and China has indicated that it plans to provide up to \$10 billion in development assistance. In total, UNAIDS estimates that non-DAC countries committed \$160 million for HIV/AIDS in 2007.

Increased bilateral assistance. Has donor assistance been the main factor behind the extraordinary increase in resources for the response to HIV? Until recently, it was difficult to obtain a clear answer, because of the lack of comparable data. Funding of HIV/AIDS programs was sometimes measured in terms of pledges, sometimes in terms of commitments (as done by financial international institutions), and sometimes in terms of spending (as measured by government budgetary expenditures and households' out-of-pocket expenditures).⁵ Since 2004, the OECD has gradually built a comprehensive and consistent database that makes it possible to track bilateral and multilateral assistance for HIV/AIDS on a consistent basis (box 7.1).

Taking into account both the DAC countries and other governments, donor commitments for HIV/AIDS are estimated to have risen from less than \$1 billion in 2000 to \$6.6 billion in 2007 (figure 7.3). Of this total, \$1.2 billion were committed through the Global Fund in 2007. Most of the

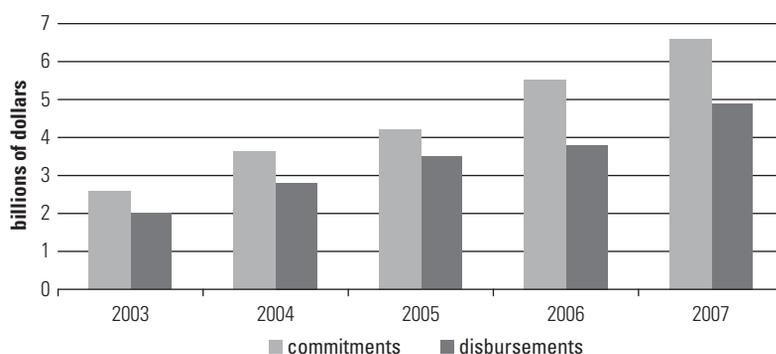
Box 7.1: OECD HIV/AIDS Database

The database is based on donors' reporting on official development assistance. Donors include the 22 member countries of the OECD Development Assistance Committee (DAC); the European Commission; some UN agencies (UNAIDS, UNICEF, the United Nations Population Fund [UNFPA]); the regional development banks; the World Bank; and other international institutions.

HIV/AIDS assistance for low- and middle-income countries is defined as including grants; concessional loans (loans made at or below market rates); gifts in kind (drugs, equipment); and technical cooperation.

The database includes the assistance flowing through the Global Fund, separating direct bilateral assistance (from donor agencies to recipient countries) from the bilateral aid given to the Global Fund, which the Global Fund transfers to countries. But it excludes assistance provided by non-DAC countries, which according to UNAIDS estimates amounted to about \$155 million in 2007; assistance provided by philanthropic foundations, such as the Bill & Melinda Gates Foundation; and HIV/AIDS-related research activities.

For more information, see the OECD DAC database.

Figure 7.3: Bilateral and Multilateral Assistance for HIV/AIDS by DAC Countries, 2003–07

Source: OECD (2007) and UNAIDS for (2007).

Note: Data include bilateral commitments and imputed multilateral commitments for HIV/AIDS.

bilateral commitments were provided by the United States (55 percent), followed by the United Kingdom (15 percent) and the Netherlands, France, Germany, Sweden, and Canada, which collectively provided 17 percent (UNAIDS/Kaiser Foundation 2008).

These estimates are likely to underestimate total bilateral commitments as they do not take into account the HIV/AIDS programs that they may be funded in the context of wide health programs and reproductive health programs. How important is this omission? A preliminary answer to this question was provided by a 2004 OECD report, which estimates that excluding aid from the United States, resources provided by health and other programs including AIDS components amounted to no more than \$400 million a year or about 6 percent of the total assistance provided by donor governments.

But is aid really increasing at community level? Overall, the commitments for HIV show a remarkable increase in development assistance. But what lies behind these numbers is much less encouraging. This is because aid is not just a matter of making promises of funding. Disbursements, not commitments or pledges, are what matters to countries. They are typically lower than commitments, for two main reasons. First, disbursements lag behind commitments. The good news is that disbursement of HIV/AIDS funds to recipient countries has remained relatively high in recent years.⁶ Of the \$6.6 billion committed by donor governments through bilateral channels in 2007, \$4.9 billion was disbursed (Kaiser Family Foundation 2008).

But even disbursements can be a misleading indicator. Typically, a substantial share of the funds that are disbursed do not reach the intended countries. At the global level, administrative costs for managing bilateral official aid have increased from an average of 5 percent in the 1980s to 8 percent in recent years, in part because of the increasing number of agencies involved in delivering aid. It is most likely that the same trend is affecting the global HIV response. Another factor contributing to reducing the share of disbursements reaching beneficiaries is technical assistance. In aggregate, technical assistance has historically been a large component of aid, amounting to about 20 percent of ODA (OECD database), but a large share of this assistance may actually never cross the borders of the donor country. And finally, another factor more specific to HIV is the tendency for vertical programs to create their own parallel channels and procedures for distributing commodities and services within countries; in most cases, these systems duplicate existing ones set up by governments. Taken together, these elements suggest that the funds actually received by countries are much less than suggested by the official data.

Finally, when donors typically disburse funds, they do so with an understanding that a substantial share will actually reach the intended beneficiaries, that is, those who are at risk of infection and the people living with HIV. But is this the case? There can be many reasons why the reality may be different. For instance, funds may be spent mostly on workshops, car purchases and travel costs, and some may be lost through corruption. In practice it is quite difficult to trace the flow of funds from the central institutions to the intended beneficiaries due to poor accountability and lack of transparency of NGOs' operations at country level. While such a study has not yet been conducted in the case of HIV, other studies carried out in Ghana, Tanzania, and Rwanda concluded that "approximately half of the overall amount allocated to clinics and hospitals did not actually reach them" (Lindelov and others 2006). If these results were confirmed in the case of the HIV response, they would suggest that the people living with HIV and those at risk of infection would have received less than \$2.5 billion in 2007. Looked at from this point of view, the assistance provided by donors seems much less impressive.

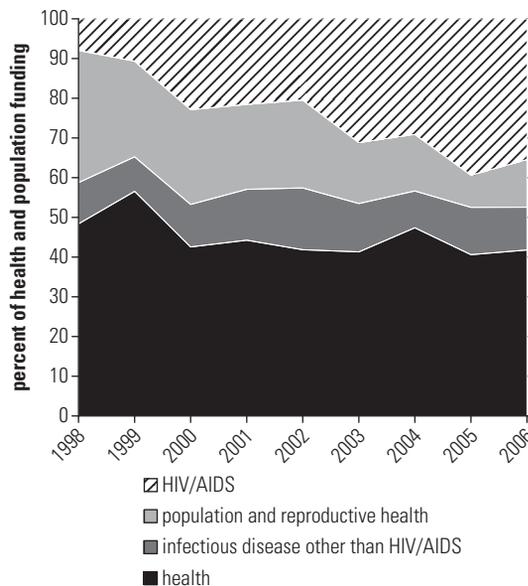
Has HIV/AIDS funding increased too rapidly?

Compared to other sectors, official development assistance for HIV/AIDS has increased quite rapidly (figure 7.2). This has led several critics to raise the issue of whether HIV/AIDS programs are receiving too much money

and are “crowding out” other development priorities. A number of observers view the increase as reflecting the priorities and needs of donors rather than those of developing countries (Garrett 2007). Proponents of this view argue that donors are making too much money available for HIV/AIDS programs while other development priorities are being starved of the funds they need (England 2007). To assess the validity of these opinions, it is useful to review whether there has indeed been a shift in donor priorities that would have adversely affected other sectors.

Shifting donor priorities. Funding HIV/AIDS programs has certainly been a growing priority for donors. This can be seen by considering how funding has evolved for four prominent health agendas—HIV/AIDS, population and reproductive health, infectious disease (other than HIV/AIDS), and health sector.⁷ The information underlying this analysis comes from the Credit Reporting System (CRS) of the OECD and it is presented for the years 1998 to 2006 when funding for HIV/AIDS rose substantially.⁸ As shown by figure 7.4, there are indications of possible displacement effects. As a share of health and population funding, HIV/AIDS rose from 8 percent

Figure 7.4: Percentage of Health and Population Donor Commitments, 1998–2006



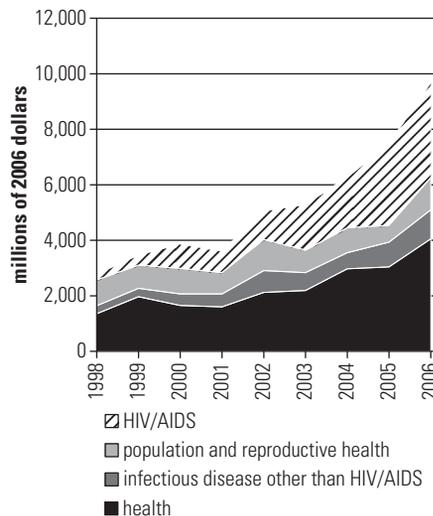
Source: OECD Credit Reporting System (CRS).

in 1998 to 35 percent in 2006, while the share of infectious disease remained around 10 percent. In contrast, the percentage of aid committed for population and reproductive health fell from a third of funding to 12 percent. Health sector's share also declined from 48 percent to 42 percent.

From the point of view of absolute shares rather than relative share, there is little support for displacement effects. In aggregate, donor commitments for health, HIV/AIDS, population and reproductive health, and infectious disease more than trebled (in constant prices) during the period reaching \$9.7 billion in 2006. This was accompanied by increases in every one of the health components even though HIV/AIDS was acquiring a prominent place in the donor funding agenda. Overall, it does not appear that health has been crowded out by HIV/AIDS.

The real issue highlighted by figure 7.5 is not so much the increase in funding for HIV/AIDS programs, but rather the lack of comparable strong financial support for other pressing health issues. This raises the question of whether health would have received more funding if HIV/AIDS had not obtained such support. This claim seems doubtful. Why? Because in aggregate, most of the increase in ODA has been taken up by debt relief,

Figure 7.5: Commitments for Health and Population by Subsectors in 2006 Dollars, 1998–2006



Source: OECD Credit Reporting System (CRS).

emergency assistance, and technical assistance (see figure 7.1). In a context of diminishing support for the traditional forms of international financial assistance, HIV/AIDS was able to mobilize additional support mainly because it relied on the creation of new instruments (global funds) and new players for disbursing these funds. This conclusion has not escaped the proponents of additional funding for health. Recently, they adopted the same strategy by creating an International Partnership for Health in the hope that this new global program would prove as successful as the HIV/AIDS global programs.

Increased spending by governments and households. An implicit assumption of the argument that too much money is being spent on HIV/AIDS programs is that the increase in funding represents donor money received against the wishes of recipient governments. Is this the case? Instead, the evidence tends to support the notion that governments and households in high-prevalence countries have given increased priority to strengthening their response to HIV. Reasons include the transformation of HIV from an invisible epidemic into a major disease, the mounting financial costs at the household level as the HIV epidemic has matured in most countries resulting in increased treatment costs, and the emergence of new actors who are shaping the HIV development agenda.

Until the mid-1990s, the HIV epidemic was largely invisible in most developing countries. Because of the substantial lag between initial infection and the emergence of AIDS symptoms (seven to eight years in the absence of antiretroviral drugs), the HIV epidemic did not result in major outlays of expenditures on treatment and care until the 1990s. At the global level, estimates suggest that external assistance for HIV/AIDS programs amounted to at most \$200–\$300 million in the early 1990s (UNAIDS 2007a). This situation started to change in the mid-1990s. As a result of mounting AIDS cases and HIV-related disease (such as tuberculosis), the public health system became burdened with increased hospitalization costs. Households also experienced rising costs, mainly for AIDS treatment and AIDS-related expenditures, such as funeral costs.

Until recently, little information was available on financial expenditures by households and governments of developing countries. This situation is starting to change, as more countries are carrying out National AIDS Spending Assessments (NASAs). What they reveal is a vastly different situation across countries.

In aggregate, NASA showed a sharp increase in the expenditures incurred by households. Domestic spending (which includes households and governments expenditures) rose by a factor of eight in this decade according to UNAIDS estimates,⁹ an increase which exceeds the rise in bilateral commitments. In upper-middle-income countries, governments finance 85–90 percent of HIV/AIDS-related costs through their public health and social security programs, and out-of-pocket expenditures represent a relatively small percentage of the total spent on HIV/AIDS. As the income of countries decreases, the percentage of expenditures financed by governments' own resources falls to less than 20 percent of HIV/AIDS funding. This low percentage is not the result of a low government priority but rather the consequence of the availability and fungibility of external resources. Because donor agencies such as PEPFAR and the Global Fund have made large amounts of resources available for funding the response to HIV in the high HIV prevalence countries, governments have allocated the resources they would otherwise have spent on HIV/AIDS to other sectors.

Households in Africa usually bear a large share of the cost of HIV-related expenditures. In Kenya, out-of-pocket expenditures accounted for 45 percent of all HIV expenditures in 2002 (UNAIDS 2006), and the share of household spending is likely to have increased even more in recent years, as a result of the maturing of the HIV epidemic and the rising numbers of orphans and of people on treatment. While most countries provide free antiretroviral drugs, access to drugs is not available in sufficient quantity to meet all needs. As a result, top-up payments by patients are common (Tayle and Dickinson, Transparency International 2006a). In addition, laboratory testing and medical visits, which amount to about half the cost of treatment, are usually paid by households.

Total domestic spending by households and governments of affected countries is estimated to represent 43 percent of total funding for the response to HIV. Spending by households and governments has become an extremely large component of the response, rising from \$500 million in 2000 to an estimated \$2.5 billion in 2004 and \$4.3 billion in 2008,¹⁰ as fighting the epidemic has become the top social priority in a number of high-prevalence countries.

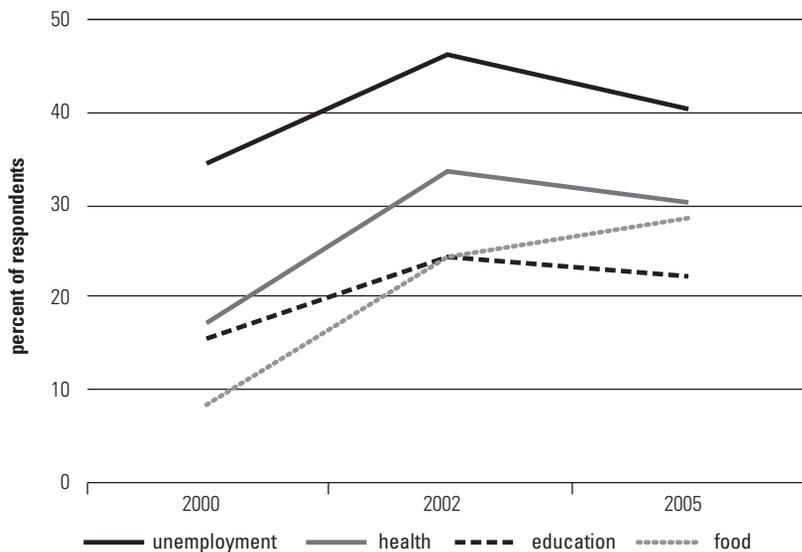
Growing priority in developing countries. What priority do Africans attach to scaling up the response to HIV? The best way to find out is to ask them directly, as the Afrobarometer survey did (Bratton 2007). Not surprisingly,

when asked in 2005 to rate their priorities, 39 percent of respondents rated unemployment as the most important priority (figure 7.6). Food rose the most, a harbinger of the food crisis experienced in 2008. Health care was rated as the second most pressing issue by 30 percent of the respondents, much ahead of education or other social issues. In 2000, education and health had nearly the same rating; in later surveys health rose nearly 10 percentage points above education. This upsurge coincided with the acceleration of AIDS-related deaths in Sub-Saharan Africa.

Confirmation of the importance of HIV is provided by the Kaiser/Pew Global Health Survey, conducted in 47 countries in 2007. Not surprisingly, the survey finds that the priority attached to fighting the HIV epidemic varies across regions. HIV was rated as the top health priority in Sub-Saharan Africa and in low- and middle-income countries in Asia. It ranked much lower in Latin America, Central and Eastern Europe, and the Middle East, where HIV prevalence rates are much lower (table 7.1).

The priority attached to strengthening the response to HIV rose in most of Sub-Saharan Africa (SSA) between 2002 and 2005. In the 16 countries

Figure 7.6: Most Important Development Issues in 12 African Countries, 2000–2005



Source: Bratton 2007.

Note: Because respondents could choose more than one answer, the total does not add up to 100 percent.

Table 7.1: Most Important Public Health Priorities Identified by Respondents in Low- and Middle-Income Countries, by World Region

RANK WITHIN REGION	SUB-SAHARAN AFRICA	ASIA	CENTRAL/EASTERN EUROPE	LATIN AMERICA	ASIA
1	HIV/AIDS	HIV/AIDS	Access to care	Hunger/malnutrition	HIV/AIDS
2	Hunger/malnutrition	Build/improve facilities	Chronic diseases	Build/improve facilities	Build/improve facilities
3	Prenatal care	Prenatal care ^a	Prenatal care	Access to care	Prenatal care
4	Build/improve facilities	Clean water	Clean water	Clean water	Clean water
5	Clean water	Hunger/malnutrition	Hunger/malnutrition ^a	Prenatal care	Hunger/malnutrition
6	Access to care	Chronic diseases ^a	Build/ improve facilities	Immunizations	Chronic diseases
7	TB/malaria/other infectious diseases	Immunizations	HIV/ AIDS	HIV/ AIDS	Immunizations
8	Chronic diseases	Access to care	Immunizations	Chronic diseases	Access to care
9	Immunizations ^a	TB/malaria/other infectious diseases	TB/malaria/other infectious diseases ^a	TB/malaria/other infectious diseases	TB/malaria/other infectious diseases

Source: Kaiser Family Foundation and the Pew Global Attitudes Project 2007.

Note: The survey included 47 countries, of which 14 were Sub-Saharan African countries: Côte d'Ivoire, Ethiopia, Ghana, Kenya, Mali, Nigeria, Senegal, South Africa, Tanzania, and Uganda.

a. Indicates ties with item directly above.

surveyed in 2005, 46 percent of respondents favored more AIDS spending, up from 42 percent in 2002. However, respondents in three countries (Botswana, Malawi, and Zimbabwe) expressed support for reducing spending on HIV programs, suggesting that in some countries too much money was flowing to HIV relative to other priorities.

The Proliferation of Global Programs

Why have global programs proliferated? At the global level a large gap has opened between the pressing needs of households in the countries affected by the HIV epidemic and the financial assistance that they have actually received. In response, the nature of development aid has been rapidly changing with new funding sources and channels for disbursing funds being created in the hope of providing assistance quicker and to more people.

Growing financing gaps. At the global level, the increased priority attached to the HIV response has been reflected in growing estimates of the financial requirements needed for fighting the HIV epidemic. The initial estimates published for the UNGASS session suggested an initial cost of about \$8 billion. The latest estimates now indicate financial requirements of \$18 billion for 2007 and up to \$35 billion by 2015 (UNAIDS 2007a). In comparison, estimated disbursements have increased much more slowly.¹¹ The gap between the needs and the available funding has in turn created a financial and institutional space for new funding instruments as well as new players.

In the process, however, the international financial HIV/AIDS architecture was fundamentally changed. It shifted away from the traditional country-focused aid delivery that had been the backbone of official development assistance for several decades toward a reliance on global programs that are dedicated to funding the response to HIV.

The new global programs. Global programs are intended to cut across more than one region of the world and mobilize dedicated resources to the implementation of their programs. Unlike the traditional “horizontal” approach of the country-based model of aid, under which funding was mobilized for all development sectors, HIV/AIDS global programs focus on only few issues (typically HIV/AIDS, tuberculosis, and malaria). For this reason they are viewed as “vertical” programs.

Such programs are not new: the first major global program (the Consultative Group on International Agricultural Research [CGIAR]) was established in 1971. Not until the late 1990s, however, did the number of global programs begin to increase rapidly in nearly every sector, but especially in health.

Global programs stemmed from the recognition that public goods (such as health research) generate benefits that extend beyond national boundaries. Because countries take into account only their own benefits and not those of other countries, they do not produce public goods at an optimal level. Examples of public goods programs include initiatives aimed at developing an AIDS vaccine (Global Alliance for Vaccines and Immunization [GAVI]) and improving access to antiretroviral drugs by poor countries by addressing policy gaps in trade and manufacturing (the Clinton Foundation).

In the case of HIV, however, the main rationale for establishing new institutional mechanisms was different. HIV was viewed as an exceptional epidemic that deserved an exceptional response (Piot 2006). The

challenges of dealing with the epidemic were considered too complex to be successfully addressed by traditional aid organizations. The international community identified four constraints which, it believed, required global programs to overcome:

- *Lack of access to drugs in poor countries.* It was expected that a global program would develop an effective supply chain of essential medical goods and reduce the cost of drugs, including antiretroviral drugs. By essentially guaranteeing a market for drugs, a global program would make it profitable for producers to increase production of drugs and sell them at a lower price.
- *Lack of adequate financing.* There was widespread expectation that the concentration of funding into one institution, such as the Global Fund, dedicated to the implementation of the response to HIV, would increase the visibility of the response and attract funding from a variety of sources, from bilateral donors to the private sector.
- *Inadequate scale of response.* While well placed to implement health interventions, health ministries are usually not the best institutions for implementing prevention interventions, which involve a wide range of actors and communities to change social behavior. Involving civil society organizations would help alleviate capacity shortages in government and the health sector, enabling a much more rapid scale-up of the response to HIV.
- *New development model.* It was expected that a global program would provide an alternative to the established models of international aid agencies, few of whose programs had managed to generate tangible progress. It was hoped that the mobilization of financing from the private sector would help redefine development financing by providing large amounts of grants and that the creation of a new institution with new rules and procedures would allow for a new model of development to work, based on an increased role of partnerships at the global and country levels. The new model would be based on performance and focused on results and accountability for results.

To a large extent, the new global programs have been quite successful. They have brought greater dynamism to the HIV/AIDS response, more resources, more innovative approaches and greater involvement of civil

society. Prominent examples of global programs in health include the Global Fund; GAVI; the Roll Back Malaria partnership program; the Stop Tuberculosis Partnership; and the International Health Partnership.

Among global programs, the Global Fund has been the most successful in terms of mobilizing financial assistance. It was established in 2002 to mobilize funds quickly and enable recipient countries to scale up their response to HIV right away (box 7.2). In that task it has proved successful: since its inception it has become a significant instrument for funding the response to the

Box 7.2: The Global Fund to Fight AIDS, Tuberculosis, and Malaria

The Global Fund was established in January 2002 as a novel mechanism for rapidly disbursing grants to governments and NGOs. Its management and operational structure is unique among development agencies. Its board consists of 19 voting members representing donors, recipient governments, NGOs, the private sector, and representatives of people living with HIV/AIDS. Representatives of international development partners also sit on the board as nonvoting members.

By design, the Global Fund does not implement or design programs; it only provides financing. Funding proposals are identified through the Country Coordinating Mechanism, which brings together donors, civil society, and governments. Money is usually disbursed to national governments in the form of two tranches, each of which requires board approval.

Until recently, nearly all funding came from bilateral donors (the exception is the Bill & Melinda Gates foundation, which provided a \$335 million grant to the Global Fund when it was created). To diversify its funding base, the Global Fund developed new partnerships with the private sector. These include the Red Product initiative and the Corporate Champion Program. Under the Red Product initiative, private firms contribute a certain portion of the profits from the sale of their products to the Global Fund. Since its launch in March 2006, this initiative has raised more than \$50 million. The Corporate Champion Program was launched in February 2008. Its objective is to mobilize support from corporations. Chevron announced that it would contribute \$30 million in cash over three years to the Global Fund. Chevron will also provide local assistance by its employees to Global Fund projects in six developing countries in Africa and Asia.

In other respects the Global Fund has followed a more traditional approach. Its basic instrument for disbursing funds remains the traditional project concept, coupled with a relatively short time horizon. Grants are provided for two years initially and extended to five years provided implementation is satisfactory. This approach has been criticized, because it makes it difficult for governments to fully integrate the funding provided by the Global Fund into their own budgets and operating procedures. In only a few countries has the Global Fund moved away from a traditional project approach and pooled its funds with those of other donors in a government basket.

pandemic. As of January 2008, the Global Fund had approved grant agreements worth \$8 billion and disbursed \$5 billion to recipients. In the process it has added legitimacy to the creation of partnerships.

Partnerships and foundations

Global programs have also proved quite attractive for philanthropic organizations such as the Bill & Melinda Gates Foundation and the Clinton Foundation. These organizations have been able to mobilize substantial funding and in the process they are reshaping the international HIV/ AIDS agenda.

Until recently, financial contributions to the HIV/AIDS response by the private sector and foundations had remained small (about \$300 million a year), but they are now rising rapidly. By 2003, the international activities of NGOs based in the United States were estimated to employ 140,000 staff and mobilize funding of \$13 billion from philanthropy (36 percent), government contributions (35 percent), and fees (29 percent) (Salamon, Sokolowski, and List 2003). Since then, further growth has taken place, especially for HIV/AIDS-related activities. It is estimated that total philanthropic funding for HIV/AIDS (including aid provided by the United States and other countries) reached almost \$1.1 billion in 2007 (UNAIDS 2008), 75 percent of it provided by the Bill & Melinda Gates Foundation (U.S. Foundation Center and the Bill & Melinda Gates Foundation).

Typically, bilateral donors, private foundations, and corporations have formed partnerships to pursue their shared goals of reversing the course of the HIV epidemic throughout the world and in the process they built new institutions for implementing these programs. Recent examples include new initiatives launched by the Global Fund such as the Red Product initiative, the Corporate Champion Program, and UNITAID, which has entered into partnership agreements with the Clinton Foundation, the Global Fund, the United Nations Childrens Fund (UNICEF), and the World Health Organization (WHO) for disbursing funds (box 7.3).

Many of the newer global partnerships seek improvements in wide-ranging areas, such as service delivery at the country level. The Bill & Melinda Gates Foundation is already the leading philanthropic foundation; the donation by Warren Buffet of about 70 percent of his estate (which Fortune Magazine estimated at about \$30 billion in 2006) can only help strengthen its role in shaping the international policy agenda.

Box 7.3: UNITAID

UNITAID is an international drug purchase facility financed primarily by a tax on international airline tickets. Its purpose is to provide long-term, sustainable, and predictable funding to increase access to and reduce the prices of good-quality drugs and diagnostics for the treatment of HIV/AIDS, malaria, and tuberculosis in developing countries. Since its launch in 2006, UNITAID has committed about \$120 million for the purchase of pediatric drugs (in partnership with the Clinton Foundation), second-line antiretroviral drugs for programs (funded by the Global Fund), and drugs and diagnostics for prevention and treatment of HIV-positive pregnant and breastfeeding women (in partnership with UNICEF and the WHO). (For more information on UNITAID, see www.unitaid.eu/hiv/aids.html.)

Foundations are playing many new roles. They are delivering an expanded program of treatment and prevention. In Botswana, for instance, the Bill & Melinda Gates Foundation, the government of Botswana, and Merck and Co. formed a partnership to improve access to treatment. Another example of the expanded role of foundation is the Clinton Foundation. It reached an agreement on antiretroviral drug pricing and trade in partnership with UN agencies. This agreement helped address policy gaps that have prevented developing countries from being able to locally produce antiretroviral drugs or import such drugs at affordable prices.

Vertical bilateral assistance programs

Verticalization of assistance is not limited to global funds. It is also evident in some bilateral programs such as PEPFAR. PEPFAR represents the first systematic attempt to reverse the course of the HIV epidemic by providing commensurate financial and technical support and concentrating it in the 15 most affected countries (12 of which are in Africa). The United States launched the first phase of the program in January 2003, with an initial funding authorization of \$15 billion for a five year period. On June 2008, PEPFAR program got a substantial boost as President Bush approved a funding authorization amounting to \$48 billion (including \$2 billion for the Global Fund and \$9 billion for malaria and tuberculosis). PEPFAR was initially designed as an emergency response to meet specific targets. This approach has made it possible for PEPFAR to achieve substantial results in a short period of time. However, the disease-specific

design of PEPFAR entails substantial costs, duplication of functions, and institutional mechanisms for the following reasons:

- New institutional mechanisms often duplicate or overlap with existing ones. For instance, a supply chain management system was created for supporting the purchase of drugs, laboratory materials, and medical supplies.
- New implementation arrangements were established to quickly overcome constraints stemming from lack of management capacity and ability to meet the fiduciary and monitoring requirements of PEPFAR. In practice, this meant that large, international NGOs were chosen to implement programs, based on their ability to meet stated targets and U.S. fiduciary requirements. This approach has resulted in high unit costs of service delivery.
- Flexibility at the country level is limited. Funding is allocated largely on the basis of requirements set by the U.S. Congress for prevention, treatment, and care. As a result, the allocation of funds is fairly uniform across countries, making it difficult to tailor programs to local conditions.

These issues are not specific to PEPFAR only. They are very much part of the trade-off involved in setting up disease-specific programs. On one hand, vertical programs can be extremely successful in mobilizing funds. But on the other hand, such programs also run into a number of problems, which severely limit their overall effectiveness in providing a long-term sustainable mechanism for reversing the course of epidemics.

The growing complexity and cost of the HIV/AIDS architecture: has the solution become the problem?

When the global HIV/AIDS programs were created, they were promoted as providing a solution to the problem faced by the response to HIV. The perceived problem, especially in Africa, was that the interventions required for halting the epidemic were well known but the funding needed for implementing them fell far short of that needed to make an impact. The solution adopted was to create global programs to scale up rapidly the response to HIV. At the global level, funds would be mobilized from a variety of sources; at country level, interventions would be implemented through partnerships involving civil society organizations.

This model succeeded extremely well in mobilizing new sources of funding, creating innovative approaches and tapping the capacities of non-governmental organizations. But it also encountered costs. The number of projects rose while the average size of projects declined resulting in increased managerial burden. Due to the difficulties of coordinating a multitude of actors, there is overlap and waste in many of the projects that are implemented and accountability and transparency are being threatened.

Increasing costs. Across all development sectors, the number of bilateral donors grew from 5–6 in the mid-1940s to at least 56 in 2007. Even more rapid has been the growth in the number of organizations, funds, and programs, which include about 150 multilateral agencies. In Haiti, for example, a small, low-income, high-prevalence country, more than 700 NGOs are reportedly active, and HIV/AIDS-related funding is potentially available from 22 DAC donor countries; the 11 UN organizations that cosponsor UNAIDS; other UN organizations, such as UNICEF; global programs (such as the Global Fund, Care International, Doctors without Borders); and PEPFAR.

Not surprisingly, this architecture has resulted in growing administrative and transaction costs. For total official development assistance (not just for HIV/AIDS) to Africa, administrative costs rose from 5 percent in the 1960s to nearly 8 percent in the 1990s and in 2000–06 (Sundberg and Gelb 2006). There is also some indication that the costs incurred by NGOs are even higher. In the United States, administrative program costs and fundraising expenses amounted to 11 percent of U.S.-based international nonprofit organizations (Kerlin and Thanasombat 2006).

Costs are also increasing at country level. Faced with a multitude of HIV/AIDS programs with different procedures and requirements, many governments have found themselves spending more time managing competing donor demands than establishing their own priorities and implementing their own programs. Common problems include the following:

- Competition among donors and recipient agencies, leading to expensive duplication—and even conflicts—in programming.
- Multiplication of parallel implementation channels, which has led to the establishment of implementation units for projects in parallel to the government's own structure. One government body or external partner may

route its resources through a national AIDS coordinating authority, for example, while another uses a ministry of health, without coordination between the two. In some cases the creation of new programs funded by global funds has led to a diversion of human resources from existing programs, weakening the existing institutional capacity of government.

- Excessive influence of donor country domestic politics on HIV/AIDS program decisions, which can result in inappropriate prevention and care schemes in local settings (an example is the controversy surrounding the reduced priority given to condoms and the increased priority given to abstinence).
- Uncertainty about future funding, which discourages countries from committing themselves to providing antiretroviral therapy over the long term or increasing health payrolls when they do not know whether funding will be available.

These problems cast doubt on the current “business” model. Key questions that need to be addressed include the following:

- How can the aid assistance provided by the proliferation of actors be harmonized?
- How can the focus of global programs on designing vertical responses be reconciled with funding needs that cut across all sectors?
- How can global programs be better integrated in national planning and budgeting systems, so that they support better development efforts?
- Is the current business model sustainable? Do the benefits that global programs generate outweigh the administrative burdens they impose on donors and recipient governments?

Inadequate harmonization of donor assistance. The 2003 Rome High-Level Forum identified a general framework for increased harmonization. That framework was further refined at the 2005 Paris High-Level Forum on Aid Effectiveness, during which more than 100 donors endorsed a Declaration of Aid Effectiveness. This declaration set out five major principles: ownership of development strategies by partner countries, alignment of donor support with these strategies, harmonization of donor actions, managing for results, and mutual accountability.

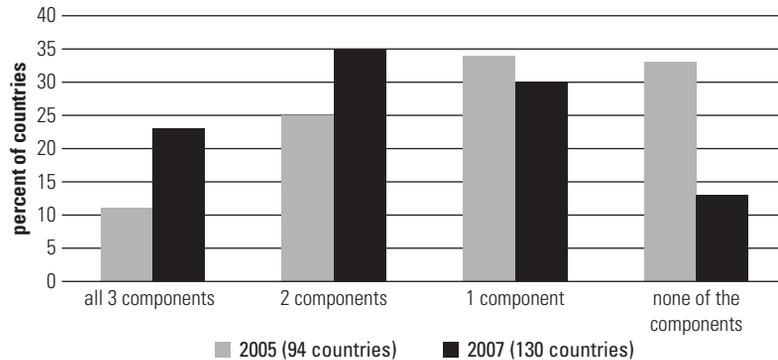
Achieving these principles has been a challenge. Results of the 2006 monitoring survey of the 12 indicators of the Paris Declaration show that alignment and harmonization actions have been undertaken but that little progress has been achieved in half of the surveyed countries (OECD 2007b). These findings highlight the need for more drastic actions to improve the financial architecture.

A similar conclusion applies to efforts to harmonize and coordinate the AIDS response. The 2004 agreement on the “Three Ones” marked a fundamental step, because it outlined what harmonization would mean for the AIDS response. It envisaged that instead of establishing different systems, donors would fund the AIDS response in a manner that supports one national AIDS coordinating authority, one national AIDS action framework, and one monitoring and evaluation system (UNAIDS 2004).

Implementation of the “Three Ones” principles moved forward in 2005. Following a March review meeting of the global response to AIDS, a global task team was created to develop a set of recommendations for improving the institutional architecture of the AIDS response (UNAIDS 2005a). These recommendations led to the proposal that UN organizations reach a division of labor in three strategic focus areas: (i) strategic planning, governance, and financial management; (ii) scaling up interventions; and (iii) monitoring and evaluation, strategic information, knowledge sharing, and accountability (UNAIDS 2005b).

Since 2005, much greater importance has been given to developing National AIDS Strategic Frameworks, strengthening national AIDS authorities, and establishing a common monitoring and evaluation framework (figure 7.7). In several countries, coordination of programs is increasingly being carried out through the creation of donor groups. But too often, especially in low-income, high-prevalence countries, governments find themselves helpless to effectively coordinate a response to HIV that may include hundreds of actors reporting to a variety of funding sources.

Mismatch between needs and resources. Currently, there is a broad disconnect between the type of expenditures needed for expanding the response to HIV and what donors are financing. What donors want to finance are expenditures in foreign currency, such as foreign technical assistance; imported commodities (condoms, antiretroviral drugs); and investment. What governments look for is funding expenditures that are recurrent (for example, wages); denominated in local currency; and cut across several sectors rather

Figure 7.7: Country Progress in Improving the Quality of the Three Ones

than being earmarked for a specific project. Such expenditures are crucial for strengthening the capacity of governments to manage large aid inflows, building the capacity of the health sector to expand its delivery of services, and implementing interventions in other sectors, such as education. To a large extent, the mismatch between needs and resources reflects a failure on the part of global programs to provide resources for funding the direct and indirect costs of the response to HIV.

Unfunded costs of the response to HIV. Initial estimates of the cost of a comprehensive response to HIV were built on the assumption that the HIV response could be scaled up without having to invest in expanding the health infrastructure and the number of health professionals, and in building systems for delivering drugs and managing the response. This assumption was realistic because there was some unused capacity. In most low-income, high-prevalence countries, up to 45–50 percent of the people had access to health services. In comparison, fewer than 10 percent of the people living with HIV had access to prevention services and treatment. This suggested that access to HIV prevention, treatment, and care could be increased substantially without bumping into the upper limit created by the limited availability of health infrastructure.

In many countries, however, the coverage of treatment has risen dramatically in recent years reaching 31 percent for the low- and middle-income countries as of December 2007 (UNAIDS 2008). Not surprisingly, further expansion of AIDS treatment and care programs is now proving difficult in

several countries without additional investments in health infrastructure and medical personnel, a fact highlighted by the recent emphasis on building up health systems. In addition, as the response has grown and now involves many actors, management and coordination issues have also tended to overwhelm the existing capacities of governments.

Over time, some of these missing components have been gradually added to the AIDS response, resulting in steady increases in cost (Vassal and Compennolle 2006). New interventions now seek to strengthen the health sector (training health professionals, providing salary supplements to health professionals, improving laboratory capacity); address socioeconomic factors (gender-related violence, human rights, and stigma) and reduce global program costs (through advocacy, international technical assistance, and global coordination). The cost of providing universal access to HIV/AIDS prevention, treatment, care, and support in developing countries is now estimated at \$42 billion in 2010 and \$54 billion in 2015 (UNAIDS 2007a).¹² But even these figures may underestimate the real cost of providing universal access to prevention, treatment, and care.

Is the answer more funds for global programs? Vertical funds have worked well in a number of areas, including the global campaigns against smallpox and polio. These programs were relatively simple “one-off” medical interventions using proven technologies that could be easily replicated across countries. In contrast, the response to HIV is complex and continuous. As stressed by UNAIDS, the response to HIV has to be multisectoral in the countries where it has reached the stage of a generalized epidemic. In all cases, it needs to fund a variety of programs outside the strictly defined health sectors.

A key challenge is to reconcile the vertical design of global funds with funding needs that now extend beyond the strictly defined “HIV/AIDS sector.” This tension affects many components of the response to HIV. Examples include:

- *Human and physical infrastructure in the health sector.* In several countries the expansion of the response to HIV requires additional training of doctors and other health providers and the building of health facilities, especially in rural areas. Some of these investments are included under the estimated cost of the world’s response to HIV; if all of them were included, it is unlikely that the global HIV/AIDS funds, which have little expertise

in these areas, could efficiently manage their allocation. It is partly for this reason that a new initiative—the International Health Partnership—has been created to provide funds directly to the health sector rather than through the HIV/AIDS funding mechanism.

- *Treatment of opportunistic infections.* Should the AIDS program fund tuberculosis drugs only for AIDS patients or for all patients? In principle, the response to HIV should fund all patients suffering from opportunistic infections. In practice, the analysis of spending (National AIDS Spending Assessments) reveals that the treatment of opportunistic infections is rarely funded by the HIV response. The reason is that such care is typically provided by ministries of health, which use their own procedures to procure drugs. This suggests that funding should be provided through the health sector (rather than through the AIDS response) for covering the treatment cost of opportunistic infections.
- *AIDS orphans.* While it is widely agreed that all orphans (rather than just AIDS orphans) should receive support, doing so in countries such as China and India (which have a large number of orphans but few AIDS orphans) would certainly exceed the financial resources of global programs. Funding for orphans including AIDS orphans would seem to be best provided by social protection programs or poverty reduction programs. In the case of AIDS orphans, doing so would also remove the stigma associated with programs that target only AIDS orphans.

It is unrealistic to expect HIV–dedicated programs to fully fund the whole array of interventions that are required for the HIV response to deliver universal access. Besides the areas mentioned above, needed actions are most likely to include universal primary and secondary education, broad access to health services, strong economic opportunities for women, well-functioning social support systems and local governments, and communities knit by strong social trust (Bonnell 2000). These are the main economic factors that have been shown to be strongly correlated with the HIV response and important for reducing the spread of HIV, especially in the case of generalized epidemics.¹³ Addressing them would, however, require a substantial increase in funding from other sources than the global funds.

Governance and community-based development. A key expectation of the HIV/AIDS global programs was that civil society organizations would provide the backbone of the response. Community-based development

initiatives were viewed as providing a mechanism for making development more inclusive, empowering poor people, and allowing for a rapid scaling-up in the response to HIV in a manner that would be sustainable. This vision became one of the cornerstones of HIV/AIDS global programs and provided the justification for the proliferation of NGOs, civil society-based organizations, and faith-based organizations.

Critics of this approach note that community-based development projects tend to be dominated by elites and that ownership of projects by beneficiaries would remain an elusive goal unless projects were based on genuine empowerment of the rural poor. Given the pressing need to scale up the response to HIV, there was a strong risk that donor agencies would skip the empowerment phase and ask beneficiaries to form groups and elect leaders to manage the newly created organizations (Mansuri and Rao 2004). Confirming these risks, a recent study shows that the formation and training of village groups in Kenya associated with the provision of tools and agricultural technology had the unexpected effect of stimulating the entry of wealthier, more educated members; the poorer initial members tended to leave the group that had been created to protect their interest (Gugerty and Kremer 2007).

These issues have been exacerbated by the rapid expansion of financial resources, which have provided strong incentives for local entrepreneurs to create new NGOs in order to secure funds. As a result, the proliferation of NGOs has become less a sign that civil society has gained new political weight than the consequence of channeling most HIV/AIDS funding through such organizations. In such an environment, it is not surprising that issues of mismanagement of funds and corruption would surface (Transparency International 2006b). Overall, the corruption affecting the response to HIV does not look very different from the corruption found in other sectors. The issue is simply that the scale up of financing combined with a multiplicity of new agencies has tremendously increased the opportunities for corruption, particularly given the priority often given to disbursing funds quickly with minimal attention given to the creation of adequate systems for controlling corruption.

These developments indicate that a much better balance is needed between the specific objectives of global programs to rapidly scale up the response to HIV and the capacities of countries to effectively manage the resources provided. In several countries, especially the low-income, high-prevalence countries in Sub-Saharan Africa and some countries in the

Caribbean, the increase in funding for HIV/AIDS programs has been quite rapid and resulted in an unbalanced institutional development. Civil society organizations have been an important beneficiary of funding; government systems have not benefited to the same extent. Because it has been viewed as an emergency response, relatively little effort has been invested to build the required systems for ensuring that HIV/AIDS funds are appropriately used and accounted for. Resolving these imbalances will require much better integration of global programs in the local governance structure of countries.

The Way Forward

The global response to HIV represents a challenge, because there is no global architect in charge. Much funding has become “privatized,” in the sense that it is channeled through private foundations and global funds working with a variety of civil society organizations. In practice, coordinating this multitude of actors has become extremely difficult for most low-income, high-prevalence countries. Faced with the problem, some countries may simply decide not to rely on external aid for funding their response to HIV.

Middle- and upper-middle-income countries can afford to turn away offers of assistance that do not fit within their current HIV/AIDS programs (recent examples include Brazil or South Africa). Low-income countries rarely have this option. In these countries, donors have provided significant financial resources. But there is growing evidence that they are not generating as much benefits as they should as too few of the people in need of prevention, treatment, and care services are benefiting from them.

An essential reform is to enhance the role of National AIDS Strategic Frameworks and annual action plans. Knowing your epidemic and where the next infections are going to occur are key for reversing the HIV epidemic. But for implementing a sustainable response, knowing your HIV response is also essential. In most cases, this means building up the needed systems for improving the allocation of resources at the country level. A first step toward that objective was taken by UNAIDS and the Global Fund, which in 2008 reached an agreement to improve the coordination and effectiveness of their respective efforts. Under the agreed framework, UNAIDS would help countries develop evidence-informed National AIDS Strategic Frameworks, provide support to the technical review process of strategies,

and technical assistance to speed up the implementation of programs approved by the Global Fund.

A second step would be to better integrate the funding systems of global and vertical programs into national systems. One option that has been adopted by some countries is to provide support through a single pooled fund that would provide earmark support for the implementation of countries' National AIDS Strategic Frameworks. This would allow countries greater flexibility in funding their response. At the same time, however, coordination and harmonization mechanisms will have to be strengthened at the country level.

Looking to the future, current estimates suggest that scaling up the HIV response to reach universal access for HIV prevention, treatment, care, and support would require available financing to increase from \$10 billion in 2007 to \$22 billion in 2010 and \$35 billion in 2015 (UNAIDS 2007a). Will donors meet these financial needs and through which channels? Currently, there are no realistic plans indicating how the annual disbursement of funds for HIV would increase by some \$26 billion between 2007 and 2015 and through which channels these resources would be disbursed.

In recent years, the bulk of the increase in international financing for HIV has taken place through global programs such as the Global Fund or bilateral, vertical programs such as PEPFAR. Together PEPFAR and the Global Fund accounted for close to 60 percent of international commitments in 2007. While these two sources can be expected to continue to increase, it seems unlikely that they can disburse the amounts of new aid that should be disbursed by 2015. Achieving this objective would require substantial institutional transformation in the manner in which the Global Fund operates, in particular to finance investments in health sector reform and training of health professionals. Concretely, this would mean creating another international financial institution dedicated to HIV and health financing.

Traditionally, international financial institutions such as the International Development Association (IDA) and other multilateral or regional agencies have provided the main vehicle for channeling development assistance to social sectors including health. So far, however, their funding of the HIV response has been limited by the scarcity of grant funding and the competition for such funds from other sectors. Implicitly it was assumed that while dedicated funds such as the Global Fund would provide a conduit for mobilizing HIV funding from bilateral donors, other multilateral institutions such as the World Bank would help countries build the systems needed for disbursing the international assistance efficiently. This model is

relevant but it has resulted in an unfunded mandate for international financial institutions. Reversing this situation may be essential for the long-term success of the HIV/AIDS response.

Notes

1. The Organisation for Economic Co-operation and Development defines official development assistance to include grants, loans, and credits provided by official agencies to developing countries and to multilateral institutions for assistance to developing countries. Such assistance is administered to promote the economic development and welfare of developing countries, is concessional, and contains a grant element that represents at least 25 percent (calculated at a rate of discount of 10 percent) of total assistance.
2. Debt relief does not increase the resources of recipient countries if it was not being repaid. In such cases, it helps reduce the stock of debt but does not create new resources.
3. These estimates were prepared for the 2001 United General Assembly Special Session on HIV/AIDS (UNGASS). During this session delegates agreed that HIV/AIDS is a national and international security issue of the highest priority and signed a declaration of commitment that promised innovative responses.
4. Non-DAC countries include OECD countries that do not belong to DAC (such as the Republic of Korea, Mexico, Turkey, and several European countries) and non-OECD countries, (such as Brazil, China, India, and the Russian Federation).
5. Unlike pledges, which are not binding, commitments require that a legal agreement be signed with recipient countries.
6. For countries that report disbursements to the OECD, disbursements rose from 68 percent in 2003–04 to 81 percent in 2005–06, this increase reflects the natural institutional build-up in bilateral programs such as PEPFAR, which was launched in 2004. In 2007, disbursements as a percentage of commitments fell back to 75 percent.
7. For a similar analysis see: Shiffman (2007).
8. The CRS database of the OECD was queried and disaggregated as follows. Categories 120 and 130 cover health and population funding. These categories were then disaggregated into separate subcategories as follows: HIV/AIDS is code 13040 (STI control) and 16064 (social mitigation of HIV/AIDS). Infectious disease is code 12250. Population and reproductive health is found under codes 13010, 13020, 13030, and 13081.
9. This figure is obtained by comparing the estimate published in the 2004 UNAIDS report to the estimate presented in the 2008 report on the global epidemic.
10. This estimate is derived by subtracting from the total funding (\$10 billion) mentioned in the 2008 UNAIDS report on the global epidemic the sum of bilateral

- disbursements (\$3.7 billion), Global Fund disbursements (\$0.8 billion), and disbursements by World Bank and international foundations/NGOs (\$1.3 billion).
11. For an analysis of funding gaps, see Bonnel (2008).
 12. As defined by UNAIDS, universal access does not mean that all the country's population would have access to services but only that a certain percentage of the people in need of services would have access to services. In practice, this percentage varies depending on the type of services and the nature of the HIV epidemic.
 13. This list includes only the key economic factors and it is not intended to be comprehensive as there are other factors likely to influence the spread of HIV (for example, circumcision, sexual concurrent partnerships, and others).

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Impact of and Response to HIV/AIDS: Public Policy Challenges

Markus Haacker

Twenty-five years since HIV/AIDS came to the attention of the general public, the epidemic has reversed gains in life expectancy in many countries (in some cases gains achieved over several decades), increased mortality among young adults, and increased the number of orphans. HIV prevalence in Sub-Saharan Africa (particularly southern Africa) remains the highest in the world, although the numbers of new infections in many African countries have declined from their peaks and much of the increase in number of people living with HIV/AIDS over the past few years was accounted for by rapidly growing epidemics (from a small base) in other regions of the world, notably Asia and Eastern Europe (UNAIDS 2008).

The international response to HIV/AIDS has made great progress, contributing to the decline in the number of new infections and vastly expanding access to treatment, including in many countries in which it had been all but unavailable. These achievements provide no reason for complacency, however: the number of people living with HIV/AIDS remains at or close to its peak, HIV/AIDS-related mortality has continued to rise over the past years, and access to treatment remains limited in many areas.

Sustaining the successes achieved so far represents new policy challenges: improved access to treatment has increased the number of people living with HIV/AIDS (Over 2004); just sustaining the level of access to treatment achieved so far will require continuing expansion in the number

of patients receiving treatment. In addition, the financial costs of treatment will rise if a growing number of patients progresses to more expensive “second-line” treatments.

Against this background, this chapter analyzes some of the implications of HIV/AIDS for public policy. Rather than analyze the policy response to HIV/AIDS, the chapter focuses on the implications of HIV/AIDS for attainment of the entire range of a government’s policies. Casting the net this widely has advantages in terms of spelling out linkages between the response to HIV/AIDS and broader fiscal or civil service issues. The analysis is intended to complement more detailed sectoral discussions of the challenges of implementing the response to HIV/AIDS at the sectoral level.

The chapter is organized as follows.

The first section provides a stock-taking exercise of the state of the global AIDS epidemic, discussing recent trends in infection rates and mortality, and highlighting some developments on the regional or country level, including the demographic implications of increased access to treatment.

The second section describes how HIV/AIDS affects the government’s capacities. Even without taking into account additional expenditures associated with HIV/AIDS, the rate of growth of fiscal revenues declines. However, most of the section discusses the impacts of HIV/AIDS on public servants, and the implications of these impacts for government capacities and finances.

The third main section focuses on the response to HIV/AIDS. One aspect covered is the financing of HIV/AIDS–related government expenditures, and the role of external financing both in overall health expenditures and in HIV/AIDS–related expenditures. This discussion is complemented by a discussion of the role of human resources in scaling up the response to HIV/AIDS, looking both at domestic resources and the role of migration. An empirical section analyzing determinants of scaling-up pulls together some of the strings of the preceding discussion, covering the role of inputs to health services and the response to HIV/AIDS as well as the role of the effectiveness of national health systems.

Overview of the Global AIDS Epidemic

Data from the *2008 Report on the Global AIDS Epidemic* (UNAIDS 2008) reveal several trends in the global HIV/AIDS epidemic (table 8.1 and figure 8.1):

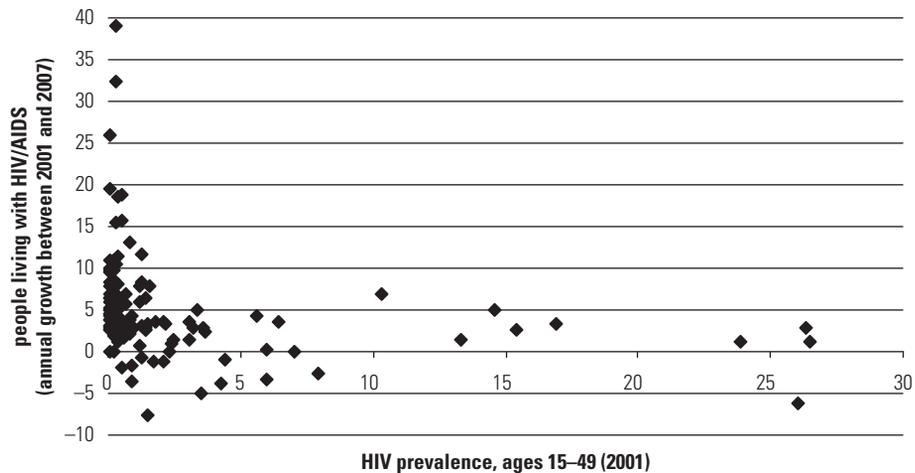
Table 8.1: HIV/AIDS Prevalence, Incidence, and Deaths, by World Region, 2001 and 2007

	YEAR	PEOPLE LIVING WITH HIV/AIDS			NUMBER OF NEW INFECTIONS		DEATHS FROM HIV/AIDS	
		NUMBER (MILLIONS)	ANNUAL RATE OF GROWTH (PERCENT)	ADULT PREVALENCE (PERCENT)	NUMBER (MILLIONS)	ANNUAL RATE OF GROWTH (PERCENT)	NUMBER (MILLIONS)	ANNUAL RATE OF GROWTH (PERCENT)
Sub-Saharan Africa	2001	20.40		5.7	2.1		1.30	
	2007	22.00	1.3	5.0	1.9	-1.9	1.50	2.4
Middle East and North Africa	2001	0.30		0.3	0.05		0.02	
	2007	0.38	4.0	0.3	0.04	-3.1	0.03	3.5
South and South-east Asia	2001	4.20		0.4	0.32		0.25	
	2007	4.20	0.0	0.3	0.29	-1.9	0.34	5.3
East Asia	2001	0.49		0.1	0.08		0.015	
	2007	0.74	7.1	0.1	0.05	-6.4	0.040	17.8
Oceania	2001	0.03		0.2	0.00		0.001	
	2007	0.07	19.8	0.4	n.a.	n.a.	n.a.	n.a.
Latin America	2001	1.40		0.5	0.11		0.05	
	2007	1.70	3.3	0.5	0.11	-0.1	0.06	5.0
Caribbean	2001	0.21		1.1	0.02		0.02	
	2007	0.23	1.5	1.1	0.03	4.4	0.01	-1.1
Eastern Europe and Central Asia	2001	0.65		0.4	0.22		0.01	
	2007	1.50	15.0	0.8	0.10	-12.6	0.06	43.3
Western and Central Europe	2001	0.61		0.2	0.03		0.01	
	2007	0.73	3.0	0.3	0.03	-1.1	0.01	-3.0
North America	2001	1.10		0.6	0.01		0.00	
	2007	1.20	1.5	0.6	0.03	12.0	0.00	4.2
Total	2001	29.50		0.8	3.00		1.70	
	2007	33.00	1.9	0.8	2.70	-1.8	2.00	2.7

Source: UNAIDS (2008) and author's calculations, based on UNAIDS (2008). Data on new infections have been calculated by the author based on country-level data released by UNAIDS, and may be subject to rounding errors.

Note: Growth rates shown relate to the annual rate of change between 2001 and 2007. Adult prevalence rates relate to the population aged 15–49.

- Globally, the number of people living with HIV/AIDS increased only modestly between 2001 and 2007, and global HIV prevalence stabilized. While the number of new infections declined in many regions, HIV/AIDS-related mortality increased in almost all regions.
- Sub-Saharan Africa remains the worst-affected region, with 22 million people living with HIV/AIDS. However, the number of new infections is estimated to have declined by about one-quarter, and average adult HIV prevalence in the region declined from 5.7 percent in 2001 to 5.0 percent in 2007. While increased availability of treatment slows down mortality,

Figure 8.1: HIV Prevalence and Number of People Living with HIV/AIDS, 2001–07

Source: Author's calculations, based on UNAIDS (2008).

the number of HIV/AIDS-related deaths still increased between 2001 and 2007.

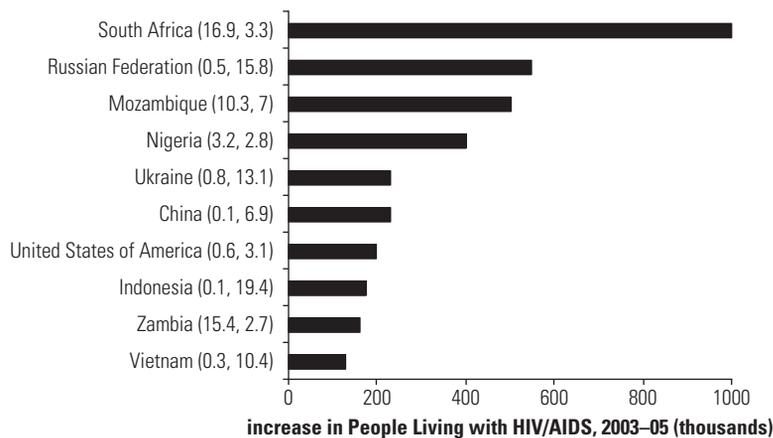
- The epidemic has spread most rapidly in Eastern Europe and Central Asia, where the number of people living with HIV/AIDS more than doubled and deaths increased by a factor of more than six between 2001 and 2007. However, the number of new infections in the region is now below its 2001 level.
- In East Asia, the number of people living with HIV/AIDS increased by about 50 percent between 2001 and 2007, although HIV prevalence remains low.
- In absolute numbers, South and Southeast Asia (containing China and India) remains the region with the second-highest number of people living with HIV/AIDS. Estimates for this region have been revised downward by about 50 percent since the 2006 *AIDS Epidemic Update* (UNAIDS/WHO 2006b), largely reflecting adjustments in the estimates for India.

One increasingly important determinant of HIV prevalence and mortality is increased access to treatment. Most directly, the number of HIV/AIDS-related deaths declines; additionally, the reduced mortality among people

living with HIV/AIDS tends to increase HIV prevalence. Globally, access to treatment has increased to 31 percent of people needing antiretroviral therapy, with about 3 million receiving it as of end-2007. In sub-Saharan Africa, treatment coverage was estimated at about 30 percent (with 2.1 million people receiving treatment). These improvements partly explain why the number of people living with HIV/AIDS has continued to rise, even though the number of new infections has declined between 2001 and 2007. Additionally, the data on increased access to treatment suggest that mortality would have increased dramatically without treatment, as an increasing number of people living with HIV/AIDS began to develop the full symptoms of AIDS (following, with a lag, the increase in the number of new infections in the late 1990s).

The geography of HIV/AIDS is changing, as the epidemic spreads across the world. While Sub-Saharan Africa remains, by a large margin, the worst-affected region, high rates of increase in other parts of the world, most notably Asia, mean that that only 4 of the 10 countries with the largest increases in people living with HIV/AIDS are in Sub-Saharan Africa (figure 8.1 and 8.2). Notably, these 10 countries account for more than the total increase (105 percent) in the number of people living with HIV/AIDS, while the number of people living with HIV/AIDS has declined most significantly (in absolute numbers) in Côte d'Ivoire, Uganda, India, and Zimbabwe.

Figure 8.2: Ten Countries Account for Most of Increase in Number of People Living with HIV/AIDS between 2001 and 2007



Source: UNAIDS/WHO 2008.

Note: 2007 HIV prevalence (ages 15-49) and annual rate of growth in number of people living with HIV/AIDS between 2001 and 2007 in parentheses.

One of the most visible consequences of HIV/AIDS is the increase in the numbers of orphans (table 8.2). This increase represents a serious challenge to institutions and networks providing support to households affected by HIV/AIDS or surviving children, which often have limited capacities to adapt to a several-fold increase in the number of orphan.

To understand the social challenges and the challenges to public policy associated with rising orphan rates, it is important to bear in mind that these are averages across the young population; orphan rates are very low at birth and rise with age. An example consistent with an average orphan rate of 15 percent of the population at ages 0–17, based on an assumed annual population growth rate of 1 percent and an annual mortality rate among the young of 0.05 percent, shows that such a rate is consistent with an orphan rate rising from close to zero at birth to about 18 percent at age 10 and to 34 percent at age 17 (figure 8.3).¹

Effect of HIV/AIDS and the Government's Capacities

HIV/AIDS represents a constraint to public policy to the extent that it affects the government's fiscal resource envelope and increases morbidity and mortality, including of civil servants. Evidence of the impact of HIV/AIDS on government revenues is largely unavailable. A few studies attempt to estimate

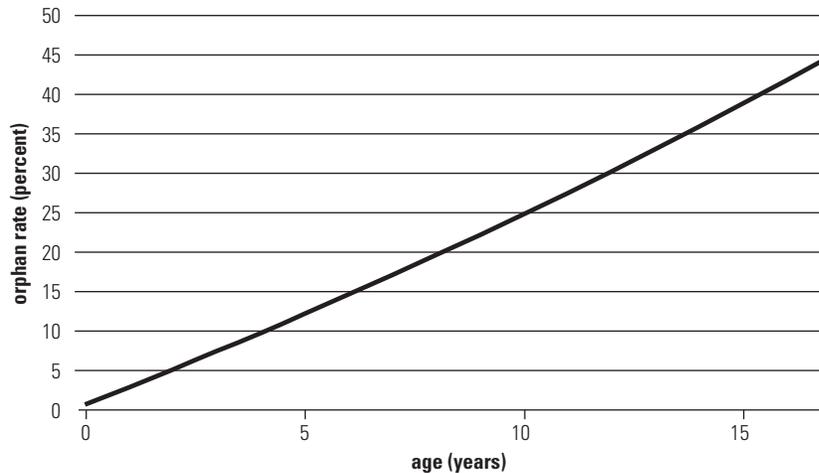
Table 8.2: Impact of HIV/AIDS on Number of Orphans in Sub-Saharan Africa, 2001 and 2007

COUNTRY	NUMBER OF AIDS ORPHANS		AIDS ORPHANS (PERCENT OF POPULATION UNDER 18)		ALL ORPHANS (PERCENT OF POPULATION UNDER 18)	
	2001	2007	2001	2007	2001	2007 ^a
Botswana	57,000	95,000	7.3	12.1	12.5	17.3
Central African Rep.	32,000	72,000	1.6	3.4	11.0	12.8
Lesotho	37,000	110,000	4.0	11.6	14.0	21.6
Malawi	240,000	560,000	3.8	7.5	11.5	15.2
Mozambique	120,000	400,000	1.3	3.7	12.3	14.7
Namibia	23,000	66,000	2.5	7.1	9.1	13.7
South Africa	400,000	1,400,000	2.2	7.6	8.7	14.1
Swaziland	19,000	56,000	3.6	10.6	10.4	17.4
Zambia	390,000	600,000	7.0	9.6	15.0	17.6
Zimbabwe	720,000	1,000,000	11.6	16.3	17.0	21.7
Sub-Saharan Africa	6,500,000	11,600,000	1.8	2.9	13.7	14.8

Source: Author's calculations, based on UNAIDS (2008), United Nations Population Division (2007), and UNAIDS/UNICEF/USAID (2004).

a. Assumes that number of non-AIDS orphans grows at same rate as young population.

Figure 8.3: Percentage of Orphans by Age Consistent with Average Orphan Rate of 15 Percent among the Population under Age 17



Source: Author's calculations.

the impacts of HIV/AIDS on key components of government revenues (see Haacker [2004] for a more comprehensive discussion). In our discussion, we focus on the impact of HIV/AIDS on the size of the tax base, proxied by macroeconomic variables such as GDP.

From a public policy perspective, the impact of HIV/AIDS on GDP and similar macroeconomic indicators is important because it represents not only an objective of public policy (raising living standards) but also a means of attaining a wide set of policy objectives. Despite widespread perception that HIV/AIDS slows economic growth, the empirical evidence in support of this view is very weak: even in the worst-affected countries, HIV/AIDS has not had a major impact on GDP growth.

Haacker (2006), for example, finds that in southern African countries in which the HIV prevalence rate is 15–35 percent, HIV/AIDS is associated with a decline in per capita GDP growth of less than 1 percentage point. If this is indeed the case (the observed differences are too small to allow a firm conclusion to be drawn), the impact of HIV/AIDS on per capita GDP in most countries would be very small. Because such growth comparisons are not suitable to identify long-term growth effects (the slowdown may be a one-off adjustment within the sample period), they are not speculated on here.

While there is some disagreement on the impact of HIV/AIDS on GDP per capita, fueled by only weak empirical evidence, most observers agree that HIV/AIDS has a negative effect on total GDP growth, in line with the slowdown in population growth associated with HIV/AIDS.² As a result, the government's tax base grows more slowly.

Two additional considerations are noted but, in light of weak data, not discussed at length here. First, the impacts of HIV/AIDS on government revenues are more complex than the discussion of the impacts on the tax base suggest. HIV/AIDS may affect the ratio of certain taxes to GDP (if, for example, HIV/AIDS affects the profitability of companies, by reducing productivity or increasing personnel expenditures or if the composition of imports shifts). Second, a smaller population results in a decline in the demand for certain government services. The net impact of the decline in population growth on the government's capabilities to attain certain objectives may therefore be smaller than the gross impact.

One of the consequences of a slowdown in growth for the government's resource envelope arises from the dynamics of public debt. The most common measure of a country's indebtedness is the debt/GDP ratio. By increasing debt (D), an increase in the government deficit raises this ratio; an increase in GDP (Y) reduces it. The evolution of the debt/GDP ratio can be described by

$$\text{Percentage change in } \left[\frac{D}{Y} \right] = r + f \frac{Y}{D} - g - n$$

where r stands for the interest rate on public debt; f denotes the government deficit (including grants, but excluding interest on public debt) as a percentage of GDP; g is the rate of growth of per capita GDP; and n is the rate of population growth. The rate of GDP growth thus is equal to $g + n$.

Suppose that the government aims to maintain the debt/GDP ratio at some level $\left[\frac{D}{Y} \right]^*$. Doing so requires that the fiscal deficit does not fall below a level, given by

$$f = (g + n - r) \left[\frac{D}{Y} \right]^*$$

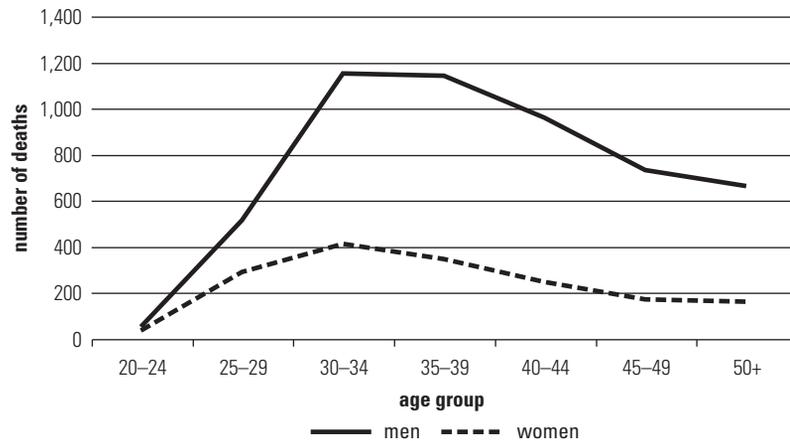
As HIV/AIDS slows economic growth (as g , n , or both decline), it has some implications for the fiscal balance required to maintain the debt/GDP ratio at a sustainable level. If, for example, the government aims to keep this

ratio at 50 percent of GDP and GDP growth declines by 1 percentage point, a fiscal adjustment of 0.5 percent of GDP would be needed. For some of the worst-affected countries, the United Nations Population Division (2007) estimates that the rate of population growth has declined by about 1 percentage point. Even maintaining moderate levels of public debt of 20–30 percent of GDP would require an adjustment in the fiscal balance of 0.3–0.5 percent of GDP.

A decline in government revenues (or an increase in the costs of pensions and other benefits) can have an important and disproportionate impact on the fiscal balance, because HIV/AIDS financing is project related. If, for example, the indirect fiscal costs of HIV/AIDS (revenue losses, increases in payroll, and social expenditures) amount to 0.5 percent of GDP, the impact on the fiscal balance would be the same as the costs of a national response to HIV/AIDS totaling 5 percent of GDP, 90 percent of which was covered by external grants.

The most direct impacts of HIV/AIDS on government's capacities, however, occur through its effects on the delivery of public services through increased morbidity and mortality among government employees. Because data on morbidity or mortality among public servants are scarce, estimates of the impacts of increased attrition usually rely on demographic estimates for the total population. While this may represent the best available method for some back-of-the-envelope calculations on the order of magnitude of the impact of HIV/AIDS on public services, it can yield very misleading results, especially when there are indications that HIV prevalence varies by socioeconomic subgroup, education, or income or if there is an urban–rural differential in prevalence rates. Moreover, in many countries government employees, unlike the majority of the general population, are covered by a medical insurance scheme. In the context of expanded access to treatment, this means that survival rates among government employees may be much higher than they are for the rest of the population.

As an illustration of the impact of HIV/AIDS on the mortality of government employees, summary data from one of the few comprehensive studies on trends in mortality are presented (Malawi and UNDP 2002). The data cover five ministries that together employ 70 percent of the Malawian civil service. Although the study does not attribute deaths to causes, it finds that death-related attrition increased substantially between 1990 and 2000, from 0.1 percent to 0.7 percent at the Ministry of Education, for example, and from 1.1 percent to 2.7 percent within the police service (figure 8.4). The

Figure 8.4: Deaths among Civil Servants in Malawi, by Age and Gender, 1990–2000

Source: Malawi and UNDP 2002.

Note: Data cover five ministries that together employ 70 percent of the Malawian civil service.

pattern of mortality, which peaks in the 30–34 age group, strongly suggests that the rise in mortality can be attributed to HIV/AIDS.

The impact of the increased attrition on the effectiveness of government services depends on the economic context. In Malawi, vacancy rates were very high (37–77 percent). In this setting, government employees cannot be easily replaced and an increase in the attrition rate may cause serious disruptions to the affected government units. If, however, high vacancy rates reflect very high attrition rates for other reasons (such as low government salaries), HIV/AIDS–related attrition may simply exacerbate an existing retention problem; its impact may be masked by the already high staff turnover.

Where vacant positions can be filled within a reasonable time period, a type of multiplier analysis is usually applied to quantify the disruptions caused by increased HIV/AIDS–related morbidity and mortality. Haacker (2004) summarizes some of these studies. For an HIV prevalence rate of 20 percent among government employees, HIV/AIDS–related absenteeism may add up to 2 percent of all working hours.³ A related cost, partly overlapping with the costs of absenteeism, is sick leave, which depends on country-specific provisions. An additional source of absenteeism is attendance at funerals. In an example cited by Haacker (2004) that uses a prevalence rate of 20 percent as a reference point, funeral absenteeism may account for

0.7 percent of working hours. Overall, the costs of HIV/AIDS-related absenteeism for an HIV prevalence rate of 20 percent may amount to 2–3 percent of working hours. Only part of these costs, however, represents fiscal costs that would affect payroll expenses, as occasional absences or most periods of sick leave are not normally covered by additional staff. Government, of course, may hire more staff to compensate for efficiency losses related to increased absenteeism, but in the absence of any evidence to this effect, it makes sense to interpret the estimates of HIV/AIDS-related absenteeism and sick leave as indicators of an erosion in the capacities of government agencies.

As HIV/AIDS results in higher rates of attrition, the number of vacancies rises. If vacancies can be filled within a reasonable time period, the impact on the effectiveness of public services is similar as those describes for increased absenteeism. In terms of fiscal costs, however, an increased vacancy rate may temporarily reduce payroll expenses. Where vacancies are not filled within a short period, service disruptions can be more pervasive, as it is more difficult to cover for positions (by prioritizing activities, for example) over longer time periods.

Over the longer run, HIV/AIDS affects the survival probabilities of government employees and consequently the composition of public servants (table 8.3). Using a prevalence rate of 20 percent as a reference point, HIV/AIDS-related mortality results in a drop of about half (48 percent for men, 55 percent for women) the number of people reaching age 50.

The demographic estimates on which table 8.3 is based did not incorporate the impact of widespread access to treatment. However, the estimates

Table 8.3: Estimated Survival Probabilities for 20-Year-Old Men and Women, Given HIV Prevalence of about 20 Percent

PROBABILITY OF SURVIVAL UNTIL AGE . . .	MEN		WOMEN	
	ACTUAL	IN ABSENCE OF AIDS	ACTUAL	IN ABSENCE OF AIDS
30	87.8	94.5	82.9	96.1
40	62.8	88.4	52.2	91.0
50	41.5	80.2	37.9	84.3
60	26.7	67.7	29.3	74.3

Source: Author's calculations, based on example in Haacker (2004), using estimates of mortality rates provided by the U.S. Census Bureau.

summarized in table 8.3 suggest that the attrition among public servants would still be very severe even under an ambitious scaling-up of treatment. For example, if all public servants requiring treatment receive it and live 10 years longer as a result, survival rates at age 50 would rise to 57 percent for men and 48 percent of women. This is a very substantial improvement (under very optimistic assumptions), but it still represents a decline of 29 percent (not percentage points) for men and 43 percent for women.

Medical benefits, pensions, and social security. The increased morbidity and mortality among government employees has fiscal consequences, because it increases both medical and death-related benefits. Government employees and their family members are typically covered by some form of medical benefits, even in countries in which the overall coverage of such insurance schemes is low. Studies (and informal evidence) consistently point to an increase in the cost of medical benefits as a result of HIV/AIDS, although most of these studies relate to the private sector (Rosen and others 2006). Because government employees are frequently covered by the public health service, which in turn is financed through the general budget, data on the costs of public health services to government employees are rarely available. An additional consideration, in the context of scaling up access to antiretroviral treatment, financed to a large extent by external grants, is that the government might be able to shift the financial burden of increasing medical benefits to grant-financed HIV/AIDS programs, thereby reducing the costs of these services to its employees (as well as the broader population).

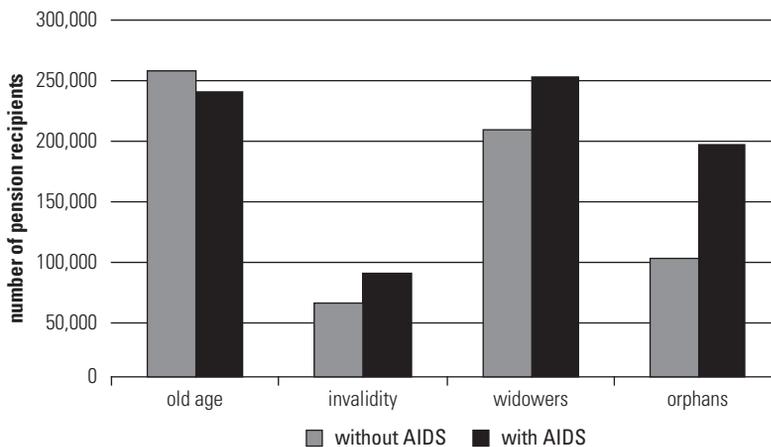
Although the economics and the political economy of government employee pension schemes and government-controlled public pension schemes are quite different, in light of limited data, in what follows they are lumped together, because the impact of HIV/AIDS plays out in a similar fashion.⁴ (Most of the discussion also carries over to private pension insurance.) The most direct form of death-related benefits are lump-sum payments made to surviving dependents as a one-off payoff from a retirement account, lump-sum survivor benefits, or funeral grants. Some studies (see Haacker [2004] for references) report that funerals cost one to four monthly salaries; funeral grants intended to cover the full expenses of a funeral could add 0.2–0.7 percent to payroll expenses given a prevalence rate of 20 percent.

In many cases, the assessment of the financial repercussions of changed mortality or demographic patterns on pension or social security systems is more complicated, because these systems may provide different types of benefits, which are not affected by HIV/AIDS in the same ways. Indeed, the effects on different types of pension and social security payments may partly offset one another. These benefits are usually grouped under old-age pensions, invalidity pensions, and pensions to surviving dependents.

Plamondon, Cichon, and Annycke (2004) give a sense of the impacts of HIV/AIDS on the numbers of beneficiaries of the different types of pensions.⁵ They find some adverse impact of HIV/AIDS on social security schemes (figure 8.5). The highest proportional increases in pension payments occur for orphans and widows/widowers. These payments are only partly offset by the financial savings associated with the decline in the number of people reaching retirement age.⁶

One way of reducing the exposure to demographic change and increased mortality caused by HIV/AIDS is to move from a defined-benefit to a defined-contribution pension scheme. Under a defined-contribution scheme, benefits are based on the contributions made (plus interest), so that the fiscal impact of increased mortality on the balance of the pension scheme is limited. The financial risk, however, is shifted to the insured. In the context of HIV/AIDS, which is associated with high mortality rates at an early

Figure 8.5: Projected Number of Pension Recipients by Pension Type, 2005



Source: Plamondon, Cichon, and Annycke 2004.

age, this would mean that payouts to surviving dependents would frequently be low compared with the income lost. Using an example from Plamondon, Cichon, and Annycke (2004), for an employee who starts working for the government at age 20 and dies at age 35, the value of the accumulated pension is 1.6 times the annual salary at the time of death, which would translate into an annuity for the surviving spouse of about 9 percent of the deceased's salary. Thus from the perspective of insuring against risks to material living standards associated with HIV/AIDS, a move to a defined-contribution scheme can be problematic.⁷

In practice, the distinction between defined-contribution and defined-benefit schemes is not clear cut. The benefits of defined-benefit schemes typically depend on the duration of contributions, while most defined-contribution schemes also include some elements of defined-benefit schemes (with regard to the risks of death in service and of disability, for example [see Sanlam 2004 for an illustration]).

Scaling Up the Response to HIV/AIDS

Our discussion of challenges related to the scaling up of HIV/AIDS, regarding implications of and for the government's capacities, proceeds in three steps. First, we discuss the financing of HIV/AIDS-related expenditures, notably the role of external financing. Second, we analyze the role of human resources, looking at available capacities, and covering the role of migration. Finally, we summarize findings from an empirical analysis of determinants of access to treatment.

Financing of general and HIV/AIDS-related health expenditures

One of the most important fiscal aspects of HIV/AIDS is the cost of prevention, care, and treatment programs. Comparing spending across 13 Sub-Saharan African countries reveals several important findings (table 8.4). First, while per capita health expenditures differ by a factor of 59 (in U.S. dollar terms), most of the difference is explained by differences in per capita GDP: health spending as a percentage of GDP varies by a factor of just 2.6. Second, the share of public expenditure in total health expenditure varies widely across countries, from about 30 percent in Côte d'Ivoire and Uganda to 80 percent in Lesotho. Third, external finance plays an important role in

Table 8.4: Financing of Health Expenditures in Selected Countries in Sub-Saharan Africa

COUNTRY	TOTAL SPENDING		PUBLIC SPENDING (PERCENT OF TOTAL SPENDING)	EXTERNAL FINANCE	PRIVATE SPENDING	OUT-OF-POCKET		PREPAID (PERCENT OF PRIVATE SPENDING)
	(\$ PER CAPITA)	(PERCENT OF GDP)		(PERCENT OF GOVERNMENT SPENDING)	(PERCENT OF TOTAL SPENDING)	(PERCENT OF TOTAL SPENDING)	(PERCENT OF PRIVATE SPENDING)	
Botswana	232	5.6	58.2	5.0	41.8	12.0	28.8	21.8
Côte d'Ivoire	28	3.6	27.6	12.3	72.4	65.5	90.5	9.5
Ethiopia	5	5.9	58.4	44.5	41.6	32.7	78.7	0.5
Lesotho	31	5.2	79.7	10.3	20.3	3.7	18.2	0.0
Malawi	13	9.3	35.2	71.3	64.8	27.7	42.7	1.6
Mozambique	12	4.7	61.7	66.1	38.3	14.9	38.8	0.5
Namibia	145	6.4	70.0	7.6	30.0	5.8	19.2	76.0
South Africa	295	8.4	38.6	1.3	61.4	10.5	17.1	77.7
Swaziland	107	5.8	57.3	9.6	42.7	18.1	42.4	19.6
Tanzania	12	4.3	55.4	39.5	44.6	36.2	81.1	5.4
Uganda	18	7.3	30.4	93.8	69.6	36.7	52.8	0.2
Zambia	21	5.4	51.4	87.0	48.6	33.1	68.2	0.0
Zimbabwe	40	7.9	35.9	18.9	64.1	36.3	56.7	21.0

Source: WHO 2006b.

complementing domestic finance in some countries, accounting for about 90 percent of health spending in some low-income countries; external finance accounts for less than 10 percent of spending in middle-income countries in the region. Fourth, the role of out-of-pocket spending is much lower in middle-income than in low-income countries, indicating that the availability of certain financial services helps mitigate the economic risks associated with the costs of treatment in these countries.

Detailed cross-country data are not publicly available. Rather than draw on the more aggregated numbers provided by the OECD or UNAIDS, the author constructed a dataset from various sources, including WHO (2006b) for total health expenditures;⁸ UNAIDS (2006b) for domestic spending; OECD (2007) for grants related to sexually transmitted infections (STIs) and grant flows from the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria (the Global Fund); the U.S. State Department (2006) for grants by the President's Emergency Plan for AIDS Relief (PEPFAR) (country-managed programs only); data downloaded from the World Bank's project database on grants under the Multi-Country AIDS Program; and the International Monetary Fund's World Economic Outlook database for GDP data.

The data suggest that HIV/AIDS–related expenditures play a very important role in the countries surveyed, accounting for 0.3–3.8 percent of GDP (table 8.5). Comparison with total health expenditure is instructive in terms of relative magnitude and as an indicator of the scale of HIV/AIDS–related spending, but it should be done with caution, as some HIV/AIDS–related expenditures financed by grants should be classified as educational or social expenditures rather than health spending. Of the 13 countries covered, HIV/AIDS–related spending exceeds 50 percent of total health expenditure in 3 countries and between one-quarter and one-half of health expenditures in 7 others.

The expansion of HIV/AIDS programs has been driven by external finance, which accounts for more than 90 percent of HIV/AIDS–related spending in five countries and for more than 80 percent in nine countries. The Global Fund has played a key role in financing HIV/AIDS programs—in 6 of the 13 countries studied, disbursements from the Global Fund (which receives

Table 8.5: Domestically and Externally Financed HIV/AIDS–Related Expenditures in Selected Sub-Saharan African Countries, 2005 (percent of GDP)

COUNTRY	TOTAL HEALTH EXPENDITURES ^a	HIV/AIDS–RELATED EXPENDITURES ^a	HIV/AIDS: DOMESTIC FINANCING	HIV/AIDS: EXTERNAL FINANCING				
				TOTAL ^b	OECD ^c	GLOBAL FUND ^d	PEPFAR	World Bank
Botswana	5.6	2.12	1.68	0.44	0.00	0.00	0.44	0.00
Côte d'Ivoire	3.6	0.30	0.04	0.26	0.00	0.06	0.20	0.00
Ethiopia	5.9	1.57	n.a.	1.57	0.18	0.43	0.78	0.18
Lesotho	5.2	0.57	0.10	0.47	0.20	0.25	0.00	0.02
Malawi	9.3	1.45	0.46	0.99	0.30	0.53	0.00	0.16
Mozambique	4.7	1.25	0.03	1.22	0.24	0.00	0.86	0.12
Namibia	6.4	1.45	0.66	0.79	0.01	0.10	0.68	0.00
South Africa	8.4	0.28	0.21	0.07	0.01	0.00	0.06	0.00
Swaziland	5.8	0.96	0.17	0.79	0.00	0.79	0.00	0.00
Tanzania	4.3	1.57	0.40	1.17	0.07	0.31	0.76	0.03
Uganda	7.3	2.69	0.28	2.41	0.18	0.08	1.94	0.21
Zambia	5.4	2.05	0.59	1.46	0.29	0.44	0.51	0.22
Zimbabwe	7.9	3.46	0.26	3.20	1.00	0.01	2.19	0.00

Source: WHO (2006b), UNAIDS and WHO (2006b), OECD (2007), GFATM (2007), United States Department of State (2006), and data provided by the World Bank.

Note: With the exception of the PEPFAR data (which are budget data), all figures represent disbursements rather than commitments.

a. Total health expenditures are from WHO (2006b), whereas HIV/AIDS–related spending is obtained “bottom-up” by adding the data from the sources shown. HIV/AIDS–related expenditures include spending not captured under health spending.

b. Identified financing from stated sources only. Data do not include funding from private foundations.

c. OECD data are for control of sexually transmitted disease, and exclude general health funding (even though this is partly related to HIV/AIDS). Data exclude the United States, as these are largely captured under PEPFAR.

d. For the Global Fund, only grants specifically for HIV/AIDS programs are shown.

its funding from bilateral donors) exceed the sum of the disbursements from the other four identified sources. The PEPFAR, which is dominant among identified donors in six countries, also plays an important role.

A question that has repeatedly been raised is whether the huge financial flows associated with HIV/AIDS could have an adverse impact on the macroeconomic situation. In the context of total external aid, this appears to be a quantitatively minor issue, as financial flows associated with HIV/AIDS are small compared with total external funding.

An important aspect of HIV/AIDS programs is that a substantial proportion of expenditures is concentrated in the health sector. This raises the possibility of constraints to scaling up HIV/AIDS-related health interventions at the sectoral level. The most important concern voiced is that an effective response to HIV/AIDS is constrained by the scarcity of skilled personnel or that externally financed HIV/AIDS programs attract scarce health personnel from other health programs, exacerbating shortages elsewhere in the health sector.

The extent to which such human resource constraints, financial constraints, or other factors impede the response to HIV/AIDS is an empirical question. The following section analyzes the role of these factors in implementing health sector responses to HIV/AIDS based on data on access to ART collected in the context of the WHO's 3 by 5 initiative.

Expanding treatment: human resource issues

A key constraint to expanding access to treatment in the area of HIV/AIDS (or, more generally, achieving improvements in the quality of public health services in order to achieve the MDGs) is the shortage of skilled health personnel. For countries with severe HIV/AIDS epidemics, the shortage of health professionals arises not only because the demand for health services has risen but also because the epidemic affects the supply of health professionals. Migration also affects the shortage of health personnel (as discussed later in the chapter).

In light of the huge increases in funding for HIV/AIDS programs in recent years, the focus of attention has moved to human resource issues as a critical constraint. As the WHO (2006a, p. 19) notes, "the impressive mobilization of donor funds to achieve the health-related MDGs, and in particular to combat HIV/AIDS, has created a new environment in which a shortage of human resources has replaced finance issues as the most serious

obstacle to implementing national treatment plans.” This is consistent with the earlier observation that efforts to expand access to ART have been most pronounced in countries in which the quality of health services (measured by life expectancy at birth) was relatively good before the epidemic.

Unsurprisingly, the availability of trained health personnel is highly correlated with per capita GDP (see annex table 8A.1).⁹ Per capita GDP also appears to be an important determinant of access to health services (measured in terms of the availability of trained staff). However, some countries facing relatively low endowments of health professionals have been successful in reaching high treatment coverage rates (figure 8.6). It therefore appears that factors other than the availability of health professionals are at play, enabling countries with low endowments of human resources to increase coverage, and holding back others that, judging from domestic resources, attain low coverage rates.

Migration. The scaling up of national responses to HIV/AIDS takes place in a context of high mobility of health professionals. Clemens and Pettersson (2006) provide some indicators of migration of health professionals for Africa, based on data from source countries and nine receiving countries (table 8.6). In 16 African countries, the number of physicians with citizenship of that country working abroad exceeds 50 percent of the number of physicians working domestically. For nurses, the extent of migration appears less

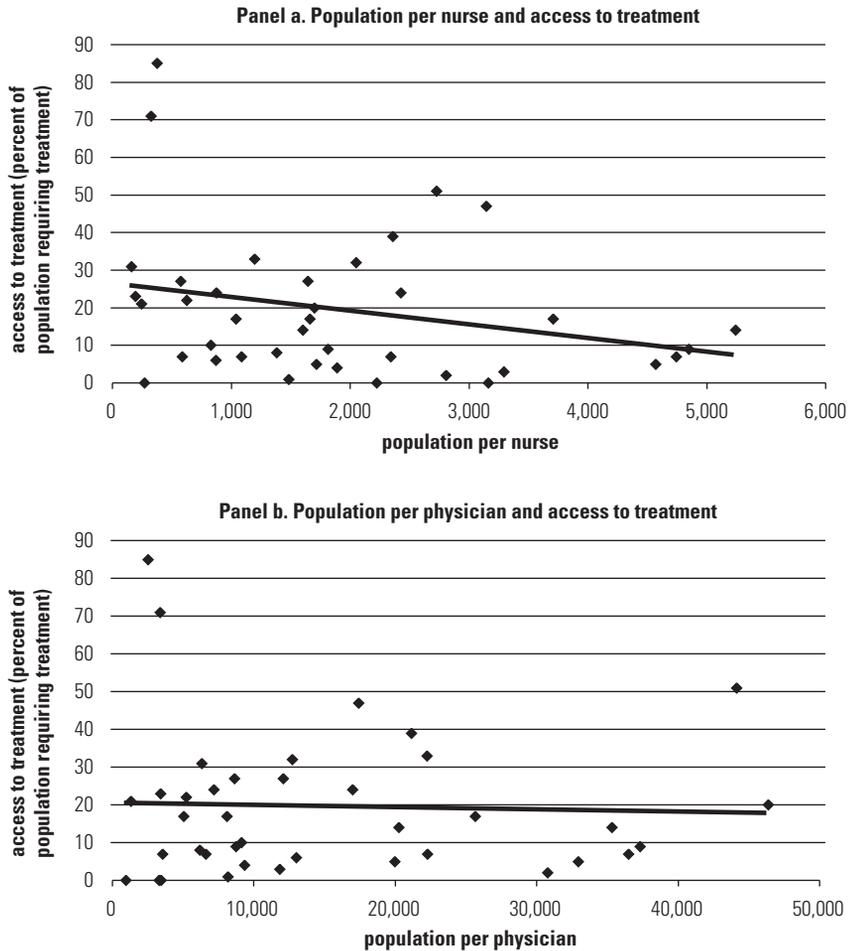
Table 8.6: Migration of Physicians and Nurses from Selected Countries in Sub-Saharan Africa, around 2000

COUNTRY	PHYSICIANS			NURSES		
	DOMESTIC	ABROAD	ABROAD (% OF TOTAL)	DOMESTIC	ABROAD	ABROAD (% OF TOTAL)
Angola	881	2,102	70	13,135	1,841	12
Botswana	530	68	11	3,556	80	2
Ethiopia	1,310	553	30	5,342	1,077	17
Liberia	73	126	63	185	807	81
Mozambique	435	1,334	75	3,664	853	19
South Africa	27,551	7,363	21	90,986	4,844	5
Swaziland	133	53	28	3,345	96	3
Zimbabwe	1,530	1,602	51	11,640	3,723	24
Sub-Saharan Africa	96,405	36,653	28	414,605	53,298	11

Source: Clemens and Pettersson 2006.

Note: “Domestic” health professionals include immigrants. Figures therefore overstate net effects of migration. Data on health professionals abroad include only those identified from nine key receiving countries; they therefore understate outward migration.

Figure 8.6: Availability of Health Personnel and Access to Treatment in Selected Countries in Sub-Saharan Africa, 2003



Sources: WHO 2006b; WHO, UNAIDS, and UNICEF 2007.

pronounced: the number of nurses working abroad exceeds 50 percent in only four cases. These data illustrate two broad trends: migration is greater for skilled health professionals, and the poorest countries—including some that experienced long periods of civil war—tend to be those that lose the largest share of health professionals.

These figures probably substantially understate the extent of migration, for several reasons. First, while the nine receiving countries include some of the most important recipients of health professionals (including France, the

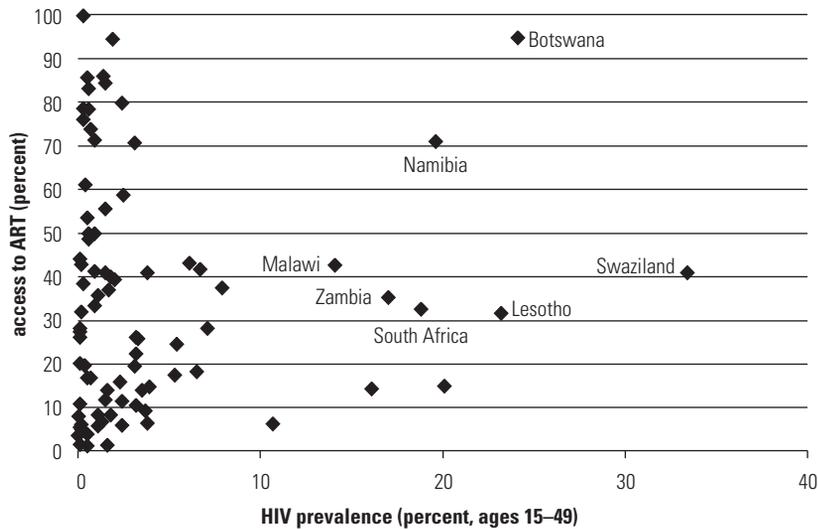
United Kingdom, and the United States), small numbers of immigrants in a large number of countries not covered probably add up to a very substantial number.¹⁰ Thus table 8.6 may understate the brain drain of health professionals from low-income to high-income countries.

Second, with the exception of South Africa, which is one of the nine receiving countries covered, the data do not capture migration within developing countries, especially in Sub-Saharan Africa. Swaziland, for example, has lost 28 percent of its physicians to migration, but the WHO (2004) estimates that about half of physicians working in public hospitals in Swaziland are expatriates, which means that Swaziland appears to be a net recipient of health professionals. Botswana also relies heavily on expatriates to staff its health services: a country guide for health professionals by the University of Pennsylvania's Penn Medicine Program in Botswana (2006) estimates that 90 percent of physicians in hospitals are from outside Botswana.

There are several reasons for the high degrees of inward migration in Sub-Saharan Africa. Many African countries do not have medical schools and need to hire graduates from abroad.¹¹ These may be nationals who studied medicine abroad. More generally, the fact that the training of doctors frequently crosses borders in Africa means that the market for health professionals is remarkably international. Africa is also a destination of migration from other regions, including China and Cuba.

HIV/AIDS adds an additional dimension to the role of migration of health professionals within Africa, as it induces very substantial shifts in the demand for health services between countries. Cross-country migration could therefore play an important role in alleviating demand pressures in some of the worst-affected countries. Some countries with high HIV prevalence rates rely heavily on expatriate doctors. The fact that some of the countries with very high prevalence rates have also achieved high coverage rates of ART (figure 8.7) suggests that migration of health care professionals may be playing an important role in the response to HIV/AIDS in Sub-Saharan Africa.

In some other regards, however, the pattern of migration in Sub-Saharan Africa mirrors the broader issues that come up in the context of migration between low- and high-income countries. The destination countries for migration within Sub-Saharan Africa are relatively rich. Migration to these countries creates brain drain issues (see WHO [2006b] and UNFPA [2005]). Where high HIV prevalence rates coincide with low per capita GDP, inward migration alone is therefore not an effective tool with which to address a

Figure 8.7: Correlation between High HIV Prevalence Rates and Access to ART

Sources: WHO, UNAIDS, and UNICEF 2007; UNAIDS and WHO 2006b.

health emergency. In this case, an adequate health sector response likely rests on donor-supported measures to improve retention rates and attract expatriates. The best known of these programs is the one in Malawi, supported by the Global Fund and the U.K. Department for International Development, which relies heavily on financial incentives for health professionals, among other measures. Differential pay scales, across the public service or the health sector, can create a different set of problems, however. The WHO (2006b, p. 21) notes that “well-funded programmes that are implemented through non-governmental mechanisms—notably those focused on HIV/AIDS treatment—often pay salaries that exceed local wages in the public sector.” This practice, which creates a situation in which health professionals with similar levels of training often earn different salaries, has possible repercussions for effectiveness in areas that are not prioritized.

Access to treatment: looking back at 3 by 5

Together with social and economic factors, the key determinant of the risks to life and to living standards associated with HIV/AIDS is the availability of treatment, which until recently was extremely limited in most low- and middle-income countries. This changed with adoption of the WHO’s 3 by

5 initiative. The concluding report (WHO 2006a) provides a point of reference for analyzing the progress made in expanding access to treatment (and, by implication, the changes in risks to life and living standards associated with HIV/AIDS).

Although the targets envisaged under the 3 by 5 initiative have not been met, the initiative has made impressive achievements in terms of raising awareness and soliciting funding. The initiative has contributed to a very substantial increase in ART in low- and middle-income countries, increasing the number of people on ART from 400,000 (7 percent coverage) in 2003 to about 1 million by end-2005, and preparing the ground for an expansion in access to treatment to about 3 million by end-2007, corresponding to a coverage rate of 31 percent (WHO/UNAIDS/UNICEF 2008). The increase has been most pronounced in Sub-Saharan Africa, where the number of people on treatment increased from 100,000 to about 2.1 million, and coverage of ART rose to 30 percent.

The experience in expanding access to treatment provides an opportunity to look back and analyze potential determinants of access to treatment. The first such determinant that comes to mind is the scale of the epidemic. Four features of the data displayed in figure 8.7 stand out. First, a high HIV prevalence rate appears not to be an insurmountable obstacle to reaching high coverage rates of ART—indeed, there is no clear correlation between HIV prevalence and access to treatment. Second, the high-prevalence countries that have achieved high ART coverage rates tend to be middle-income rather than low-income countries. Third, many low-prevalence countries that might be able to attain high coverage rates have not done so.

A dataset was constructed that includes data on HIV prevalence and domestic spending on HIV/AIDS (UNAIDS/WHO 2006b); ART coverage rates and birth attendance rates (as a measure of the capacities of the health sector) (WHO/UNAIDS/UNICEF 2007); the numbers of doctors and nurses (WHO 2007); population size (UNFPA 2007); GDP and per capita GDP (IMF 2007); and external financing (OECD 2007).¹² The data on external aid and domestic spending were translated into dollars per person living with HIV/AIDS in each country. This yielded a dataset of 87 countries for which all variables were available.

As the dependent variable is censored (it can take values between 0 and 100 only), censored normal TOBIT maximum likelihood estimators are used throughout. HIV prevalence rate (*HIV*) alone explains none of the variation in access to treatment (*TREAT*) in equation (8.1) ($R^2 = 0.001$).

$$TREAT = 34.0^{***} + 0.32 \cdot HIV. \quad (8.1)$$

(9.7) (0.7)

Adding per capita GDP to the regression (equation 8.2) raises the R^2 to 0.36, which means that differences in per capita GDP are associated with much of the variations among the low-prevalence countries in figure 8.6 while the level of HIV prevalence remains insignificant.

$$TREAT = 19.3^{***} + 0.30 \cdot HIV + 0.008^{***} \cdot GDPPC. \quad (8.2)$$

(5.5) (0.8) (6.9)

All of the variables mentioned above are included in the regressions. Eliminating successively insignificant variables (the numbers of doctors, nurses, and domestic expenditure on HIV/AIDS) raises the R^2 to 0.49. Equation 8.3 explains access to treatment in terms of HIV prevalence, per capita GDP, external aid per capita ($AIDPC$), and birth attendance rate ($BIRTHATT$):

$$TREAT = -6.0^{(-0.5)} - 1.11^{**(-2.4)} \cdot HIV + 0.007^{***} \cdot GDPPC + 2.90^{***} \cdot AIDPC + 0.3^{**(2.2)} \cdot BIRTHATT. \quad (8.3)$$

An increase in HIV prevalence translates into a treatment coverage rate that is lower by 1.1 percentage point. A \$1,000 difference in per capita GDP is associated with a 7 percentage point difference in access to treatment. A \$1 increase in external aid per capita raises access to treatment by 2.9 percentage points. A birth attendance rate that is 1 percentage point higher translates into a treatment coverage rate that is 0.3 percentage points higher.

Two important tentative conclusions emerge from these findings. First, the international response to HIV/AIDS has been effective in leveling the field across countries in terms of access to treatment. The fact that HIV prevalence appears insignificant in some regressions of the type shown above can be attributed to the exclusion of aid from the analysis; if aid is included the coefficient of HIV prevalence turns negative.

Second, the shortage of human resources (measured by the availability of trained physicians or nurses) does not appear to be a critical constraint to scaling up access to treatment. In contrast, indicators of the output of public health services (or access to general health services), such as birth attendance rates, appear significant.¹³ This finding suggests that factors that impede general access to health services or compromise the quality of services, not health sector inputs, determine success in scaling up treatment.

While inputs and outputs are obviously related, the critical constraint appears to be the quality of health services rather than the quantity of health sector inputs.

Conclusions

This chapter discusses the implications of HIV/AIDS for public policy, with two related objectives: (1) illustrating the erosion of government capacities associated with HIV/AIDS, looking at both fiscal and human resources; and (2) describing the context in which the response to HIV/AIDS takes place, notably in countries facing severe epidemics.

We first highlight the implications of HIV/AIDS for the capacities of governments, both in terms of government finance and in terms of human resources, highlighting domestically financed HIV/AIDS-related expenditures, indirect fiscal effects which arise, for example, if an economic slow-down also affects the tax base and government revenues, and the erosion of government's capacities as increased mortality and morbidity among government staff affect government services.

Our analysis of HIV/AIDS-related resource flows highlights the dominant role of external financing in this area in low-income countries. While external financing plays an important role in public health in general, this role is even more pronounced as far as the national responses to HIV/AIDS are concerned.

While external financing plays a crucial role in financing the national responses to HIV/AIDS in low-income countries, and goes a long way in addressing fiscal constraints to an effective response, the availability of health professionals differs very considerably across countries. Constraints in the availability of health professionals apparently do not go very far in terms of explaining differences in access to treatment across countries, however.

On migration, a complex picture emerges. In some African countries, more than half of all nationals who are health professionals work abroad, and migration is most pronounced for the most skilled health professionals, and the poorest countries. However, we also find some evidence that suggests that the labor market for health professionals within Africa is highly mobile, and that some of the successful countries, in terms of expanding access to treatment, rely heavily on recruiting abroad (to the extent that they may be net recipients of health professionals). One consequence is that efforts to

improve the availability of health professionals need a regional, rather than a national, perspective.

Finally, our analysis of the determinants of access to treatment points at some obstacles to comprehensive scaling-up that go beyond the financial or human resource constraints that discussions of access to treatment frequently focus on. External aid appears to be effective in enabling countries with high prevalence rates to meet some of the demand for treatment. However, we find that countries where the reach of basic health systems is limited also tend to be countries where coverage rates of ART have remained low so far.

Table 8A.1: Availability of Medical Professionals and Access to Treatment in Selected Countries in Sub-Saharan Africa

COUNTRY	GDP PER CAPITA (U.S. DOLLARS)	HIV PREVALENCE AMONG PEOPLE 15-49 (PERCENT)	TREATMENT COVERAGE (PERCENT)	POPULATION PER PHYSICIAN	POPULATION PER NURSE	NUMBER OF PEOPLE LIVING WITH HIV/AIDS PER PHYSICIAN	NUMBER OF PEOPLE LIVING WITH HIV/AIDS PER NURSE
Angola	1,873	2.1	25	12,993	871	137	9
Benin	595	1.2	49	22,244	1,195	160	9
Botswana	5,829	23.9	79	2,510	378	396	60
Burkina Faso	438	1.6	35	16,975	2,427	158	23
Burundi	107	2	23	35,340	5,243	540	80
Cameroon	952	5.1	25	5,216	626	158	19
Central African Republic	336	6.3	21	11,819	3,293	423	118
Chad	601	3.5	13	25,664	3,709	481	69
Congo, Dem. Republic of	119	1.2-1.5	24	9,339	1,890	67	14
Congo, Rep. of	1,751	3.5	17	5,050	1,040	112	23
Côte d'Ivoire	850	3.9	28	8,120	1,660	227	46
Djibouti	885	3.1	16	n.a.	n.a.	n.a.	n.a.
Equatorial Guinea	5,934	3.4	31	3,314	2,224	68	46
Eritrea	206	1.3	13	19,986	1,715	150	13
Ethiopia	153	2.1	29	36,507	4,746	416	54
Gabon	6,538	5.9	42	3,420	194	122	7
Gambia	304	0.9	18	9,141	830	43	4
Ghana	512	1.9	15	6,598	1,085	76	13
Guinea	355	1.6	27	8,734	1,812	76	16
Guinea-Bissau	181	1.8	20	8,181	1,483	82	15
Kenya	574	7.1-8.5	38	7,195	874	33	4

(continues on the following page)

Table 8A.1: Availability of Medical Professionals and Access to Treatment in Selected Countries in Sub-Saharan Africa (*continued*)

COUNTRY	GDP PER CAPITA (U.S. DOLLARS)	HIV PREVALENCE AMONG PEOPLE 15–49 (PERCENT)	TREATMENT COVERAGE (PERCENT)	POPULATION PER PHYSICIAN	POPULATION PER NURSE	NUMBER OF PEOPLE LIVING WITH HIV/AIDS PER PHYSICIAN	NUMBER OF PEOPLE LIVING WITH HIV/AIDS PER NURSE
Lesotho	537	23.2	26	20,247	1,605	2,760	219
Madagascar	263	0.1	4	3,442	3,162	2	2
Malawi	161	11.9	35	46,380	1,698	3,156	116
Mali	421	1.5	41	12,734	2,051	106	17
Mauritius	5,058	1.7	22	946	271	7	2
Mozambique	346	12.5	24	37,319	4,851	2,363	307
Namibia	2,870	15.3	88	3,363	327	300	29
Niger	278	0.8	10	32,931	4,571	137	19
Nigeria	678	3.1	26	3,551	590	63	10
Rwanda	242	2.8	71	21,150	2,360	366	41
Senegal	715	1	56	17,406	3,145	72	13
Sierra Leone	219	1.7	20	30,762	2,807	275	25
South Africa	5,100	18.1	28	1,298	245	152	29
Togo	378	3.3	19	12,086	1,646	232	32
Uganda	326	5.4	33	44,131	2,729	1,494	92
Tanzania	324	6.2	31	22,298	2,343	811	85
Zambia	609	15.2	46	8,642	575	753	50
Zimbabwe	383	15.3	17	6,199	1,382	709	158
Angola	1,873	2.1	25	12,993	871	137	9

Source: UNAIDS 2008; WHO, UNAIDS, and UNICEF 2008; IMF 2007; United Nations Population Division 2007; and author's calculations.

Notes

1. The higher the rate of population growth and the higher the rate of mortality among the young population, the larger the population weights of the younger cohorts within the young population.
2. For examples on both sides of the spectrum, see Young (2005) and Bell, Devarajan, and Gersbach (2004).
3. The government of Malawi and UNDP (2002) estimate that absenteeism averages 65 days a year for employees with full-blown AIDS and 15 days a year for people who are HIV-positive but have not yet developed full symptoms. This estimate is consistent with estimates by Grassly and others (2003), who estimate that absenteeism amounts to an average of 1.3 months a year per HIV-positive employee.

4. Much of the discussion in this section is based on Plamondon, Cichon, and Annycke (2004).
5. A quantitative analysis, which requires a suitable demographic model, is beyond the scope of this chapter.
6. An important issue that is beyond the scope of this analysis is that benefits frequently differ depending on whether death occurs in service or following retirement. This difference provides an incentive to hang on to a position following the onset of illness.
7. The appropriateness of any pension scheme depends on many factors other than the ones noted here; this discussion should not be generalized beyond HIV/AIDS-related risks.
8. The data on total health expenditures are for 2004. To the extent that HIV/AIDS-related spending grew between 2004 and 2005, this introduces a source of bias in comparing overall and HIV/AIDS-related spending.
9. The coefficients of correlation between a country's rank based on GDP per capita and the rankings in terms of the number of physicians and nurses are 0.68 (for physicians) and 0.66 (for nurses).
10. The data fail to capture emigration to Arabic-speaking countries, which may be important in Eritrea, Somalia, and Sudan.
11. The countries worst affected by HIV/AIDS include several that do not have medical schools—including Botswana (which is in the process of establishing one), Lesotho, and Swaziland—and thus rely heavily on expatriates.
12. The analysis was completed before the *2008 Report on the Global AIDS Epidemic* (UNAIDS 2008) and the update on scaling up access to ART were published. While references to the state of the global AIDS epidemic in the text were updated, it was not possible—owing to tight time constraints—to update the data set used for the econometric analysis and redo the econometric analysis.
13. Using life expectancy in 1985 (before the HIV epidemic escalated in most countries) as an indicator of the quality of health services yields similar results.

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Gender and HIV/AIDS

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The spread of HIV/AIDS is fueled by inequalities between genders, particularly in Sub-Saharan Africa. Gender-biased economic, sociocultural, and legal norms shape the status and roles of women and men and determine attitudes toward sex, sexuality, and sexual behavior and the availability of information about them. These norms play a critical role in the exposure to risk and the consequences of the infection, substantially determining the course of the epidemic.

Nearly half of the 33.2 million people living with HIV/AIDS worldwide are female. A decade ago, women were on the periphery of the pandemic. In the mid-1990s, about 4 out of every 10 people living with HIV/AIDS were women. Today they are at the epicenter. The feminization of the epidemic is most notable in Sub-Saharan Africa, where, in 2007, 61 percent of people living with HIV/AIDS were women.

Vulnerability to HIV infection is determined not only by physiological differences between men and women but also by interrelated economic and cultural factors. In Sub-Saharan Africa, these factors tend to lead to a power imbalance between the sexes that has negative consequences for both men and women. In many instances, women's limited access to and control over resources leads to an economic dependence on men that translates into a loss of control over their bodies, significantly increasing their vulnerability to HIV infection. For their part, men (especially young men), tend to engage in risky behavior that conforms to societal notions of masculinity that promote multiple sexual partners and sex at an early age.

The levels of HIV infection rates among 14- to 24-year-olds in Sub-Saharan Africa are rising. Worldwide, young women (15–24 years) are 1.6 times as likely as young men to be HIV-positive (UNFPA 2005c). One-third of all women living with HIV are between the ages of 15 and 24. The fact that among this age group in Sub-Saharan Africa, HIV prevalence among women and girls is much higher than the prevalence among males is particularly worrisome (figure 9.1).

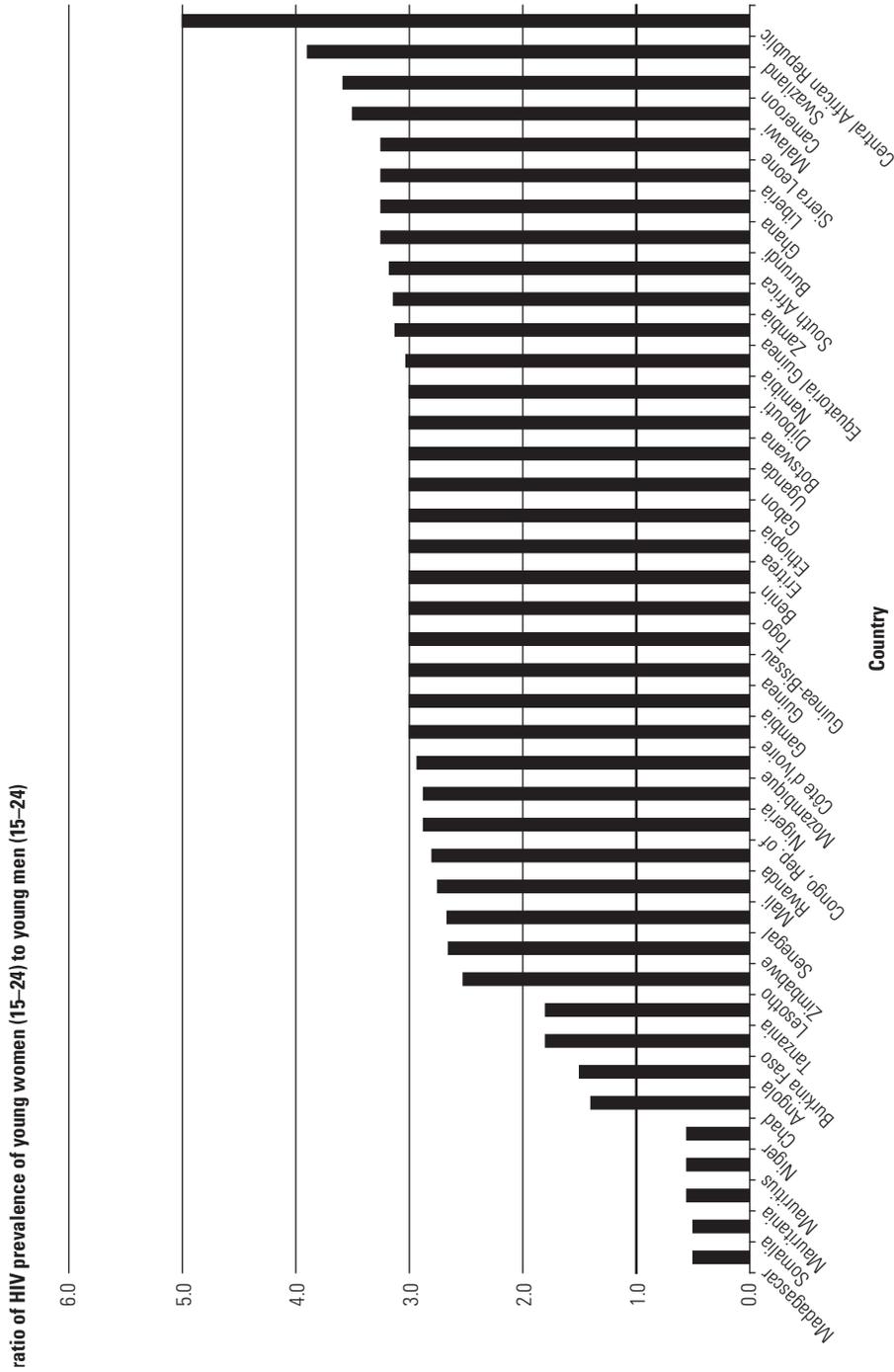
While women and young girls are particularly at risk, some segments of the male population—prisoners, soldiers, long-distance, mobile migrant workers, miners, and men having sex with men—are also highly vulnerable to HIV infection. Both women and men are part of the solution to the pandemic. National HIV/AIDS policies, strategic plans, and program and project interventions must focus on understanding gender roles to support the deep-rooted behavior change needed to halt the spread of HIV/AIDS.

This chapter summarizes a variety of complex issues that must be taken into account to understand the *susceptibility to HIV/AIDS that is determined by gender*. Epidemiological data and behavioral studies point at some of the key factors that predispose the risks to HIV/AIDS. These include biological susceptibility, multiple concurrent sexual relations, transactional and intergenerational sex, and lack of negotiating power to use protection among women and girls. Similarly, unprotected sex, especially at an early age, coupled with low and inconsistent condom use, as well as unplanned pregnancies resulting in unsafe abortions, seriously increase the odds of contracting and transmitting the virus for both women and men. Structural factors such as poverty, displacement, and violence as a result of war and conflict increase HIV/AIDS risks for women and girls. Finally, lack of information about HIV/AIDS and misconceptions regarding susceptibility to the virus, perceptions of sexuality, and social expectations for women and men hinder the effectiveness of HIV prevention.

Gender-Based Vulnerability to HIV/AIDS

Epidemiological data and behavioral studies point to factors that put certain individuals at a higher risk of HIV/AIDS infection. These include the socialization of males and females, which reinforces societal norms of masculinity and femininity; gender norms; sociocultural norms and practices relating to sex and sexual matters; poverty, as a cause of economic dependence

Figure 9.1: Estimated Ratio of Female to Male HIV/AIDS Prevalence Rates among 15- to 24-Year-olds in Sub-Saharan Africa, by Country



Source: UNAIDS 2008.

Note: Data for Kenya and the Democratic Republic of Congo unavailable at the time of the latest UNAIDS 2008 Epidemiological Update. HIV and AIDS estimates and data, 2007 and 2001. The estimated rate of prevalence among young women (15–24) in Swaziland, expressed as a percentage is 22.6 percent, whereas the estimated prevalence rate among men in the same group is 5.8 percent, making the ratio of female to male prevalence rate 3.9.

and transactional sex; occupational factors; legal factors; conflict; and violence against women (table 9.1).

Societal norms of masculinity and femininity

Manifestations of traditional perceptions of masculinity and femininity play an important role in the spread of HIV/AIDS. A large body of research on sexuality and gender indicates how ideas of masculinity and femininity in traditional societies influence people's decisions to seek information about sex and sexual and reproductive health. Norms and practices that sometimes condone male promiscuity and control over women are often associated with risk-taking sexual behavior (early sex, promiscuity, unprotected sex, domination and violence against women) (Alan Guttmacher Institute 2003). Cultural and traditional norms that reinforce the notions that men are more knowledgeable about and more aggressive with respect to sex, and have greater sexual experience than women; are more self-reliant; and have sole power in decision-making over sexual matters, including reproductive health, are learned and reinforced in the region (Gupta 2000). These norms increase men's and women's vulnerability to HIV (Barker and Ricardo 2006).

Multiple concurrent sexual relations increase the odds of HIV/AIDS transmission. Sporadic sexual experiences significantly increase the risk of HIV infection, because men and women who are engaged in more than one sexual relationship, are less likely to use protection. This behavior reflects a variety of factors, including the lack of information, the inability to assess the risks associated with having multiple concurrent sex partners, peer pressure, impaired judgment due to intoxication, the inability to refuse unsafe sex, and the perception that the probability of becoming infected with HIV is low.

Intergenerational sex is a crucial factor in making women and girls more vulnerable to HIV/AIDS. Sociocultural norms that reinforce gender inequalities and make women and girls economically inferior to men, allow for age-mixing and sexual networking as a coping strategy for young women and girls. Many women have their first sexual experience with an older man. These men are high-risk partners, because they are more sexually experienced and thus more likely to be HIV-positive than younger men. In countries in which HIV prevalence is high and condom use low, this situation translates into substantial HIV transmission and higher prevalence rates among young girls than among young boys. Studies

Table 9.1: Determinants of Vulnerability to HIV/AIDS by Males and Females

DETERMINANT	MALE VULNERABILITY AND RISKS	FEMALE VULNERABILITY AND RISKS
Socialization of males and females; societal norms of masculinity and femininity	The socialization of males emphasizes certain behaviors associated with manhood, such as power, knowledge, bravery, invulnerability, and self-reliance. The norms of masculinity that dictate that men should be experienced about sex prevent them from admitting lack of knowledge about sex and sexual protection, and hinder them from seeking information or help. In addition, homophobia and stigmatization of men having sex with men ensure that such men keep their sexual orientation/behavior secret. This denial increases their own and their partners' risk of exposure.	The socialization of females encourages behaviors that are often associated with subservience, dependence, and purity. The traditional norm of virginity for unmarried girls may discourage them from seeking information for fear of being labeled sexually active. Young girls are at higher risk of rape and sexual coercion. Economic dependence on males may place them at increased risk of HIV infection.
Gender norms	Because sexual ignorance is socially unacceptable for men, young men are reluctant to admit lack of knowledge and therefore are unlikely to openly seek such knowledge, especially from people who are not their peers.	The culture of motherhood as the feminine ideal may discourage women from using barrier methods and nonpenetrative sex as safe sex options. Women and girls are viewed as primary caregivers, placing a significant burden on them.
Cultural norms and practices relating to sex and sexual matters	Dominant notions of masculinity often encourage young men to seek sexual experiences with a variety of partners. Many societies assume that males have a certain level of sexual competence and knowledge. These norms seriously challenge the effectiveness of prevention messages that call for fidelity.	Cultural norms in many societies assume that females are innocent about sexual matters. The culture of silence surrounding sex makes it difficult for females to be informed about risk or proactive in negotiating safe sex. Other practices, such as widow inheritance and female genital cutting, may also increase the spread of the virus.
Poverty	Poverty prompts men to migrate in search of work. Long periods away from home increase the likelihood of sexual encounters with multiple partners.	Poverty sometimes prompts women and girls to engage in risky behavior. Such behavior includes exchanging sex for gifts or money, becoming dependent on men who engage in risky behavior, and being unable to negotiate safe sex.
Occupational factors	Separation from family caused by occupation (migrant work, long-distance trucking) or incarceration means that some men are far from their regular sexual partners and families for long periods of time. These situations put them and their sexual partners at increased risk.	Female sex workers are particularly at risk of contracting STIs, which makes them more vulnerable to HIV infection. They are more likely than other women to engage in unsafe sex.

(continues on the following page)

Table 9.1: Determinants of Vulnerability to HIV/AIDS by Males and Females (*continued*)

DETERMINANT	MALE VULNERABILITY AND RISKS	FEMALE VULNERABILITY AND RISKS
Legal issues/enforcement of laws	The relatively higher rates of incarceration among men increase sexual activity between men, whether voluntarily or coerced. The scarcity of condoms in this environment leaves few options for protection from HIV.	Legal issues/enforcement of laws on reproductive health, marriage, coerced sex, rape, sexual abuse, inheritance and succession, and access to property rights and land tenure may not provide protection for women infected with or affected by HIV/AIDS or victims of sexual violence.
Conflict, war, and displacement	In conflict situations, a disproportionately higher number of males than females are involved as combatants. The military is associated with youth, power and aggression. Soldiers' use of alcohol, access to money, and absence from home all contribute to increased sexual activity, some consensual, some coerced.	The negative consequences of wars and conflict, including displacement and dislocation, make women more likely to exchange sex for favors (such as money or food). It also increases their risk of experiencing sexual violence, rape, or coercion. The incidence of HIV/AIDS is higher among rape victims than other women.
Violence against women	Young men, especially those in societies affected by conflict, are vulnerable to initiation into forms of violence such as street crime. The sense of powerlessness and emasculation that young males experience when they are displaced by war or unemployed leads them to express their frustration through violence, a means of demonstrating that they still have some power.	Violence against women forces them to engage in sexual activity against their will. It also prevents them from seeking voluntary counseling and testing and taking the necessary steps to prevent mother-to-child transmission.

Source: Authors.

show that sex that involves an age gap of 6–10 years seriously hinders the power of young women to resist unsafe sexual practices. Polygamy is also a serious concern in some countries, making women more likely to contract HIV and other sexually transmitted infections (STIs). Intergenerational sex is linked to sex without condoms and the failure to discuss HIV, because efforts by women to take preventive action can lead to violence (Luke and Kurz 2002).

Risk and vulnerability to HIV/AIDS are substantially different for men and women, as evident in prevalence rates. These differential impacts reflect traditional gender roles and responsibilities in both household and market activities. The influence of heterosexual and cross-generational sex on the spread of HIV/AIDS points to the significant impact of norms about male and female roles in society, societal attitudes, and norms relating to relations between the sexes.

Early sexual debut increases the chances of HIV/AIDS infection. In most parts of the world, young people have sex at an early age. Many young people, including those in Africa, have their sexual debut before the age of 15. Early sex typically involves unprotected sex with high-risk partners (older men and women) or multiple concurrent partners. Some reports on Africa indicate that men 15–19 are less likely to use condoms with partners with whom they do not live, particularly at sexual debut (UNAIDS and UNICEF 2002).

Unwanted pregnancies among young women and girls are common, and partly reflect their lack of awareness of the risks involved in being sexually active. One in every 10 births worldwide is to a teenage mother (UNFPA 2003). The value placed on fertility and children also puts young women at risk of having many children at an early age. In Africa, one in five births is to a mother who is less than 20 years old. As a result, Sub-Saharan Africa has among the highest ratios of childbearing adolescents in the world. The incidence of unwanted pregnancies among young mothers is very high. One-third to almost half of surveyed adolescents in Côte d'Ivoire, Ghana, Kenya, and Zimbabwe reported that their pregnancies were unplanned (World Bank 2006b).

Unsafe abortions kill an estimated 68,000 women in Africa each year. The chances of death related to pregnancy or delivery is as high as 1 in 16 women, reflecting both a high incidence of pregnancy and the higher risks associated with pregnancy. Nearly 60 percent of all abortions and 70 percent of abortion-related complications in Africa are among women ages 15–24 (WHO 2005).

Sex-related sociocultural norms, practices, and taboos

Social, cultural, and religious influences that prohibit open discussion of sex and sexuality often hinder access to adequate information, for both men and women. Many people engage in unprotected sex even when they possess knowledge of the dangers of HIV, because they do not have access to reliable and adequate information. Some surveys of Sub-Saharan Africa indicate that a mere 2–18 percent of unmarried, sexually active 15 to 19-year-old women have sex with condoms (UN 2006). Among men in the age group of 15–19, the use of condoms is also much lower than it is among adult men.¹ Men and women who become sexually active in their teens have a high partner turnover and engage in both casual sex and short-term monogamous relationships (UN 2006). Many downplay the risk of contracting HIV, believe themselves to be invincible, and fail to recognize that the sexual behavior of their partners puts them at risk.

Early marriage increases women's vulnerability to HIV/AIDS. In 29 countries in Africa in 2005 (UNICEF 2006), 42 percent of women ages 15–24 were married before the age of 18.^{2,3} This phenomenon is perpetuated by several driving forces, including traditional gender norms: the value placed on virginity, fertility, and childbearing. Such marriages are also driven by the need for families to secure social, religious and ethnic affiliations or obtain greater economic security. Young married girls are expected to assume the roles of adult women. In addition to domestic duties, this includes frequent, unwanted, and unprotected sexual relations and immediate motherhood. In some situations, young girls are married as second or third wives to men who are much older than they are. Their restricted mobility, poor social connections, and low status in the household trap them in deep economic and social dependency on their husbands and new families, impeding their self-development and self-esteem.

Previous exposure to STIs and lack of willingness to seek treatment increase the risk of HIV/AIDS. International data show that men and women under the age of 25 experience more than 100 million STIs a year, excluding HIV (UNAIDS and UNICEF 2002). STIs increase the rate of HIV transmission, especially when left untreated. These infections can spread rapidly, particularly as the infected often do not show any symptoms, especially women. Even after being made aware of an infection, many people do not seek treatment, either because they do not feel at risk or because services are not available to them. Men often do not seek treatment because they cannot

afford the costs; women fail to treat their infections mainly because of the stigma of being infected and the fear of being exposed (Mills 2006).

Taboos around issues related to sex hinder information dissemination. Sex is a subject that is not easily or openly discussed in many societies. Families, educators, and community leaders find it difficult to communicate with young people about sex and STIs. Open discussions about condom use and safe sex are often believed to lead to promiscuity. In some societies, adults perceive young people as “naturally promiscuous” and are concerned that giving them information about sex will make them more sexually active. As a result, young people may be confused, misinformed, or frightened about sex and thus unclear about how to avoid HIV infection.

Poverty and lack of economic empowerment

The spread of HIV is both a cause and a consequence of AIDS. For women and men alike, poverty, economic dependency, and insecurity increase the likelihood of exchanging sex for money or favors and decrease the likelihood of successfully negotiating protection. Early exposure to the virus is exacerbated by the need to survive in a community in which economic opportunities and access to education and health services are limited at best. Gender discrimination in Africa affects women’s income, property rights, land rights, and financial opportunities, often forcing them to remain economically and socially dependent on men. Poverty—and the belief that marriage grants protection from HIV—are also important factors behind early marriage (Population Council 2005).

Provision of HIV-related health services is limited in Sub-Saharan Africa, for several reasons. First, affordable, private, confidential services that take gender sensitivity into account are rare; services are usually provided through family planning, antenatal, and child health clinics that are typically not designed to meet the needs of men or youth. Second, the stigma surrounding HIV/AIDS discourages people from seeking services. The taboo surrounding sex in Africa often makes it difficult for women to learn about and use sexual and reproductive health services, including HIV services.

The lack of negotiating power for women and girls to engage in safer sex is one of the fundamental causes of the gender disparity that largely drives the spread of HIV. Analysis of prevalence and incidence of HIV/AIDS among African women and girls indicates the devastating impact of the infection and the growing disparity between male and female infection rates—and projec-

tions suggest that such disparity is expected to grow (Summers, Kates, and Murphy 2002). Women's ability to negotiate condom use is a special challenge in many societies, especially in Africa, where it defies accepted gender roles and raises questions of loyalty, trust, and fidelity. Even women who are aware of the effectiveness of condoms or other forms of protection prefer not to engage in discussions over condoms for fear of being misunderstood or physically abused by men. Some women and especially young girls end up engaging in unprotected sex because they lack the skills to negotiate abstinence or condom use, or are embarrassed to discuss sex with their partners.

Low and inconsistent condom use fuels the epidemic. The reasons for inconsistent and low condom use are multiple and vary across countries and demographic groups. They include economic factors (the high price of condoms make them unaffordable for many people); limited access (condoms are not easily obtained in some rural areas); and cultural misconceptions that create a stigma around condoms (raising questions about fidelity, loyalty, and trust). Condom use may also be low because it is considered a sign of disease; because of misconceptions about the need for protection (many people, for example, believe that being in a monogamous relationship grants protection from STIs, including HIV); or because of the desire to get pregnant. In addition, many men and women dislike condoms because they reduce pleasure or are perceived as ineffective.

Transactional and commercial sex work

Most sex workers are women, particularly young women. Left without other options, many women in Africa engage in high-risk behaviors, including bartering sex for money, shelter, or protection. HIV prevalence among sex workers is very high in many African countries: 70 percent of teenage sex workers in Abidjan are reportedly HIV positive, for example (UNICEF/UNAIDS/WHO 2002). Economic hardship, civil unrest, and displacement increase the chances of women becoming sex workers. Thousands of Africans, especially young girls, are abducted, tricked, or forced into prostitution, sometimes by their parents (ILO 2005).

Men and boys are also forced into both homo- and heterosexual relations or transactional and commercial sex for economic survival, dramatically increasing their exposure to HIV. Some researchers have reported that young men enter into sexual relationships with older women who help them raise the money they need to marry (Mataure and others 2000).

Legal issues

Legal and regulatory systems have not kept pace with the evolution of the epidemic. A sustainable response to the HIV/AIDS threat must rely on a legal and judicial system that works in conjunction with the health system. The legal/judicial sector must be seen as an integral part of national AIDS efforts, providing protection from gender-based discrimination. This has not yet been achieved in Sub-Saharan Africa, where lawyers, judges, and the police do not appear to be fully aware of the gender dimensions of the pandemic.

The subordinate roles of females in many segments of society, such as in the household or in family relations, place them at a disadvantage as far as HIV/AIDS is concerned (for example, with regard to stigma and alienation). HIV/AIDS further exacerbates their diminished rights to hold, inherit, or dispose of property; to participate in democratic processes; or to make decisions about marriage or the education of their children (World Bank 2004a). Their subordinate roles are often reinforced under the law as well. Some legal and regulatory systems result in different, often discriminatory, outcomes for women and men, specifically in the following areas:

- Property rights: laws generally deny women the right of inheritance or succession.
- Gender-based violence (rape, sexual harassment, and coerced sex): narrow definitions for these offenses in some legal systems, coupled with the associated stigma, transform a rape victim into a suspect, deny rights if the victim is married to the offender, or decriminalize many kinds of unwanted sexual advances.
- Reproductive rights: some laws do not grant women, especially young women, the right to control their fertility.
- Mixed legal traditions: in some legal traditions, discrepancies between statutory law and customary law result in unequal treatment in the areas of inheritance rights, ownership of family property, separation, divorce, and child custody.

Civil conflict, war, and displacement

Civil conflict, war, and displacement provide a fertile environment for HIV/AIDS, because sex is used as an instrument of war and domination. These circumstances significantly increase the magnitude of sexual

violence, rape, and forced sex as well as reliance on sex for economic survival (as discussed above). Sexual exploitation of women, teenagers, and children is heightened by the increasing number of children and youth caught in armed conflicts (child soldiers) or displaced by civil conflicts. Women represent about 80 percent of the world's 35 million refugees and internally displaced persons, and the number of orphans and street children, who are often abused, traded for sex, or dependent on sex for survival, is growing (UNAIDS 2006a).

War and conflicts also increase the risk of HIV infection among men, who are more likely to engage in high-risk sexual behavior in these circumstances. Some estimates indicate that while STI prevalence is 2–5 times higher in the military than in the general population during peacetime, it can rise to 50 times higher during armed conflict (UN 2005). Most soldiers are young, single men who return home after the war, becoming a vector of transmission of STIs and HIV/AIDS.

Vulnerability of women to HIV

Following unprotected vaginal intercourse, women are more likely than men to contract HIV; they are also more likely to experience a faster progression of the disease, often without their knowledge (Center for Reproductive Rights 2002). The immaturity of young female reproductive organs leaves young women much more exposed to HIV than mature women. Other factors behind the higher risk associated with women include poor hygiene, genital mutilation, and complications associated with abortions and early pregnancies.

Rape and sexual abuse of girls and young women, which are common in many societies, drastically increase the odds of contracting STIs and HIV. The United Nations Population Fund (UNFPA 2005b) estimates that nearly half of all sexual assaults worldwide involve girls under age 15. Young women—and young men—often suffer injuries from forced sex (Population Council 2004; World Bank 2006c).⁴ Reports on sexual violence at sexual debut, partner violence, and virgin and child rape in many African countries demonstrate the extent of the danger young girls face. In southern Africa, young girls and children as young as nine months old have been raped by older men, in some cases because of a common misconception that HIV can be cured by having intercourse with a virgin (UNAIDS and UNICEF 2006). Many young men also use force at sexual debut, increasing the chances of contracting HIV and infecting their partners.

Institutional Responses, Strategies, and Actions

Consensus is growing that the integration of gender considerations into development policies, including HIV/AIDS programs, is critical in Sub-Saharan Africa. Limited capacity, restricted funding, weak institutions, and often lack of political commitment make doing so a challenge. Scaling up existing HIV/AIDS interventions and providing gender-specific prevention tools is a priority, as is integrating gender aspects into targeted service delivery for prevention, care, and treatment within national AIDS policies, strategies, and action plans. Analytical work—including operational research, pilot testing, and capacity building through systematic in-country training, harmonization, and coordination of all efforts—is needed to shape the decision-making process.

Addressing gender inequality issues is of crucial importance in the context of the HIV/AIDS epidemic because of the negative consequences of such inequality. Policy makers and practitioners have difficulty understanding and transforming gender roles and relations to support the deep-rooted behavior change needed to reduce gender-based vulnerability and risk.

National HIV/AIDS strategies identify the role that gender inequality plays in the spread of HIV/AIDS and the need to address these issues at the central policy level. They do not, however, consistently apply gender methodology or consistently recommend policies and actions to address the gender dimensions of the challenge. Many national AIDS authorities express the need for more training in gender analysis and tools. Very few of the national AIDS authorities reviewed had a full-time gender specialist on staff, although several national AIDS authorities had a focal point for broader social issues. All national AIDS authorities had representatives from the ministry responsible for women's or gender affairs. Although technical resources and generic guidelines are available, the extent to which they are applied and the impact they have on programming remain unclear. (For some of the factors and key questions that can guide the formulation of gender-sensitive national policies and strategies, see annex table 9A.1.)

In 2006, the World Bank conducted a portfolio review of gender mainstreaming within its Multi-Country HIV/AIDS Program (MAP) for Africa. The review assessed the level of inclusion of gender issues in 12 projects in countries with different HIV/AIDS prevalence rates (table 9.2).

The review applied a checklist of key questions to assess the gender sensitivity of programs at different stages of the project cycle (see annex table 9A.2). The review finds that the MAPs generally acknowledge the

Table 9.2: Selected Countries for the 2006 Portfolio Review of Gender Mainstreaming within the Multi-Country HIV/AIDS Program (MAP) for Africa

FISCAL YEAR APPROVED	HIV/AIDS PREVALENCE AMONG POPULATION 15–49		
	4 PERCENT OR LESS	4–8 PERCENT	MORE THAN 8 PERCENT
2001	Ethiopia	Cameroon	—
	The Gambia	Kenya	
	Madagascar		
2002	Burkina Faso	Sierra Leone	Zambia
2003	—	Rwanda	Mozambique
2004	—	—	Malawi
			Tanzania

Source: World Bank World Development Indicators database, September 2005, for 2003 or 2004, as available. Data for Sierra Leone from UNAIDS, 2006.

gender dimensions of HIV/AIDS risks and impacts as they relate to women and girls but that male-specific issues are only at the very early stages of recognition and attention (World Bank 2006c). The broader social dimensions of the epidemic are being assessed. Reviews identifying successes and gaps of gender considerations in the design of MAP projects provided insights into gender mainstreaming (Delion, Peters, and Bloome 2004). An Operational Guide for Integrating Gender Issues into the World Bank HIV/AIDS Operations has been prepared.

Good Practices and Promising Approaches

Good practice approaches openly acknowledge the issues that are at the core of gender-based vulnerability and risk. Programs that have made significant efforts to address the culture of silence around sex, the issues facing people at elevated risk because of gender or age, and institutional and legal bottlenecks have had significant impact on gender issues. Examples of these programs are described below.

Intervening early in the project cycle

One of the main success factors to gender equality issues is the recognition of and planning for these issues at the national and subnational intervention design stage. This was the case with the Gambia HIV/AIDS Rapid Response Project (HARRP), which analyzed gender issues and brought in local experts to participate in project implementation (box 9.1).

Box 9.1: Empowering Women in The Gambia

The HIV/AIDS Rapid Response Project (HARRP) actively supports several women's groups. As of March 2006, more than 60 percent of its community grants had been awarded to women's groups. One such group is the Foundation for Research on Women's Health, Productivity, and the Environment (BAFROW). Starting in 1991 with a one-room clinic and their own personal networks, a group of women organized themselves to improve health outcomes for women and combat HIV/AIDS. Today BAFROW is a self-supporting, fee-for-service network of clinics that has been cited as a flagship on work with women and gender issues. BAFROW offers services and preventive care and supports systems focusing on economic and emotional well-being through entrepreneurship education.

Source: Interview with John May, Lead Population Specialist, World Bank, May 2006.

Promoting open discussion of sensitive topics through peer groups

First developed in Uganda and now replicated in countries such as The Gambia and Sierra Leone, the "Stepping Stone" approach has proven to be a useful tool to open dialogue on sensitive topics among women and men at the community level. The community identifies a Stepping Stone facilitator, who is trained for six weeks before returning to the village. The village is then divided into four groups: older women, younger women, older men, and younger men. These peer groups meet separately to discuss their most pressing issues. After agreeing on these issues, the entire village meets and each group presents its issues to the village through music or drama. Examples of issues that have been selected by the peer groups include young women wanting older men to stop sexually harassing them, older women wanting older men to stop spending money on beer, and young men wanting better access to condoms.

Focusing on gender-based risk and vulnerability

Successful targeting strategies involve identification of a project's primary beneficiaries on the basis of their gender-based exposure to risk or vulnerability. This is coupled with empowerment-enhancing interventions, such as mobilizing community members around behavior change and women's empowerment. In Rwanda, for example, activities are supported that target genocide widows, mobile populations, sex workers, and other women to determine their livelihood priorities and design income-generating activities

for them. Not only does this raise the self-esteem of women in the community, it also enables them to focus on sexual behavior change. In Zambia, a national strategic plan has focused on similar targeting strategies (box 9.2).

Another successful targeting strategy involves microfinance and microcredit initiatives to assist women with livelihood strategies. In Eritrea, economic activities such as poultry initiatives and beekeeping are being supported. The Great Lakes Initiative on HIV/AIDS (GLIA) (World Bank 2005b) conducted a social and gender assessment designed to better understand the gender dimensions of HIV/AIDS among refugees and internally displaced people in the region. It indicates that HIV/AIDS interventions need to go beyond conventional responses, focus on the separate needs of men and women, and identify specific actions to empower women. These findings paved the way for more directed gender targeting.

An important aspect of targeting includes providing peer-appropriate HIV/AIDS information. In Cameroon, material on sensitive issues such as sexual behavior was produced and disseminated. A national behavior study (2004) undertaken by the project provided the basis for a comic book on sexual behavior targeting youth. The document proved to be extremely popular. It provides an example of how to develop appropriate messages and materials for a particular audience.

Adopting community-based planning and participatory approaches

Community participation, peer learning, and networking to build local capacity on gender issues are key tools for any gender program. A good example is the use of community score cards in Cameroon (box 9.3).

Box 9.2: Targeting High-Risk Groups in Zambia with Gender-Relevant Interventions

Zambia's National HIV/AIDS Strategic Plan (2006–10) cites high-risk groups as one of its strategic objectives for intensifying prevention and expanding treatment, care, and support. The Zambia National Response to HIV/AIDS project (ZANARA) also emphasizes the need to target such groups. ZANARA's primary focus is on the specific needs of different sectors and themes, such as education, gender, labor, social development, transport, and industry. It targets groups known to be particularly vulnerable to HIV infection (youth, especially girls, pregnant women, long-distance truck drivers, construction workers, traders, fishermen, soldiers, and prisoners); groups engaging in high-risk, HIV-related behavior, such as sex workers; and people in key sectors, such as agriculture, mines, road construction, power, and energy.

Source: Authors.

Box 9.3: Adopting a Community-Based Participatory Approach in Cameroon

Participatory methodologies were fine-tuned to enable special targeting of high-risk groups in Cameroon, such as sex workers, prisoners, students, and people living with HIV/AIDS. Through a mobilization effort, the number of communities implementing HIV/AIDS action plans assisted by project grants rose from zero in 2001 to 6,000 by the end of 2005, far exceeding the original target of 3,000 communities. While the project did not measure the gender balance in the HIV/AIDS committees, women have played and continue to play a major role in them (discussion with Jean Delion, Social Development Specialist, World Bank, June 2006).

Report cards have galvanized community interest and action, promoted open discussion of sensitive topics among women and men, and put in place a participatory mechanism for evaluating local HIV/AIDS community action. Using report cards, community representatives voted on nine HIV/AIDS-related issues, such as knowledge of how HIV is transmitted, changes in their behavior because of HIV/AIDS, the quality of services provided, the promotion and use of condoms, access to treatment, management of financial resources for the fight against HIV/AIDS, and the effectiveness of the local HIV/AIDS committee. Using a tool that was anonymous facilitated discussion of a very sensitive and previously forbidden topic. Printed report cards are now available in 6,000 communities (World Bank 2006d).

Source: For more information, see Delion, Peters, and Bloome (2004).

Another important element of community-based planning includes engaging the support, commitment, partnership, and leadership of indigenous institutions, local leaders, and champions. In Guinea-Bissau, a project worked with traditional healers on prevention and treatment. In Ghana, a program works with leaders and respected members of society (such as queen mothers) to encourage communities to integrate AIDS orphans and other vulnerable children into families rather than placing them in orphanages (World Bank 2005c).

Encouraging multisectoral and intersectoral planning

Line ministries and other public sector institutions with mandates for addressing gender-relevant development issues have important roles to play. Agencies whose portfolios cover gender equality and women's welfare (education, health, social welfare, and gender affairs); access to productive resources and services (agriculture, transport, labor, and commerce); individual status, rights, and protection under the law (interior and justice); the productivity, safety, and welfare of men and women as productive members of society (interior, justice, and labor); and the economy and state security (finance and defense) are important players in the multisectoral response.

Monitoring and evaluating gender-sensitive indicators

Most national AIDS frameworks identify monitoring and evaluation (M&E)—tracking project inputs, outputs, outcomes, and impacts—as a crucial aspect of the learning-by-doing approach. Substantial resources from programs and projects supported by the World Bank and donors go toward M&E frameworks. The M&E results for HIV/AIDS have been mixed and are largely a work in progress.

Integrating gender-specific and gender-disaggregated indicators into M&E frameworks would enhance program effectiveness and track progress toward achieving gender-specific goals (box 9.4). In Madagascar, different targets are established for men and women, based on the situation and regional context, and male and female beneficiaries were consulted during the design of the M&E system for Zambia. This potential remains untapped in most other countries, however.

Box 9.4: Gender-Sensitive Indicators for HIV/AIDS Programs

Gender-sensitive M&E consist of multiple components, such as surveillance, research, and financial monitoring. Each component relies on gender-sensitive indicators to determine the effectiveness with which gender dynamics are being addressed (table).

Components of Gender-Sensitive Monitoring and Evaluation

Component	Description
Impact	Monitoring of prevalence among 15- to 24-year-olds, including pregnant women; rate of mother-to-child transmission; and number of children orphaned.
Outcome	Monitoring of changes in behavior or skills, based on gender-disaggregated data on knowledge of methods of protection; condom use; and use of referral systems by voluntary counseling and testing, health care services, and community-based organizations.
Input	Evaluation of people, training, and equipment needed to achieve outcomes, based on proportion of HIV/AIDS budget targeting gender-sensitive measures; sectoral ministries that incorporate gender-sensitive HIV/AIDS components in their plans; training for national stakeholders; and percent of sectoral ministry staff (by gender) active in HIV/AIDS programs.
Output	Evaluation of activities and services delivered based on participation of women's organizations in HIV/AIDS policy development, implementation, and monitoring; stigma-reduction activities; and prevention programs in school curricula.

Source: Authors.

The examples from Madagascar and Zambia are the exception rather than the norm. Moreover, where gender-sensitive monitoring is conducted, indicators are largely quantitative. Qualitative indicators, which are crucial for assessing such vital issues as behavior change or reduction in the stigma experienced by people living with HIV/AIDS, are rarely used. Most donor projects have only end-of-project targets, no indicators to track progress during implementation that would enable assessment of improvements in qualitative indicators. Recent efforts, such as the Great Lakes Region of Africa Social and Gender Assessment, reflect heightened interest in linking such analysis to the use of scarce resources to enhance intervention outcomes. The basic methodological tools to do so are now available, but they need to be customized for different regions of Africa. More attention must also be paid to reducing the costs of such analyses to make them more accessible to program managers.

Conceptual and Institutional Challenges for Gender Mainstreaming

The project review reveals several difficulties with conceptual and institutional gender mainstreaming. Substantial gaps remain between the understanding and actual integration of gender issues into the design and implementation of HIV/AIDS projects. Conceptual problems with gender equality appear to be a major source of confusion about which gender issues to focus on and how to address them. Policy and institutional gaps also limit the ability of programs to provide more strategic targeting of beneficiaries. Special attention to bridging these gaps will ensure that donor and national resources target areas and issues such as male-focused interventions, where the need is greatest.

There is still only limited understanding of the concept of gender (how societies define the acceptable economic and social roles and behaviors of males and females). These definitions result in disparities in male and female rights, responsibilities, access to and control over resources, voice, and division of labor at the household, community, and national levels. As a result of gender differences and disparities, males and females may have different priorities and constraints. Gender influences the social and economic well-being of males and females. In the context of HIV/AIDS, however, it is usually equated with women's roles only, leading to women-focused initiatives that do not take into account the interrelations

between female and male roles. The complex gender issues that underpin the epidemic emphasize the need for a more sophisticated response. Programs need to conduct more-thorough gender analysis and identify strategies to address both male and female gender equality needs.

Programs that address half of the gender equation are not holistic in terms of linking to poverty reduction; means of enhancing male involvement and women's empowerment (for example, female condom, economic advancement, education, access to credit); and reproductive health. Only comprehensive and multidimensional development interventions will deepen the understanding of gender roles, include men as part of the solution, and improve women's status, as they are more likely to empower women economically, legally, and socially. In sum, to effectively address gender and HIV/AIDS, policy makers need to consider both direct and indirect actions that will lead to the desired outcomes.

Very few interventions explicitly analyze and address male gender issues. Most discussions about gender issues focus on the disadvantages that women and young girls experience. Very few interventions conduct gender analysis or adopt perspectives that include male gender issues. Several initiatives target high-risk groups of men. Some projects specifically address the needs of the ministries of defense and transport, two institutions that can be described as predominantly male domains. However, very few analyses examine how rigid notions of masculinity and femininity in many societies contribute to two of the most pressing development challenges facing Africa's development: HIV/AIDS and armed conflict.

Special programs need to be designed to target men with specific messages and programs that highlight their responsibilities as husbands, fathers, and protectors of families and communities. The reproductive health sector has useful examples of how to engage different cohorts of males as partners in both local and national responses that can serve as good practice experiences for HIV/AIDS programs. Subgroups that need targeted interventions include men in the armed forces, excombatants and adolescent boys in conflict zones and refugee camps, teenage boys and young men, boys and men in prison, male street children, men having sex with men, and "men on the move" (truck drivers, migrant workers).

There is limited mainstreaming of gender issues at the institutional level. A common approach in many countries is to have the ministry responsible for women's or gender affairs implement gender initiatives. These ministries are usually not the best placed, qualified, or financed to deliver the

multidimensional and cross-cutting initiatives that are required as effective gender approaches. They rarely have relevant experience dealing with male gender issues and have very limited implementation capacity. Mainstreaming gender issues also requires more than just stand-alone gender activities. It requires infusion of the gender determinants of HIV/AIDS risk into mainstream programs (that is, the majority of programs implemented by mainstream agencies) in order to ground programs firmly in social and cultural contexts and realities. Developing strategic partnerships on the range of gender-relevant HIV/AIDS issues by all sectoral ministries, agencies, and local organizations is a crucial aspect of gender mainstreaming.

Effective mainstreaming requires capacity to work across sectors. HIV/AIDS programs are often implemented by ministries of health (and sometimes education). These ministries often have good understanding of women's health and girls' education issues. By virtue of their mutual interests, they are able to liaise with the agencies responsible for gender affairs. However, empowerment-related gender equality issues require engagement of other sectors of the economy that are relevant for reducing poverty and promoting growth, such as agriculture, private sector development, transport, and energy. A common gender mainstreaming practice in many countries is the assignment of a gender focal point within each ministry to coordinate gender considerations and liaise with other sectors. This focal point system has not proven to be the most effective way to work across sectoral lines, because the effort requires not just liaison but sector-specific strategic planning and programming expertise that is implemented through a gender-informed lens.

Very few programs effectively address policies, laws, law enforcement, or access to legal information. HIV/AIDS has many legal dimensions and repercussions that should be addressed by the legal and justice system. Improving both males' and females' knowledge about their legal rights is critical to addressing the range of risk and vulnerability factors for HIV infection.

The gender impacts of community-based home care are often not fully addressed. As the impact of the disease on patients increases incrementally, so does the burden on caregivers. World Bank programs and others have supported community-based home care because this approach offers viable alternatives given the "weak public health infrastructure, spiraling health costs, and lack of resources" (Mohammad and Gikonyo 2005, p. v). However, the burden of caring for people living with HIV/AIDS, as either primary

care givers or volunteers, disproportionately falls on women. The caregiving tasks that result from having a household member with HIV/AIDS are numerous, and they increase the burden of other domestic activities, such as housekeeping, shopping, and transportation (Akintola 2005a). Older women are overwhelmed with the magnitude and multiplicity of tasks they have to perform, and young girls are often forced to miss or drop out of school (Lindsey, Hirschfeld, and Tlou 2003).

Looking Ahead: A Poverty-Focused Strategic Approach

Gender inequality and vulnerability create a major barrier to effective HIV/AIDS prevention and treatment programs. High poverty rates by and large contribute to the rapid spread of HIV/AIDS. Most countries' poverty reduction strategies prioritize HIV/AIDS as an important poverty reduction goal. This designation of HIV, especially in countries with generalized epidemics, as one of the central development themes, presents an opportunity for a holistic, integrated approach that links gender and HIV/AIDS issues to poverty. This means addressing basic gender inequalities in society.

Institutional and community responses offer a good opportunity to test ways to mainstream gender issues. The high level of resources earmarked for community-level activities in HIV/AIDS programs (often more than half) provides a unique testing ground for different approaches tailored to local needs. However, this does not by itself ensure that gender issues will be automatically incorporated into the selection and design of local activities. Ensuring such incorporation requires an explicit effort on the part of practitioners and partners, complemented with tools, guidance, good practice examples, how-to guides, and checklists to build capacity to address gender issues. The checklist displayed in annex table 9A.2 is a versatile tool that can be used at both the design and completion stages to assess the extent to which programs have effectively incorporated gender issues.

A learning-by-doing approach offers rapid, real-time feedback on what works. It presents unique opportunities to analyze lessons on gender issues and to document and disseminate good practices. The Africa Region's HIV/AIDS Agenda for Action 2007–11 puts forward the next phase of the World Bank's multisectoral programming in Africa to scale up tools and methods, provide innovative and effective interventions, and support the development of sustainable HIV/AIDS action plans. This next generation of multisectoral interventions should make more progress than the "emergency

phase” of the World Bank’s program in tackling the gender dimensions of the epidemic if it takes a comprehensive approach to the following issues:

- Institutional capacity building and action planning to strengthen the capacity of national AIDS authorities to develop and implement gender-relevant policies, goals, strategies, and costed action plans to mainstream gender issues into HIV/AIDS programs.
- Integrated social/poverty/gender analyses to increase policy makers’ and program managers’ awareness of the linkages between gender equality, the sociocultural and socioeconomic aspects of the HIV/AIDS epidemic, poverty reduction, and women’s economic empowerment.
- Application of a gender perspective that focuses on both females and males to facilitate understanding of and responses to male-specific risk and vulnerability factors; the needs of boys, young men, and adult men; and the implications of male gender issues for power relations between women and men, sexual violence, and women’s economic empowerment.
- Promotion by national AIDS authorities of public sector gender and HIV/AIDS partnerships that engage partners beyond the ministries of women’s and gender affairs to invest in research on the gender-specific needs of males and females. Specific areas of research could target areas such as job creation, links between gender norms and violence, and youth development. Prioritizing women’s economic empowerment as an overarching goal and using the education system to address the socialization of young women and men are good opportunities for cross-sectoral collaboration.
- Legal system reforms, enforcement of laws, and sensitization of the legal profession and law enforcement officials about the gender and legal dimensions of HIV/AIDS and their effects on males and females of all ages. Such legal system interventions could include legal literacy and legal aid services to promote and enforce women’s rights under customary and statutory law; antistigmatization and antidiscrimination laws, policies, and strategies; and reproductive law and policy to enable individuals to make decisions free of coercion and violence and to promote access to safe services and information.
- Collection and analysis of gender-relevant and gender-disaggregated data to improve understanding of how gender issues affect the spread of HIV/AIDS.
- Development of country-specific databases on good practices and promising approaches for addressing the gender dimensions of HIV/AIDS.

Annex

Table 9A.1: Checklist for Mainstreaming Gender Issues into HIV/AIDS Strategies and Action Plans

ISSUE	QUESTIONS TO CONSIDER
I. National HIV/AIDS strategic plan (NSP)	
A. <i>Strategic planning: Objectives and goals, evidence-based approach</i>	
Does the NSP provide considerations for gender in the formulation of its goals and key objectives?	Assess the degree to which the NSP's goals and objectives take gender into account by indicating if goals and objectives mention gender
Does the NSP provide gender-specific evidence of "Know Your Epidemic"?	Who are the key gender-specific drivers of the epidemic? What are the underlying factors (sociocultural, economic/poverty, legal/institutional) that increase vulnerabilities and risks associated with gender and age?
B. <i>Gender analysis of the national response</i>	
Did the preparation of the NSP include a gender analysis?	Does the NSP have enough evidence to fully explain gender-specific dynamics of the epidemic? If so, are the data being incorporated into the formulation of the NSP's priorities (areas and types of interventions); targets (geographic coverage, target population), and expected outcomes and impacts? If not, what type of data are missing and how does the NSP aim to address the knowledge gaps?
Has there been a gender analysis of the national response?	Has there been a gender analysis of the national response?
Does the NSP include a country gender and HIV/AIDS social assessment? Has a country social assessment that includes an analysis of gender and HIV/AIDS been conducted?	Does the NSP include a country gender and HIV/AIDS social assessment? Has a country social assessment that includes an analysis of gender and HIV/AIDS been conducted?
Has a country poverty and social impact assessment that included an analysis of the gender and poverty specific impact of HIV/AIDS been conducted?	Has a country poverty and social impact assessment that included an analysis of the gender and poverty specific impact of HIV/AIDS been conducted?
C. <i>Translating gender-specific evidence into formulation of priority areas and interventions</i>	
Is gender considered in the formulation of priority areas?	What are the gender-specific inequalities in prevention, treatment, and care? How many and which priority interventions address gender?
Is gender considered in the formulation of priority interventions?	Do priority interventions address gender-specific inequalities in prevention, treatment, and care? How do they do so?

D. Implementation and monitoring and evaluation of gender-specific interventions

How does the National HIV/AIDS Strategy Plan (NSP) aim to implement its gender-specific interventions?

Does the NSP formulate the participation of key implementing partners of gender-specific interventions?

Is gender included in the NSP's annual action plan? Is it considered in the NSP's annual budget?

What specific roles and responsibilities of key implementing partners are indicated in the NSP?

How does the NSP define the role of the NAC with respect to the ministries in charge of promotion of gender equality (ministries of gender, justice, women's affairs, youth, social affairs, economic development, labor) and those in charge of specific populations (ministries of migration, refugees, defense, interior)?

How does the NSP define the role of key sectors in mainstreaming gender into the sector (education, transport, health, agriculture and rural development, extractive industries)?

How does the NSP plan to monitor and evaluate its gender-specific interventions?

Is gender included in the design of the monitoring and evaluation framework?

Did the process of developing a monitoring and evaluation framework include development of gender-disaggregated indicators?

II. Operational plan in support of the national HIV/AIDS strategy

Is gender integrated in the formulation of an operational plan?

Did preparation of an operational plan include participatory stakeholder consultations with men and women on how to integrate gender into the operational plan?

How does the operational plan aim to address the gender-based inequalities in prevention, treatment, and care?

Are gender-specific interventions prioritized in the operational plan?

Did the consultation include prioritization of key intervention areas and target groups disaggregated by gender?

Did the preparation of an operational plan include analysis of the existing gender-specific evidence of the priority areas, targets, and goals?

What are the priority areas, targets and goals and how are those specified by gender?

Are the gender-specific interventions of the operational plan costed?

Does the operational plan have a detailed costing of gender-specific activities?

What are the key elements of the implementation of the operational plan?

How does the operational plan aim to implement its gender-specific interventions?

Did the process of developing a monitoring and evaluation framework include development of gender disaggregated indicators?

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Table 9A.1: Checklist for Mainstreaming Gender Issues into HIV/AIDS Strategies and Action Plans (*continued*)

ISSUE	QUESTIONS TO CONSIDER
Participation of key implementing partners of gender-specific interventions	<p>What are the specific roles and responsibilities of key implementing partners indicated in the operational plan?</p> <p>How does the NSP define the role of the NAC with respect to the ministries in charge of promotion of gender equality (ministries of gender, justice, women's affairs, youth, social affairs, economic development, labor) and those in charge of specific populations (ministries of migration, refugees, defense, interior)?</p> <p>How does the operational plan define the role of key sectors in mainstreaming gender into the sector (education, transport, health, agriculture and rural development, extractive industries)?</p>
Monitoring and evaluation of gender-specific interventions of the operational plan	<p>How does the operational plan aim to monitor and evaluate its gender-specific interventions?</p> <p>Is gender included in the design of a monitoring and evaluation framework of the operational plan?</p> <p>Did the process of developing a monitoring and evaluation framework include development of gender-disaggregated indicators?</p>
III. National HIV/AIDS policy Integration of gender	<p>Does the policy include statements on the gender dimensions of the epidemic?</p> <p>What are the goals of the policy from a gender perspective?</p> <p>Does the policy address issues of human rights, universal access to prevention, and treatment and care for all gender groups (men, women, sexual minorities [transgender])? If so, what are its key principles?</p> <p>How does the policy address the specific needs of people living with HIV/AIDS disaggregated by gender and age (women, girls, men, boys, orphans, and vulnerable children)?</p>
IV. Sectoral HIV/AIDS policies Understanding the impact of HIV/AIDS in a sector across gender groups Proposed actions and implementation mechanism Monitoring and evaluation of gender-specific interventions	<p>Does the sector strategy reflect an understanding of the impact of the epidemic disaggregated by gender and age (women, girls, men, boys)?</p> <p>Has there been an analysis of the sector impact?</p> <p>What actions will be taken by the sector to address the impacts disaggregated by gender? Is gender included in the design of the monitoring and evaluation framework?</p> <p>Did the process of developing a monitoring and evaluation framework include development of gender-disaggregated indicators?</p>

V. National gender policies, strategies, and action plans	
How does a gender policy, strategy, and action plan articulate the issue of gender and HIV/AIDS?	Does the strategy reflect an understanding of the impacts of the epidemic disaggregated by gender?
How do a gender policy, strategy, and action plan address the issue of HIV/AIDS and gender?	What actions are to be taken to address the impacts of HIV/AIDS disaggregated by gender?
Implementation of proposed actions	How will the gender-specific actions of the policy, strategy, and action plan be implemented?
Monitoring and evaluation of the implementation of the gender-specific actions	What is the monitoring and evaluation mechanism of the implementation of the proposed gender-specific actions?
VI. Project/program design	
Inclusion of gender and HIV/AIDS dimensions in the formulation of the project/program design	Does the project/program design reflect an understanding of its gender and HIV/AIDS dimensions, including risks and vulnerabilities of female and male populations?
Participation of target population in the design of the project/program	Does the project/program intend to include women, girls, men, and boys in the project/program design?
VII. Coordination of a multisectoral response	
A. <i>Division of roles and responsibilities in coordination</i>	
Role of the NAC	What are the specific actions of the NAC in increasing attention to gender issues at the national and international level? How does the NAC coordinate the efforts of public and private sector interventions with regard to integrating gender? How does the NAC coordinate the support of donor and development agencies to promote integration of gender into the national response? Has an analysis of the funding mechanisms, resource mobilization, and management of donor and development agencies' support in promoting integration of gender been conducted?
Role of line ministries	What specific actions will line ministries take to address gender as it relates to their primary constituencies?

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Table 9A.1: Checklist for Mainstreaming Gender Issues into HIV/AIDS Strategies and Action Plans (*continued*)

ISSUE	QUESTIONS TO CONSIDER
Role of donors	<p>What specific actions will donors take in increasing attention to gender issues?</p> <p>Has an analysis of the funding mechanisms, resource mobilization, and management of the donor agencies' support in promoting integration of gender been conducted?</p>
Role of UN agencies	<p>What are the specific actions of the UN agencies in increasing attention to gender issues?</p> <p>Has an analysis of the funding mechanisms, resource mobilization, and management of UN agencies' support in promoting integration of gender been conducted?</p>
<p><i>B. Building/strengthening strategic partnerships</i></p> <p>Horizontal partnership between NAC and line ministries in charge of gender, women, youth, labor, social affairs, justice, health, and social development</p> <p>Vertical partnership between NAC, donors, and international development partners</p> <p>Partnership with private sector</p> <p>Partnership with civil society</p>	<p>Assess the types of partnership needed for the NAC to build/strengthen with line ministries (capacity building, knowledge management, and others)</p> <p>Assess the types of partnership needed for the NAC to build/strengthen with the donor and international development agencies (that is, areas of support—financial, technical)</p> <p>Assess the types of partnership needed for the NAC to build/strengthen with private sector (for example, provision of services, capacity building)</p> <p>Assess the types of partnership needed for the NAC to build/strengthen with civil society (provision of services, and others)</p>
<p>VIII. Sector-specific responses (education, health, agriculture and rural, extractive industries, urban development, private sector, economic development)</p> <p>Inclusion of gender-disaggregated issues by ministries' primary constituencies</p>	<p>What analysis of sector impact has been conducted?</p> <p>How does the design of institutional actions address gender and HIV/AIDS?</p> <p>How is the design of interventions targeted to each gender-specific population of the sector?</p>
<p>IX. Legal, regulatory, and policy frameworks for gender and HIV/AIDS</p> <p>Analysis of legal and regulatory frameworks for gender and HIV/AIDS</p> <p>Application of international laws on human rights, women's rights, and rights of children and youth to the national context</p> <p>Policy on HIV/AIDS</p>	<p>Has there been a review of legal frameworks of gender and HIV/AIDS including issues of men and women?</p> <p>Has there been an analysis of the gap between the commitments and application of the international laws and conventions with realities on the ground?</p> <p>How does the HIV/AIDS policy ensure protection of universal rights to prevention, treatment, care, and support for people living with HIV/AIDS, specified by gender and age?</p> <p>How does the policy ensure protection of universal rights to prevention, treatment, care, and support for high-risk groups—sex workers, prisoners, internally displaced people, men having sex with men—specified by gender?</p> <p>How does the HIV/AIDS policy provide for creating a legal environment to fight stigma surrounding HIV/AIDS and discrimination against people at high risk for or living with HIV/AIDS?</p>

Policy on gender	How does the gender policy ensure protection of people's rights to prevention, treatment, care, and support, specified by gender? How does the gender policy ensure promotion of people's economic rights (property rights, employment) to reduce the vulnerabilities associated with gender? How does the women's policy ensure protection of women's rights to prevention, treatment, care, and support?
Policy on women	How does the policy ensure promotion of women's economic rights (property rights, employment) to reduce the vulnerabilities associated with gender? How does the youth policy ensure protection of young people's rights to prevention, treatment, care, and support, specified by gender? How does the policy ensure promotion of young people's economic rights (property rights, employment) to reduce the vulnerabilities associated with gender?
Policy on youth	How does the policy on children ensure protection of children's rights to prevention, treatment, care, and support specified by gender?
Policy on children	How does the policy on orphans and vulnerable children ensure protection of their rights to prevention, treatment, care, and support, specified by gender? Is there a national policy on male circumcision?
Policy on orphans and vulnerable children	
Policy on male circumcision	
X. Participation of civil society in addressing gender in the national response	
Participation of NGOs, CSOs, FBOs, and other grassroots organizations working on HIV/AIDS and gender	List of local and international NGOs, CSO, and FBOs per area of intervention and target groups disaggregated by gender and age, including: Women (among those high-risk groups, vulnerable women, girls, people living with HIV/AIDS, orphans, and vulnerable children) Men (including high-risk groups, vulnerable men, boys, people living with HIV/AIDS, orphans, and vulnerable children) General population (men) General population (women)

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Table 9A.1: Checklist for Mainstreaming Gender Issues into HIV/AIDS Strategies and Action Plans (*continued*)

ISSUE	QUESTIONS TO CONSIDER
Support to NGOs, CSOs, and FBOs	<p>What is the mechanism for ensuring/encouraging the participation of the NGOs, CSOs, and FBOs?</p> <p>What is the role of the NAC, line ministries, and donor/development agencies in ensuring the participation of the NGOs, CSOs, and FBOs?</p>
Sustainability of NGO, CSO, and FBOs participation, including funding and human resources	<p>List existing funding sources (donors/development agencies)</p> <p>Funding available</p> <p>Human resources available</p>
Monitoring and evaluation of activities implemented by NGOs, CSOs, FBOs	<p>Is an adequate monitoring and evaluation system in place?</p> <p>What are its elements?</p>
XI. Participation of the government at the local level	
Participation of local governments	<p>List type of activities per area of intervention and gender group</p> <p>Women (among those high-risk groups, vulnerable women, girls, people living with HIV/AIDS, orphans, and vulnerable children)</p> <p>Men (including high-risk groups, vulnerable men, boys, people living with HIV/AIDS, orphans, and vulnerable children)</p> <p>General population (men)</p> <p>General population (women)</p>
Sustainability of local government's participation, including funding and human resources	<p>Funding available</p> <p>Human resources available</p>
Monitoring and evaluation of activities implemented by NGOs, CSO, FBOs	<p>Is there an adequate monitoring and evaluation system in place? What are its elements?</p>

Source: Authors.

Table 9A.2: Checklist for Mainstreaming Gender Issues into HIV/AIDS Programs and Projects

ISSUE	COMMENTS/OBSERVATIONS
<p>National HIV/AIDS strategy High-risk groups mentioned in overall goals Women and youth targeted Non-HIV/AIDS gender-based intervention (such as literacy) included National gender strategy Discusses HIV/AIDS and gender issues</p>	<p>These items provide entry points for discussions of gender issues in subsequent projects to address HIV/AIDS impact^a</p> <p>Shows the level of information available, and awareness of gender issues in relation to HIV/AIDS</p>
<p>Project or program design Did the appraisal address male risk and vulnerability (socioeconomic, cultural, and other risk factors associated with masculine roles) Did the appraisal address female risk and vulnerability (socioeconomic, cultural, and other risk factors associated with feminine roles) Did the appraisal cite a gender assessment or study Identifies male groups as high risks Identifies male groups as vulnerable Identifies female groups as high risks Identifies female groups as vulnerable Do female beneficiaries participate and collaborate in project design Do male beneficiaries participate and collaborate in project design</p>	<p>If so, shows awareness of how masculine and feminine roles influence decisions on sexual behavior</p> <p>Shows availability of information on gender roles and issues, as well as socioeconomic data Is there a listing of key target groups (sex workers, uniformed services, truck drivers, pregnant women), that are de facto gendered? The review should look at whether activities to reach these groups take gender differences into account</p> <p>Involvement of groups representing target population is likely to better inform the project on gender issues</p>
<p>Project or program implementation Do female beneficiaries participate and collaborate in project implementation Do male beneficiaries participate and collaborate in project implementation</p>	<p>Through representation in various councils and coordination mechanisms</p>

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Table 9A.2: Checklist for Mainstreaming Gender Issues into HIV/AIDS Programs and Projects (*continued*)

ISSUE	COMMENTS/OBSERVATIONS
<p>Gender analysis or studies conducted during implementation</p> <p>Any social analysis conducted</p> <p>Social and/or gender study financed by trust fund</p> <p>Terms of reference for implementation reviews include attention to gender issues</p> <p>Midterm review includes attention to gender issues</p> <p>Completion report discusses gender results and issues</p> <p>Social scientist or gender specialist involved in supervision/reviews</p>	<p>Sometimes combined in one study, sometimes found in trust fund section of files</p> <p>What is not specifically mentioned in terms of reference is not likely to be looked for</p> <p>For completed projects or programs</p> <p>Involvement of a social scientist or gender person demonstrates felt need for such skills</p>
<p>Multisectoral/mainstreaming and institutional activities</p> <p>Did the national AIDS authority take steps to increase attention to gender issues</p> <p>Main line ministries serving primarily men involved</p> <p>Main line ministries serving primarily women involved</p> <p>Evidence of a champion for gender issues</p> <p>Advisor with explicit gender responsibilities posted in project</p> <p>Strategic partnership between health ministry and other ministries on gender and HIV/AIDS</p> <p>Strategic partnerships between ministries on gender issues</p> <p>Strategic partnerships between ministries and gender groups</p> <p>Are government mechanisms to address legal and gender issues discussed</p> <p>Any evidence of a gender capacity building initiative</p> <p>Workshop, training, manuals on gender issues in multisectoral program</p>	<p>If so, document how and with which parties</p> <p>If so, located where</p> <p>Strategic partnerships across sectors are a key element of MAP and could help render gender considerations a common theme</p> <p>(that is, legislation, training of judiciary, laws affecting women and youths)</p>
<p>Community activities and local response</p> <p>Are NGOs, CSOs, and other grassroots organizations working on women's issues involved in identification of activities funded?</p> <p>Are NGOs, CSOs, and other grassroots organizations working on men's issues involved in identification of activities funded?</p> <p>Are local governments involved?</p> <p>Is the private sector involved?</p>	<p>Try to list what types of activities</p>

<p>Local reports include % activities undertaken by women's groups</p> <p>IEC and/or BCC tailored to different audiences (men, women, youths)</p> <p>Use of social or gender factors to identify 'hot spots' or conduct a PLACE study</p>	<p>Shows at least some awareness of different needs, and indicates proportion of women and men reached</p> <p>Shows awareness of different needs and situations</p> <p>As MAP projects move from general IEC to BCC for selected groups, integrating gender issues into the identification of areas or communes for priority action is essential</p>
<p>Male inclusion</p>	
<p>Explicit male target groups</p> <p>Explicit activities targeting males</p> <p>Activities in location with high numbers of men at risk</p> <p>Explicit involvement of male peer groups</p>	<p>Such as adolescent boys, soldiers, married men, MSM, transport and migrant workers, tourism workers, fishermen</p> <p>Prevention, effort to curb violence against women (that is, mines, borders where migrants are crossing)</p>
<p>Female inclusion and empowerment</p>	
<p>Explicit female target groups</p> <p>Explicit involvement of female peer groups</p> <p>Evidence of efforts to involve women in shaping local response</p> <p>Leadership training for women</p> <p>Helping women and girls protect themselves from violence/forced sex</p> <p>Sensitize women to their role in protecting young girls</p> <p>Literacy activities</p> <p>Information on legal rights</p>	<p>Girls ages 10–14, young girls, married women, pregnant women, CSW</p>
<p>Monitoring and evaluation</p>	
<p>Differential targets for men and women according to situation at design</p> <p>Sex-disaggregated data to monitor progress toward targets</p> <p>Female and male beneficiaries consulted in the monitoring and evaluation design</p> <p>Gender-specific indicators to measure whether projects affect women and men differently</p> <p>Data collection through direct access to women when relevant</p> <p>Female and male participation in discussion of findings</p> <p>PLACE approach: draw from knowledge of gender disparities to identify likely hot spots</p> <p>Studies to better understand gender issues, or measure change in relationships between men and women</p>	<p>This is an important finding, showing that there were data and awareness early on that the situation was different for men and women</p>

Source: World Bank staff.

Notes

1. A study in Burkina Faso shows that 64 percent of adult males and just 45 percent of women use condoms (World Youth Report 2003).
2. UNAIDS and UNICEF (2002).
3. The incidence of early marriage ranged widely, from 8 percent in South Africa to 77 percent in Niger.
4. Because of underreporting of rape and violence against young men, discussions of HIV/AIDS transmission fueled by sexual violence often exclude male victims.

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The Private Sector and HIV/AIDS in Africa: Recent Developments and Implications for Policy

Frank G. Feeley III, Sydney Rosen, and Patrick J. Connelly

Much has been written about the potential for the private sector in Africa to assist in the response to the HIV epidemic. Several factors suggest the motivation and preconditions for such a response. In many African countries, out-of-pocket payments—often to private pharmacies or providers—make up at least half of total health expenditures (World Bank n.d.). Because of inaccessible or unavailable public services, many large employers in Africa have traditionally provided health care to their workers. Worker illness and death from AIDS should provide employers with incentives to extend HIV prevention and AIDS treatment benefits to their workers. Before the push for donor-funded treatment programs that followed the fall in the price of antiretroviral medications, the few Africans receiving AIDS treatment were treated in the private sector.

The term *private sector* is often loosely defined, so that different commentators may be talking about overlapping sectors of society. This chapter examines two aspects of the private sector. The first is private sector employers. When employees of these firms contract HIV and subsequently become ill with AIDS, the disease may impose a cost on the employer, which can create a demand for prevention and treatment services. This category includes firms that may be partially or wholly owned by the state. Such parastatal firms are common in Africa, particularly in sectors such as utilities,

transport, and finance. As employers, they function more like privately owned firms than government bureaucracies. Excluded from the definition is direct government employment (civil servants), although a number of impact studies have been conducted among such groups using a methodology similar to that discussed below (Rosen, Hamazakaza, Feeley, and Fox 2007).

The second aspect of the private sector examined here is its role in the supply of HIV/AIDS services, through both financing mechanisms and direct service provision. If firms offer services directly, they are also a source of supply. Private sector financing may include payment by employers, individuals, or risk-pooling intermediaries, such as commercial or community health insurance plans. In addition to employer clinics, the definition of private service providers includes clinicians in private practice, even those who may be moonlighting from positions in the government health services. The discussion also includes for-profit and nonprofit institutions (hospitals, clinics, laboratories) that derive most of their income from employers, patient user fees, and insurance. In Africa, many mission hospitals are heavily subsidized by the government or staffed by clinical personnel seconded from the government. While these institutions have some management autonomy, they represent an extension of the government health service; they are therefore not included in the definition of *private provider* in this chapter.

With the HIV epidemic well established throughout most of the continent and a large-scale public sector/donor response growing in impact, it is time to reassess the role of the private sector in both the demand for and supply of HIV/AIDS services. This chapter reviews the experience on private initiatives for HIV prevention and treatment to address the following questions:

- What is the impact of HIV on employers in Africa? How much is the disease costing these companies, and what is the corporate perception of the threat from AIDS?
- How are employers responding to the AIDS threat, and how is this response differentiated?
- What role is financing by employers and households playing in paying for HIV services? What innovations would encourage the expansion of private financing?
- What role are nongovernmental providers playing in treating AIDS? Can this source of care be expanded?

- What innovations in public private cooperation offer the potential to increase private contributions to the treatment of the AIDS epidemic?
- What are the implications of experience for the policy of donors and governments? Should they be doing more to encourage private sector initiatives?

The chapter is divided into two sections. The first section describes the impact of HIV on employers and the extent to which affected firms are creating demand for services to prevent or treat the disease. This section also examines both standard models of private sector provision and financing of services and innovative ideas. The second section draws four important policy lessons.

Impact on and Response to HIV by Employers

This section examines the role private employers can play in responding to the HIV epidemic. The costs of the disease in the work force and the pressure for corporate social responsibility motivate various levels of demand for services from employers, some employers providing no services and others providing on-site prevention and treatment programs.

Impact on employers of HIV and demand for HIV/AIDS-related services

HIV infections can affect an employer's costs in a variety of ways. As employees' health deteriorates, they take more sick leave, and when they do report for work, they may be less productive ("impaired presenteeism"). The employer may incur costs for medical treatment of the disease. When the worker dies, the employer may pay death benefits and incur the costs of recruiting, hiring, and training a replacement worker. Supervisors spend time dealing with the workers' illness, the vacancy created following death, and the training of replacement workers. Productivity of the entire work group may be diminished by the absence of the worker or the limited experience of his or her replacement. These costs are potentially quantifiable in a firm with good data on human resources and productivity.

Firms can also expect other effects that are harder to quantify. An important piece of capital investment may go unused because the one worker

trained to use or maintain it is ill; at one Ethiopian manufacturer, a production line switched to older, less-productive equipment because of such an illness (personal communication). Management may spend time dealing with HIV/AIDS issues, which imposes an opportunity cost on the firm. Premiums for health, life, and disability insurance as well as pension fund contributions may increase because of increased illness and an earlier average age at death. Markets may shrink when consumer incomes are reduced by household illness and more household resources are spent caring for members with AIDS.

While it is difficult to make global estimates of the cost of AIDS to African employers, a research team at Boston University reports the results of studies conducted at 16 companies in six countries (Botswana, Ethiopia, Kenya, South Africa, Uganda, and Zambia) (Rosen, Feeley, and others 2007). All of the companies had more than 350 workers, and some had many thousands. These studies used variants of a standard methodology that drew on corporate records to estimate incremental absenteeism, the cost of benefits, and the cost of hiring and training replacements for employees who died or took medical retirement because of chronic illness. Most of these studies did not attempt to measure the cost of impaired presenteeism. Data were generally taken for a period before antiretroviral therapy (ART) became available to the workforce through public or employer treatment programs. Estimated HIV prevalence in the workforce ranged from 5.6 percent (in Uganda) to 36.8 percent (in Zambia) (table 10.1).

In the nonagricultural companies in South Africa, Uganda, and Zambia, employees who died of AIDS or suspected AIDS were absent or on leave 18–50 days more than other employees in the two years before death. They lost one to three months of working time in this period (Rosen, Feeley, and others 2007).

Other studies have looked at absenteeism before and after starting ART. A study conducted in Côte d'Ivoire reports an average of 3.5 months of absenteeism in the year before beginning treatment (Eholie and others 2003). A study conducted in South Africa reports more than seven days of absenteeism in the month before beginning ART (Muirhead and others 2006).

For most of the firms shown in table 10.1, the average cost of one AIDS-related termination (including absenteeism and benefits paid) was 0.7–1.9 times annual average compensation (three firms report costs per termination of 3.6–4.4 times annual average compensation). The total effect on the companies of the costs measured varied from 0.5 percent to 10.8 percent of total compensation costs. Values of this “AIDS tax” were less than

Table 10.1: Estimated Impact of HIV/AIDS on Labor Costs at 14 Companies in Sub-Saharan Africa

SECTOR AND COUNTRY	APPROX. WORKFORCE SIZE	ESTIMATED WORKFORCE HIV PREVALENCE IN YEAR OF STUDY (%) ^a	AVERAGE COST PER AIDS-RELATED TERMINATION (MULTIPLE OF AVERAGE ANNUAL COMPENSATION) ^b	"AIDS TAX": AGGREGATE COSTS IN BASE YEAR (% OF TOTAL ANNUAL COMPENSATION) ^b
Commercial agriculture^c				
South Africa	7,000	23.7	1.1	0.7 ^e
Uganda	500	5.6	1.9	1.2
Kenya	22,000	10.0	1.1	1.0 ^e
Zambia	1,200	28.5	0.9	1.3 ^{d, e}
Mining				
Botswana	500	29.0	4.4	8.4
South Africa	600	23.6	1.4	2.4
Manufacturing				
South Africa	1,300	14.0	1.2	1.1
Uganda	300	14.4	1.2	1.9
Ethiopia	1,500	5.3	0.9	0.6
Ethiopia	1,300	6.2	0.8	0.6
Other				
South Africa (retail)	500	10.5	0.7	0.5 ^e
South Africa (media)	3,600	10.2	1.3	1.3
South Africa (utility)	>25,000	11.7	4.7	2.2 ^e
Zambia (tourism)	350	36.8	3.6	10.8

Source: Rosen, Feeley, and others 2007.

a. Prevalence estimates were based on anonymous workplace HIV seroprevalence surveys, modeling from population data, modeling from observed mortality, or a combination of these methods, depending on available data.

b. Compensation includes base salary or wage plus benefit.

c. Commercial agriculture includes producing, purchasing, processing, or marketing agricultural products; not all companies are engaged in all of these activities.

d. This estimate is based on observed rather than estimated AIDS mortality; costs based on estimated mortality would be substantially higher than shown.

e. Includes nonpermanent workers, such as casual and seasonal workers.

2.5 percent of annual compensation in all but 2 of the 14 firms. While these measurable incremental costs associated with AIDS are significant, they are not catastrophic for most of the employers studied.

Loss of productivity is more difficult to study. It has been measured at two tea plantations in Kenya (Rosen and others 2005). At these sites, productivity at work (pounds of tea picked per day) by workers who subsequently left employment because of AIDS fell 8.0 percent at one company in the penultimate year of employment and by 17.5 percent at the other. In the final year of employment, the productivity of workers ill with AIDS fell 17.4 percent at one company and 22.6 percent at the other. Absenteeism

increased both years, causing reductions in the quantity of tea picked by workers with AIDS of 28.6 percent at one firm and 18.9 percent at the other in the penultimate year of employment and 35.3 percent and 27.2 percent in the year immediately before death or medical retirement.

The observed variation in the impact of AIDS on African firms is influenced by a number of factors:

- *HIV prevalence.* The highest cost impacts shown in table 10.1 are associated with high HIV prevalence. Companies in the high-prevalence countries of southern Africa are likely to face higher costs.
- *Stage of the HIV epidemic.* Where the epidemic is mature, deaths and costs are higher for the same level of HIV prevalence. In the early phases of the epidemic, before many HIV-positive workers have progressed to full-blown AIDS, a company bears lower HIV-related costs than it does later.
- *Wage and benefit structure.* The illness and death of a manager, professional, or skilled employee—who receives higher wages and benefits than other employees—cost companies more than the illness and death of an unskilled worker.
- *Labor markets.* Where labor markets are tight, companies incur higher costs in recruiting replacement workers. If replacements for some skilled workers cannot be hired quickly, capital equipment may lie idle or productivity may be adversely affected in other ways. In addition, labor shortages exacerbated by AIDS attrition can drive up the wages of replacement workers.
- *Workforce structure.* Many companies contract for unskilled services, such as housekeeping or security, or employ contract workers with few benefits. If HIV prevalence is higher among groups that are not “regular” employees, companies limit their exposure to the costs of the local epidemic.
- *Training investments.* A company that invests heavily in training its workforce incurs greater costs with AIDS attrition than one that makes no such investment or one that hires workers who have previously been trained at the expense of the government or other employers.

The combination of these effects means that the burden on a company will be lower if it employs low-skilled workers in areas of labor surplus and does not invest in training the workers it hires. Agricultural firms,

for example, may face relatively low costs in relation to the extent of the local HIV epidemic. Mining firms that invest in worker training or manufacturing firms using skilled labor will have higher AIDS-related costs in the same epidemic. Given the costs of ART (assumed to be \$500 a year) and the costs of AIDS-related attrition, treatment of low-wage workers did not make economic sense for many of the companies studied (Rosen and others 2004).

Estimating the impact on small and medium-sized enterprises is more difficult, because the data are not as well organized and benefit policies may not be as clearly codified. However, surveys of such firms in Africa give an idea of the impact of HIV as well as management perception of this impact. Rosen, Feeley, and others (2007) report on five such surveys conducted in Kenya, South Africa, and Zambia. In all, 192 firms were surveyed, with a median workforce size of 17–48 workers. Annual attrition because of poor health or death averaged 0.9–3.7 percent of the workforce. In South Africa and Zambia, illness-related attrition accounted for 8–15 percent of total employee turnover. In Kenya, which had the highest turnover because of poor health or death (3.7 percent), illness-related attrition represented 45.2 percent of total employee turnover.

This set of employers does not generally see AIDS as a pressing management issue. In the four surveys in which the question was asked, 65–85 percent of managers perceived that AIDS was having little or no impact on their companies. Only in Kenya, where poor health and death accounted for almost half of employee turnover, did managers place AIDS in the top five business concerns. In none of the surveys did more than half of responding firms report that they had ever discussed AIDS as a business issue.

HIV infection is imposing a tangible cost on African companies. This cost can be significant in high-wage, high-HIV prevalence areas; it is lower in many other economic sectors and in certain parts of the continent. The costs of HIV/AIDS do create some demand for treatment and prevention services. However, particularly among smaller firms, this demand is muted by the many other pressures on firm profitability and survival.

Company-based provision of HIV/AIDS prevention and treatment services

Employer responses to the HIV epidemic vary, for a number of reasons. The actual or perceived level of current impact (or the future risk associated

with employee infections) is only one factor determining employer demand for HIV/AIDS services.

Other factors determine the response as well. Larger multinational firms and parastatals seem to respond more actively to the epidemic than smaller and locally owned firms. Multinational firms may be subject to pressures to respond from foreign shareholders, or they may be concerned about customer pressure in developed country markets. Centrally determined HIV policies in these multinationals provide both management direction and an implementation template for local operations. Large companies have larger and more professional human resource departments, with the time and skills to implement HIV/AIDS interventions. On a per employee basis, response costs are generally higher in small firms and the level of profitability lower, limiting the amount such firms spend on HIV/AIDS interventions.

One significant reason why companies do not rate AIDS as a major management issue is that their workers do not rate the issue highly. In collective bargaining between employers and unions, wage levels, job security, and pensions are higher priorities for workers. To a certain extent, stigma may stifle the discussion of AIDS in formulating the union agenda. But more than reticence is at work. The companies that have traditionally done the most for workers' health (running high-quality workplace clinics or providing health insurance) have often been the first to respond to the HIV epidemic. Where a company has traditionally taken little responsibility for employee health care, workers look elsewhere—often to public sector facilities—for treatment. Now that the public sector is actively expanding free, or nearly free, ART, workers look to the public sector for care and do not pressure their employers to sponsor or finance this service.

The range of programs that companies can implement to respond to the AIDS epidemic is broad. Such programs include the following:

- HIV prevention education, such as workplace distribution of condoms
- Implementation of policies restricting workplace discrimination against people with HIV
- Confidential HIV testing and voluntary counseling
- Treatment of AIDS (including opportunistic infections) through ART offered by company clinics, health insurance and medical schemes, and special new arrangements to provide or finance AIDS care.

Interventions intended to prevent HIV infections in the workforce may have relatively low, out-of-pocket costs for employers; nongovernmental organizations (NGOs) or the government may provide educational materials or train peer educators. Condoms may also be available free from donors, government agencies, or NGOs. If the employer provides time off during working hours for prevention education, the costs mount, but if production expectations are met, there is little cash cost. The employer's benefit from such interventions is long delayed, however: an infection prevented today would not impose a cost on the employer for 7–10 years, given the latency period for untreated HIV. After discounting the benefit of infections averted, the financial incentive to provide prevention education is low, even if the worker would still have been employed with the same firm when he or she developed AIDS, which may not be the case.

Despite the modest benefits to the employer, many employers have responded to the call to corporate social responsibility and implemented prevention programs. In South Africa, 98 percent of large employers had implemented a workplace awareness policy by 2005 (South African Business Coalition on HIV/AIDS 2005). Six surveys conducted between 2004 and 2006 in Kenya, South Africa, Uganda, and Zambia show that 15–55 percent of the firms surveyed provided prevention education, information, or both to their employees (Rosen, Feeley, and others 2007). The lowest percentage was among small- and medium-size enterprises in South Africa, where only 38 percent of respondents said they had ever discussed AIDS as a business issue.

If companies move beyond prevention to treatment, there is good evidence that corporate programs can be effective. Heineken, which made a commitment to treat all HIV-positive workers in its African breweries, reports survival of 85 percent or more for workers on ART three years after beginning treatment (personal communication Heineken International Medical Services 2008). Less than four years after beginning the treatment program at its Rwanda brewery, an estimated 87 percent of HIV-positive employees were enrolled, 39 percent of whom were already receiving ART (Van der Borgh and others 2007). In this moderate-prevalence setting, the annual costs of the treatment program were estimated at \$40 per employee in 2006 (Van der Borgh and others 2006).

Anglo Gold faced higher prevalence in its workforce—21 percent, an estimated 24,000 employees. It developed a disease management program

that offered ART at 70 workplace sites (Charlambous and others 2007). By the end of 2006, 20 percent of HIV-positive employees (4,598 workers) were receiving ART through the company program. Of those who started ART with a CD4 count of more than 200, mortality in the first year of treatment was 4.6 percent. Even among employees who did not begin ART until their CD4 counts fell below 50 (when death is usually imminent), more than 80 percent survived at least a year (Brink and Pienaar 2007).

Uptake of AIDS treatment appears to be higher when the employer is directly involved. In South Africa, companies that ran their own workplace treatment programs reported enrollment among HIV-positive employees of 44 percent—more than three times the enrollment in companies that relied on medical aid schemes (Connelly and Rosen 2006). Although initially skeptical of the company's intentions, Heineken employees in Rwanda reported that they were persuaded to use the company clinic for AIDS treatment by strong support for the program from respected local managers, as well as by the obvious recovery of workers perceived as having AIDS (Van der Borgh and others 2007).

By 2005, most large companies in South Africa provided ART for their workers through on-site treatment, health insurance, or contract clinics. In a survey of large South African employers, 63 percent of more than 1 million workers had access to company-supported treatment. HIV prevalence in this population was estimated at 15 percent, but only 4 percent (less than 1 percent of the total workforce) were receiving ART (Connelly and Rosen 2006). Barriers other than financial support for treatment—stigma, difficulty of access for off-site programs—must explain the low uptake in this population.

If companies pay for ART, they may reasonably ask if this expenditure achieves the intended benefit of avoiding attrition and maintaining employee productivity. Although only a modest amount of research has been published, the preliminary results are encouraging. Early (2001) results from the national electricity company in Côte d'Ivoire show that 91 of 101 workers identified with AIDS (about 3 percent of the workforce) were working full time two years after the company began its treatment program. The number of AIDS-related deaths fell to 5 in 2001, down from 16 in 1999. The total costs of medical care, absenteeism, and death benefits for workers with AIDS fell by 69 percent with the implementation of the ART program (Eholie and others 2003).

At Debswana, the diamond mining firm in Botswana, the rapid rise in absenteeism of workers with AIDS was quickly reversed with ART. Twelve months after treatment began, absenteeism in treated workers returned to the average for rest of the work force (Habyarima, Bekezela, and Pop-Eleches 2007).

At Kericho, the Kenyan tea producer, workers began receiving ART in 2004. Absenteeism quickly fell, although workers initially spent fewer days in the field and more on “light duty” assignments than a comparable group without AIDS. By the end of 12 months of treatment, male workers were generally back to the same work pattern as uninfected colleagues. Female workers on ART still showed a somewhat higher percentage of light duty assignments (Larson and others 2007).

Standard and innovative models of private sector provision and financing of services

Estimating how much of the burden of treating AIDS is being borne by Africa’s private sector is difficult, because the sector includes a number of segments (insurers, employers, private practitioners) that do not consistently report treatment numbers to the government. There are problems of definition as well: Is the care “public” if a patient pays privately in a government hospital? Is it “private” if the patient is treated by a private practitioner under a contract with the government or a donor? Estimates based on 2006 UNAIDS data suggest that 21 percent of all patients receiving ART in Botswana, Kenya, Namibia, Nigeria, South Africa, and Uganda were receiving care privately (Feeley, Connelly, and Rosen 2007). A more recent review estimates that about 100,000–140,000 patients are receiving ART privately in six English-speaking African countries (table 10.2).

It is not surprising that South Africa shows the highest percentage of people on treatment in the private sector. The country has the most extensive health insurance industry in Africa, and policies cover AIDS treatment. ART is now part of the mandated minimum medical scheme benefit. South Africa has many large employers committed to corporate treatment programs, and the public treatment program was slow to get off the ground. The percentage of people treated in the private sector will fall as the public treatment program continues to expand.

Namibia also has a high percentage of private treatment, because it too has a well-established health insurance industry that covered AIDS treatment

Table 10.2: Private Sector ART Treatment in Selected African Countries

COUNTRY	ESTIMATED NUMBER OF PEOPLE RECEIVING ART IN PRIVATE SECTOR	PERCENTAGE OF TOTAL ART PATIENTS TREATED IN PRIVATE SECTOR (PERCENT)
Botswana	13,000	14
Kenya	2,000–3,000	1.0–1.5
Malawi	3,300 (12/06)	4
Namibia	8,000	18 (7/07)
Nigeria	5,000	4
South Africa	68,000–110,000	24–34

Source: Montague 2008.

before the government began its treatment program. In Botswana, the estimate reflects treatment programs at large employers such as Debswana, as well as government-funded contracts to purchase private treatment services.

Africa's private sector uses several basic models to provide and finance the treatment of AIDS; each has advantages and disadvantages. The first model described in table 10.3 is fee-for-service, the traditional mode of financing private treatment of other diseases in Africa. Private providers can offer treatment on a fee-for-service basis to both individuals and employers. A study at a fee-for-service clinic in Uganda reports that 46 percent of ART patients were alive and in treatment after two years, 40 percent after three years, and 35 percent after four years (Kabugo and others 2006). The high cost of ART in relation to typical African wages threatens the adherence necessary for effective treatment, however. Evidence shows a negative correlation between fees and patient survival: a multisite study reports an adjusted hazard ratio for first-year survival of 0.23 (0.08–0.61) among fee-paying patients (ART-LINC Collaboration and ART Cohort Collaboration 2006).

While the private sector can offer convenience and confidentiality in the fee-for-service mode, reducing the costs of ART through employer or other subsidies will be necessary to achieve the maximum potential long-term survival. Private clinics can receive employer payment for AIDS treatment as part of a standard contracted benefit or as an employer-funded supplement to the standard benefit. This arrangement (in place at some large private sector clinics in Lusaka, Zambia) exploits the private provider advantage of patient convenience, but confidentiality can be compromised when the employer is billed for the treatment or asked to approve treatment in advance.

The evidence suggests that the second model in table 10.3—on-site treatment in clinics at the employment site—can be very effective. This is

Table 10.3: Models of Treatment Interventions in Africa

MODEL	DESCRIPTION	MAJOR ADVANTAGES	MAJOR DISADVANTAGES	WHERE MODEL IS IN USE	SPECIFIC EXAMPLES
Established models of treatment provision					
Fee for service	Individual or employer pays private provider for services rendered.	Uncomplicated and familiar for purchaser. Ability to easily track expenses.	High fees may lead to lower adherence. Confidentiality may not be maintained if employer pays.	Throughout Africa	N.A.
	Stand-alone facility or network of health facilities contracts with an employer or donors to provide health services, including ART.	Standardized level of care; quality of treatment overseen.	Depending on contractual arrangement, patient confidentiality may not be maintained.	South Africa, Zambia, and Ghana	Major clinics in Lusaka
Employer provides: Workplace clinic	Employer internally finances and delivers treatment and care.	Relatively good outcomes of survival reported. AIDS treatment integrated with other health services and voluntary counseling and testing (VCT).	Uptake varies with quality of program. Employees may doubt assurances of the confidentiality of HIV testing.	Throughout Africa	Anglo American, Heineken, Unilever, and other very large companies
Health insurance with AIDS coverage ^a	Insurer accepts premium from an individual or employer to pay providers for the beneficiary's health services. A disease management organization (DMO) may be subcontracted to manage ART.	High level of confidentiality for HIV-positive beneficiary. Quality of treatment overseen.	VCT services available but not used. Utilization rates of AIDS treatment services are low. Not affordable for lower wage earners.	Throughout Africa	South African and Namibian Medical Schemes; African Air Rescue (Uganda), MedX (Ghana)
New and innovative models of treatment					
AIDS insurance	Insurers offer coverage for AIDS treatment for uninsured employees.	Can be subsidized by donors. May lead to comprehensive coverage for previously uninsured.	May be hard to solely treat AIDS without providing other health services.	Namibia	Vitality (NAD30 per month premium)

(continues on the following page)

Table 10.3: Models of Treatment Interventions in Africa (*continued*)

MODEL	DESCRIPTION	MAJOR ADVANTAGES	MAJOR DISADVANTAGES	WHERE MODEL IS IN USE	SPECIFIC EXAMPLES
Company-supported community ART	With the assistance of donor, employer expands access to company AIDS treatment to community.	Takes advantage of established infrastructure.	Complex to implement. Sustainability of treatment program uncertain.	Uganda	Business PART project (Hima Cement, Findlay's Tea, and others)
Private providers with "free ART"	Government distributes ART to approved private providers as part of the national treatment program.	Reduces burden on the government by including private sector in national treatment program.	Sustainability uncertain.	Malawi	Malawi Business Coalition against HIV/AIDS
Donor-sponsored network of private providers	Donor funds AIDS treatment for targeted populations through an organized network of private providers.	Leverages private sector to reduce burden on public sector facilities.	Limited to countries with advanced private sector infrastructure. Complex to implement.	South Africa	BroadReach, Right to Care's Thusong Programme

Source: Feeley, Connelly, and Rosen 2007, used with the permission of *Current HIV/AIDS Reports*.

a. This model includes Medical Aid schemes present in South Africa and Namibia.

the typical model at firms with large concentrated workforces, as seen in the mining industry. Perhaps the link to employment (often with higher wages than in the general labor market) provides an incentive for workers to seek care, adhere to treatment, and retain their jobs. Offsetting the convenience and motivation of on-site treatment is the risk that an employee will not disclose his or her HIV status to company health care staff for fear of being discriminated against in terms of promotions or future lay-offs.

The third basic model for financing private sector AIDS care is health insurance. Traditional medical schemes in Namibia and South Africa cover ART, and the majority of privately treated patients receive support from these plans. However, the employee share of the typical medical scheme premium is too high for most low-wage workers. These workers do not enroll in medical schemes and are then left with little choice but to seek public sector ART if their employer does not provide this service at a workplace clinic.

In southern Africa, the extensive medical scheme industry and high HIV prevalence led to the development of disease management organizations such as Right to Care (<http://www.righttocare.org/>) and Aid for AIDS

(<http://www.aidforaids.org>). These organizations provide a wide range of HIV/AIDS services to employers and insurers. They conduct employee education programs and anonymous workplace seroprevalence studies that enable firms to estimate their exposure to HIV infection. Disease management organizations provide confidential voluntary testing and monitoring of workers identified as HIV-positive. When the insured employee requires ART, the disease management organization works to improve patient adherence and to ensure that the physician is prescribing the appropriate medication. Controls are put in place to prevent payment for irrational treatment regimes. Disease management organizations have extensive computer monitoring systems and a staff of nurses and physicians who interact with patients and doctors. While these efforts limit wasteful medical spending, to date they do not appear to have been as successful as on-site employee clinics in inducing workers to come forward for testing and treatment. While they probably represent an appropriate model in a high-cost health insurance system, the transferability to programs in lower-cost environments with few medical providers is more questionable. Nonetheless, these organizations have developed expertise in interacting with patients and providers that might be used in programs that are less dependent on classical health insurance.

Elsewhere in Africa the health insurance industry is less developed. Kenya has a national hospital insurance fund for formal sector workers, but it does not cover outpatient care and is consequently not a major factor in AIDS treatment. The new national health insurance scheme in Nigeria, which covers federal and state government employees, did not offer an ART benefit in 2006; the government was reluctant to expand its benefit package until the national program is put on a more secure footing (personal communication with the Hon. Nwofli Adibuah, chairman, Nigerian National Health Insurance System, June 2006).

Outside of countries with South Africa-influenced medical schemes, private medical insurance is generally limited to well-paid employees of a few firms in urban centers. It is therefore not a major factor in defraying the costs of AIDS treatment. Initially reluctant to cover AIDS, these plans have increasingly added an ART benefit as they better understand the epidemic and the costs of treatment. The major private insurers in Uganda (Microcare, African Air Rescue), for example, now cover ART.

Community health insurance schemes show clear potential to reduce catastrophic health expenses and improve access (Preker and others 2001), but

they have been reluctant to add an AIDS benefit. These plans have typically resisted coverage of chronic diseases, because they are subject to voluntary enrollment, with the risk of adverse selection by those who know they will face high health care costs (such as those who have tested HIV positive). This concern is compounded by the need to keep premiums low in the rural and informal labor markets, where this form of insurance provides the only available risk pooling.

The bottom half of table 10.3 describes innovations in standard models that offer potential for expanding the role of the private sector in AIDS treatment. One of the most important is the attempt to extend health insurance to lower-income workers. This should happen first in countries such as Namibia and South Africa, which have strong formal sectors and extensive health insurance infrastructure. In Namibia, several low-cost schemes have been developed since 2004. They focus on outpatient care, but all offer a standard AIDS benefit that is sufficient for first- and second-line ART as well as treatment of opportunistic infections. One of the plans, called Vitality, provides this AIDS benefit alone, for a premium of N\$30 (about \$5) a month. To obtain coverage, a company must enroll all of its currently uninsured employees in the plan in order to avoid adverse selection. The risk that the workforce may have an HIV infection rate higher than the national average of 15 percent (UNAIDS 2008) is redistributed by Vitality and some other plans through a risk equalization fund. Some 10,000 people are enrolled in these low-cost health insurance plans with AIDS benefits, increasing the number of Namibians with health insurance by about 4 percent (Feeley 2007).

Restrained by a minimum benefit package that makes medical aid schemes more expensive, South Africa has yet to widely implement low-cost models similar to those in Namibia. However, under the Government Employees Medical Scheme (GEMS), the government is offering low-cost schemes for its employees in order to increase the percentage of the public sector workforce with insurance coverage. Innovations that would broaden the reach of employment-based health insurance coverage are under active discussion.

Another insurance-based innovation of great interest is being supported by the Dutch-financed Health Insurance Fund. The manager of the fund, Pharmaccess International, has been actively involved in the development of low-cost plans in Namibia, where it offers a small, time-limited subsidy for enrollment. In Nigeria and Tanzania, the fund is now sponsoring insurance plans for groups of informal sector workers. Although more heavily

subsidized than in Namibia, these plans also provide AIDS treatment benefits. The experience gained with these plans might provide the information necessary to broaden the benefit package of the Nigerian national health insurance scheme to cover AIDS treatment.

Another way to expand private sector treatment is to induce companies to offer ART to populations they would not otherwise treat. For companies already treating their workers, this means treating dependents or residents of the community. For companies with a medical clinic and a low-skilled, low-wage workforce, this may mean treating workers with AIDS who would formerly have been referred to government facilities. Inducing this expansion requires supplementing an employers' sense of social responsibility by actions that lower the incremental costs of expanding the population receiving ART at company clinics.

In Uganda, the USAID-sponsored Business PART Program offered training and free antiretroviral drugs (from government stocks purchased with donor funds) to companies that expanded the number of people in treatment. In 2007, seven large employers had expanded ART to 190 new patients and were monitoring another 660 people with HIV in advance of ART. The value of the treatment services and tests provided by the companies was about equal to the cost of the ART provided by the government (Emerging Markets Group 2007).

Six of the seven participating employers were owned by foreign or multinational firms. Business PART was able to take advantage of an existing Uganda government program to certify private providers to offer AIDS treatment. It enrolled company doctors and nurses in existing ART training programs. The target population and program details varied from company to company and were documented in individual partnership agreements brokered by the USAID-sponsored program.¹ A similar partnership was put in place in Guinea, where a large mine received government-provided antiretroviral drugs to treat workers in its company clinic and even manages the stock of drugs for distribution to government clinics in the area (Diallo and Guinea Chamber of Mines 2007).

The leveraging of publicly provided antiretroviral medication to expand treatment in the private sector can go beyond employer clinics. In Malawi, private sector providers were trained in managing ART. Qualifying private clinics were certified and provided with antiretroviral drugs by the government. Patient charges for the drugs were limited to \$4 a month; in addition, the provider can charge normal consulting fees. In the first three months of

operation, this program (managed by the Malawi Business Coalition on AIDS) enrolled almost 1,000 patients (Schouten and others 2006). By June 2007, 4,000 patients were enrolled in the program (personal communication with the Malawi Business Coalition on AIDS, June 13, 2007). A similar arrangement was negotiated by the government of Uganda and some certified private sector AIDS clinics.

Uganda based its support for private sector clinics on a government certification program. It is also possible to construct a private sector franchise that monitors quality in a restricted network of private sector clinics treating AIDS. Compliance with franchise requirements would be a condition of receiving free or subsidized antiretroviral medication to pass on to patients at the price charged to the clinic. Family Health International, a large USAID/PEPFAR (President's Emergency Plan for AIDS Relief) contractor, reports attempting to build such a network of private sector AIDS clinics in Kenya that expands on the health franchise idea earlier developed for drug sellers and providers of reproductive health services. The outcome of this initiative has not yet been reported.

The franchise concept assumes that the patient (or his or her employer) will be paying for treatment costs other than subsidized drugs. A fully subsidized network of private sector providers is also possible. In South Africa, which has substantial AIDS treatment experience in the private sector and faces strong pressure to expand the government's delayed ART program, contractual relationships with private providers now provide full funding for treatment of some patients seeking care in the public sector. Broad Reach, a U.S.-based NGO, developed such a network of private providers, which is funded by PEPFAR. Right to Care supervises a similar arrangement with private providers under the Thusong Community Treatment Programme. To the extent that such networks are competitive with the public sector in terms of costs and quality, they offer the benefit of greater patient convenience and can bring into the public AIDS program the excess capacity that currently exists in the private sector.

Lessons for Policy

Donors and policy makers can maximize the contribution of the private sector to the supply of AIDS services by recognizing the realities of the response to date. This section provides some suggestions for policies going

forward that may consolidate and expand the private sector response. The number of workers (and their families) receiving private sector support for AIDS treatment can be increased. As labor markets in Africa remain dominated by employment in the informal sector, however, expanding the employer-based response is no substitute for strong public sector AIDS programs. Realistic expansion of private sector interventions can reduce the burden on treatment programs supported by donors and scarce national tax revenue, particularly where the formal sector of the economy is large and risk-pooling mechanisms have been established. In Namibia, for example, provision of ART to all formal sector workers and their dependents through programs sponsored by employers would reduce the proportion of Namibians receiving treatment through the public sector from 87 percent of the case load to 63 percent in 2015.²

Matching the policy response to employer motivation and capacity

As the evidence presented in this chapter indicates, there is wide variation in corporate motivation and response to the HIV epidemic. African employers, and their responses, can be divided into three categories: companies that have already acted aggressively, companies that are unlikely ever to have the motivation or ability to provide effective programs, and firms that have resources and interest in helping their HIV-positive workers but do not have the expertise to create their own treatment programs.

A significant minority of employers in Africa have already responded to the epidemic, providing both prevention and treatment services to their employees. These tend to be large firms, often with multinational or parastatal ownership. At these companies, the priority for policy makers is not to stimulate corporate response but to maintain it while the public sector expands its treatment programs. Where AIDS treatment is available as part of the general system of medical care (as it is in Brazil, Europe, and the United States), corporations make no effort to provide AIDS care themselves. Employees and their dependents receive such care as part of their health insurance or general entitlement.³

As public ART programs expand in Africa, even responsible companies may be tempted to cut back on the expense of their own treatment programs once the firm is confident that workers will receive care in the public sector. In Ethiopia, some companies that had supported private sector

ART reportedly steered employees to public treatment programs once these were well established and waived user fees (personal communications with company officials).

Companies will still incur costs even if they send workers for publicly funded AIDS treatment, as queues at public clinics will cause workers to miss a day or more of work each month. Companies will be reluctant to fire such workers—and may even be prevented from doing so by nondiscrimination laws. Savings will be possible by providing treatment at company work sites or at appointment times that do not conflict with workers' duties. Research is needed to determine if the employer savings from minimizing the absence of workers receiving ART offsets the costs of providing treatment.⁴ To limit the burden at public clinics, government and donors may consider providing free or reduced-cost ART to induce companies to continue corporate treatment programs.

For companies for which the cost imposed by AIDS is low and the capacity to develop corporate programs small, there seems little prospect of developing significant employment-based interventions. Small firms (particularly in less-developed economies) and those that employ unskilled labor are poor targets for developing a corporate response. One exception may be large agricultural operations. Although most employees at such firms are low-skilled, low-wage workers, some of these firms have traditionally provided limited medical care because of their geographical isolation. Programs at large tea producers in Kenya and Uganda have shown that companies can extend ART to employees (and dependents) if donors provide the drugs and share in the cost of program development.

The most attractive target for public policy is the middle group of companies: companies that have motivation and some resources but limited capacity to formulate a corporate AIDS response. A significant number of African employers has traditionally provided employees with a medical care allowance. This allowance could be directed through an insurance program that includes AIDS treatment. These companies may also be willing to provide their workforce with access to prevention interventions. The nature of such interventions may need to vary with the workforce; an accounting firm and an *abattoir* require different approaches to employee education.

A variety of organizations provides prevention and treatment services, from local NGOs to the sophisticated disease management programs that have developed in southern Africa. The per employee fees charged by disease management programs will be too high for small- and medium-size employers,

however. Where a small number of managers are multitasking to keep a business afloat, there is little time to evaluate providers of HIV/AIDS services or design new company benefit programs. Policy makers and industry leaders should focus on making the practical knowledge about company HIV/AIDS programs available to these firms. Many companies will want to know how much an AIDS treatment benefit will cost; estimating this cost entails anonymous testing or actuarial estimates to project disease prevalence in the workforce. These estimates also require data on typical annual per patient treatment costs. Some firms may want assistance in selecting the most cost-effective provider of prevention or treatment services.

Daimler Chrysler in South Africa provides an example of the potential to multiply the number of companies providing HIV and AIDS services by sharing the experience of industry leaders. The automobile giant recently extended its HIV/AIDS program through its supplier network. Disseminating expertise and sharing information on treatment relationships developed by large employers is a practical way to expand the number of firms addressing the epidemic. Rather than futilely exhorting all companies to develop comprehensive AIDS initiatives, policy makers should focus on providing technical assistance to this middle group of companies that are ready but have yet to take the plunge into significant corporate AIDS programs.

Rethinking prevention efforts at the employer level

Evidence of the effectiveness of corporate prevention programs is limited. A study of employees at 22 companies in Zimbabwe finds no protective effect from workplace testing and counseling (Corbett and others 2007). Even if a prevention program is successful, the benefits to the employer are long delayed (and highly discounted) because of the long latency period of the disease.

Since employers in Africa were first pressed to sponsor prevention programs, the level of knowledge about HIV in the general population has increased. Survey results show increased knowledge about the transmission of HIV, particularly among the more educated and urban dwellers. As public education and media campaigns expand, there may be less need for employers to provide prevention education. Lack of knowledge about the disease does not explain the continuing high rate of infection: a large percentage of Africans have the information that could protect them but are not changing risky behaviors. Before policy makers ask employers to invest

more in prevention, research should be conducted that better identifies techniques that change behavior. Furthermore, there is no reason to think that employers have an advantage in improving knowledge about the disease or converting improved knowledge into behavior change. The media or the education system may be better placed to do so.

In contrast, the results from corporate programs for AIDS treatment—at Anglo American, Debeers, and Heineken, for example—reveal positive outcomes in terms of employee adherence and survival. Employers also experience an immediate benefit when they start effective employee treatment programs, as the costs of AIDS-related employee attrition are reduced and deferred. Until more is known about successful prevention education, the emphasis in corporate social responsibility may be better placed on the provision or financing of AIDS treatment.

Leveraging existing private health resources through public-private partnerships

Individual company cost studies show that the full cost of ART exceeds the savings in labor costs at many African firms: providing or financing ART increases firms' total labor costs, reducing competitiveness and total employment. Some companies (such as apparel manufacturers) may be able to move their operations to locations with lower HIV infection rates. If they cannot move—because the business is tied to a local resource or a domestic market—firms may have other ways to reduce the costs imposed by AIDS. They can, for example, invest in labor-saving machinery, cut their payroll, contract out jobs to firms that offer even lower benefits, or switch work to casual laborers who receive no benefits (Rosen and Simon 2003). Forcing a company to provide ART may actually hurt workers if the higher costs reduce the number of jobs.

Even if the benefit of treating workers is less than the costs of AIDS-related attrition, companies still receive some benefit from worker treatment. In addition, some firms may already have on-site clinics or provide other medical benefits. If the cost of treating workers with AIDS is reduced, the company may provide treatment through on-site or contracted medical care providers. Providing antiretroviral drugs free or at reduced cost to these firms is a practical way for donors and governments to provide this partial subsidy. The experience of the Business PART Program in Uganda shows that employers will expand the population treated in company clinics—in

some cases to community members as well as employees and dependents—if they do not bear the full cost of treatment. This strategy has been effective elsewhere. In Ethiopia, the government provided antiretroviral medication to a large parastatal sugar plantation. Free ART is being provided for workers treated at the Kericho tea estates in Kenya. In Guinea, the company clinic at a large mine not only receives antiretroviral medication for administration to its own workers, but also acts as the distributor for other authorized ART sites in the area.

As foreign donors and the Global Fund to Fight AIDS, Tuberculosis, and Malaria are already providing funds for many ART programs in Africa, these drugs could be made available to companies that provide treatment through their medical providers. Corporate medical clinics in Africa often see fewer patients per day than public clinics, so such an arrangement would take advantage of reserve capacity in the private sector while diverting patients from overcrowded public clinics.

Similar arrangements are possible to expand the volume of treatment services provided by private medical clinics. Upon receipt of proper training and certification as an AIDS treatment center, a provider could receive access to antiretroviral medication from government supplies at a low cost (perhaps free). The provider would then be allowed to provide these drugs to private patients. It would be allowed to charge normal fees for consultations or laboratory tests, but it would be required to provide antiretroviral drugs at cost. Such a mechanism would leverage individual patient resources in the same way that such a scheme leverages corporate medical expenditures.

This concept could also be applied to employment-based or community health insurance programs. Where inclusion of full AIDS treatment benefits would render premiums unaffordable in the target market, government or donors could provide subsidized antiretroviral drugs to those low-cost insurance policies that offer an AIDS treatment benefit.

Resistance to such partnerships is understandable. As beneficiaries must have the funds to pay for tests and consulting fees, such a program would favor the better-off. But these fees are a fraction of the cost of ART. Even when patients can pay the full costs of episodic treatment for infections such as malaria, they will likely not have the resources to pay the lifelong costs of ART. Providing subsidized drugs to certified private clinics is a way to expand the traditional role of the private medical sector in Africa in treating this costly chronic disease. Such arrangements should be conditioned on adequate provider training, quality monitoring, and guarantees against price

gouging. Properly implemented, this mechanism could be a way for the public sector to leverage private resources to reduce the caseload in public AIDS treatment facilities.

Making AIDS treatment part of standard health care coverage

In countries in which the workforce prevalence of HIV is low (say, less than 5 percent), attrition from the disease (in the absence of treatment) will be about 0.5 percent a year—a fraction of total workforce turnover. The costs of this attrition are likely to represent just 1–3 percent of total labor costs even in high-prevalence sites, a level that is easily submerged by other factors driving up labor costs. Other diseases (malaria, hypertension) or injuries may have an equal or greater impact on labor costs.

In these countries, emphasis should be placed on improving the financing of worker health care generally, not just on AIDS treatment. Testing, monitoring, treatment of opportunistic infections, and ART should all be a part of the worker's health benefit package. But so should treatment of most common infectious and chronic diseases. The Namibian example shows that health insurance can be expanded beyond its traditional higher-income worker population to cover AIDS treatment in a relatively high-prevalence country. The impact of AIDS on insurance premiums would be much lower in lower-prevalence countries.

Rather than focusing on AIDS treatment alone, efforts should be directed toward obtaining support for employee programs (insurance or direct treatment) that reduce illness and death generally. At the same time, the expansion of such programs could free up capacity in public facilities to treat the inevitable rapid increase in the number of patients on ART.

Including AIDS treatment as part of a standard medical benefit package has another benefit. At some point the enthusiasm of corporate headquarters and international donors for AIDS programs may wane. Indeed, “issue fatigue” or “donor exhaustion” seems almost inevitable. If AIDS treatment becomes part of a standard benefit package for workers—provided through insurance or employer clinics—ART is more likely to be sustained when the level of enthusiasm for AIDS programs declines. Donors and national policy makers should look for strategies, including lower-cost medical schemes or social health insurance in the formal sector of the economy, that will institutionalize an employment-based source of funding for the treatment of AIDS and diseases with similar impacts.

Notes

1. One firm actually provides care, using its medical staff, at government health facilities in nearby villages.
2. Results are modeled assuming that all Namibians who require ART receive it and that employment-based insurance covering the worker and spouse is expanded to all formal sector employees (Feeley 2007).
3. Treatment of AIDS is provided as part of the general system of health care in Western Europe, in Brazil, and under employment-based health insurance in the United States.
4. Such research is underway at selected firms purchasing low-cost plans in Namibia.

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Community Initiatives and HIV/AIDS

Elizabeth Ninan and Jean J. Delion

The response of communities in Sub-Saharan Africa to the devastating impacts of HIV/AIDS has been overwhelming. Communities have had to deal with the effects of increasing morbidity and mortality as well as the growing number of orphans and vulnerable children. In response, communities have developed various innovative preventive and coping mechanisms to avert the negative consequences of the epidemic. They have done so largely in the absence of external assistance, through the commitment and dedication of a few likeminded people, often volunteers, who rely on their own ingenuity and financial resources (Phiri, Foster, and Nzima 2007). Communities are not simply relying on existing customary systems but responding to changing situations by developing new institutions. These include institutions to fight stigma and discrimination, provide home-based care and support for people living with and affected by HIV/AIDS, and care for orphans and vulnerable children; self-help groups; rotating credit and loan clubs; and volunteer and burial associations.

Communities and their institutions are critical to creating enabling environments that foster the behavior changes needed to confront HIV/AIDS and cope with the illness, deaths, and dependency that AIDS causes (Görgens-Albino and others 2007). Communities are central to addressing behavior change, because most determinants of sexual behaviors are deeply rooted in cultural norms, social environments, beliefs, roles, and practices that are established, maintained, enforced, and changed at the local level.

Individuals cannot change their behavior in a vacuum, but are heavily influenced by their social networks and group norms. Their very perceptions of risk are ordered and nurtured by the peer group and social context within which they operate. Behaviors have to be supported and reinforced by the value system of the society within which people function (Görgens-Albino and others 2007).

There is now consensus that community responses are a critical component of scaling up responses to achieve the Millennium Development Goal of halting the spread of HIV/AIDS and providing universal access to prevention, treatment, care, and support by 2015 (MDG 6). The “Three Ones”—namely, one national strategic framework, one HIV coordinating entity, and one monitoring and evaluation system—were developed in light of the worldwide HIV/AIDS emergency and acknowledgement that responses need to be coordinated to be effective (UNAIDS 2005). Multiple stakeholders have recognized that effective implementation of the Three Ones can be achieved only if the community sector is fully involved.

Despite their importance, for the most part, initiatives, programs, and emerging community initiatives are hardly known outside of their immediate locale, and their quality, costs, and effectiveness in providing services have not been rigorously evaluated (Phiri, Foster, and Nzima 2001). There is a need to better understand the nature and diversity of community initiatives and their establishment, organization, development, needs, capacity, and limitations.

Through an extensive review of literature related to community initiatives in the field of HIV/AIDS, this chapter tries to answer the following questions:

- What are community initiatives? How are they defined?
- What activities related to HIV/AIDS are undertaken by communities?
- What are some of the benefits of community initiatives?
- What are some of the challenges and constraints in scaling-up community initiatives?
- What are the implications for external funding agencies?

What Are Community Initiatives?

Various terms and definitions are used to describe activities undertaken at the community level. The terms *community sector* and *civil society* seek to encompass entities such as nongovernmental organizations (NGOs), community-based organizations (CBOs), and faith-based organizations (FBOs); terms such as *community initiatives*, *community interventions*, and *local responses* refer to activities undertaken at the community level.

In its guidelines for working with communities, the International Council of AIDS Service Organizations (ICASO) defines the community sector as covering

... a wide range and diversity of people, groups, and institutions. The sector is not a single entity. Rather, it is a collection of different interests, opinions, capacities, resources and priorities involved in a variety of activities ranging from advocacy to service provision. In each country, this “sector” needs to be defined according to the characteristics related with the epidemic and the conditions that make certain communities more affected by HIV and AIDS. In these guidelines the community sector refers in particular to:

- People living with HIV/AIDS, their groups, and networks
- Community networks and community-based organizations, including those that involve or support key populations
- Local, national, and international nongovernmental organizations
- AIDS service organizations
- FBOs
- NGO networks
- NGO support organizations (ICASO, AfriCASO, and the International HIV/AIDS Alliance 2007).

Programs responding to HIV/AIDS serve the same organizations, under the concepts of “support to local responses” and “support to the community sector.”

UNAIDS defines *community* in the widest and most inclusive sense as a group of people who have something in common and will act together in their common interest. Many people belong to a number of different communities, such as their neighborhood, their workplace, and their religious affiliation (UNAIDS 1997).

The “Code of Good Practice for NGOs Responding to HIV/AIDS” (“the Code”) (The NGO HIV/AIDS Code of Good Practice Project 2004) uses the term *NGO* to encompass the wide range of organizations that can be characterized as not for profit and nongovernment. This includes CBOs, FBOs, and organizations of affected communities, including people living with HIV/AIDS, sex workers, and women’s groups, among many others, who are active in the HIV/AIDS response.

In defining affected communities, the Code refers to the range of people affected by HIV/AIDS, including people at elevated risk of HIV infection and those who bear a disproportionate burden of the impact of HIV/AIDS. This group varies from country to country, depending on the nature of the epidemic. Communities are the backbone of what NGOs are and what they do.

The World Bank refers to “local responses” in its Multi-Country AIDS Program (MAP) for Africa. MAP channels funds to support local initiatives addressing HIV/AIDS in local contexts. This approach builds on community-driven development programs, which empower civil society organizations (CSOs) and communities to assess and address local factors fueling the epidemic.

For the purposes of this chapter, community initiatives are defined as:

- Activities undertaken by local NGOs that employ staff and receive donor support to operate projects. The focus is on local NGOs, which tend to be smaller than national or international NGOs.
- Activities undertaken by CBOs (membership organizations that rely exclusively on volunteers and normally receive little external funding).
- Activities undertaken by other types of voluntary associations, including labor-sharing schemes, agricultural cooperatives, revolving savings and credit associations, burial societies, grain loan schemes, mutual assistance associations, support groups for people living with HIV/AIDS, home care initiatives, and support initiatives for vulnerable children.

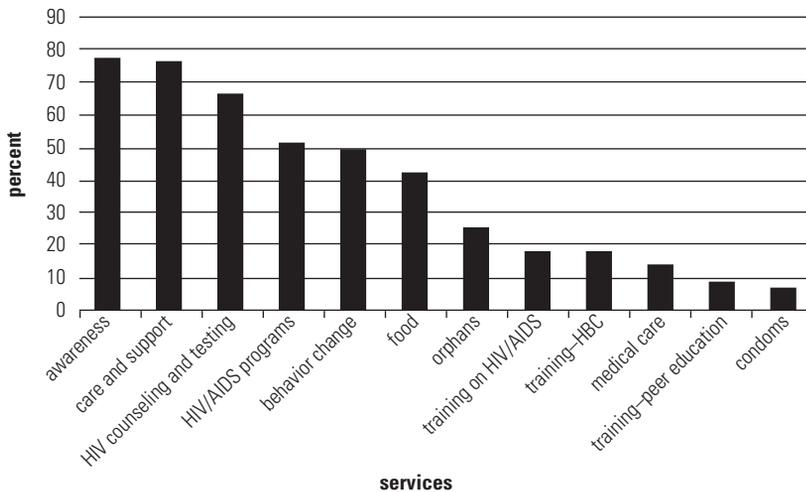
Communities are themselves part of the larger context of system or society in which they exist. They are therefore subject to influences from outside forces. According to DiClemente, Crosby, and Wingood (2005), the community intervention approach seeks to change not simply individuals’ behavior but the distribution of risk (and by inference, the probability of disease

and resulting morbidity and mortality) in the at-risk subgroup. Interventions are targeted at structures or social networks rather than specific individuals. Rather than attempting to identify characteristics of individuals that place them at risk of a particular disease, the community-level approach identifies socioenvironmental factors that are likely to predispose individuals to adopt risky behavior, prevent them from adopting protective behavior, or lead directly to increased risk of disease, regardless of individuals' risk behaviors (Link and Phelan 1995).

HIV/AIDS Services Provided at the Community Level

A study of 96 FBOs in South Africa indicates that services range from creation of awareness, care, and support to HIV counseling and testing (CADRE 2005). Almost half of FBOs reported involvement in HIV/AIDS programs, behavior change, and food (that is, food gardens and food parcels). Training on HIV/AIDS, home-based care, peer education, provision of medical care, and distribution of condoms were less common (see figure 11.1.)

Figure 11.1: HIV/AIDS Services Provided by 96 FBOs in South Africa



Source: CADRE 2005, p. 10.

Note: HBC = Home-based care.

Lwilhula and Over (1995) find that communities have established ingenious coping mechanisms to deal with the adverse effects of AIDS. These include self-help groups, burial associations, grain loan schemes and rotating credit and loan clubs.

Community initiatives through the World Bank's MAP fall into three main categories: prevention, care and treatment, and impact mitigation. Each type of program is described below.

Prevention

The most common activities undertaken by the community are in the area of prevention. Many countries support community mobilization and awareness campaigns to support behavioral changes. Activities include the following:

- training influential leaders, teachers, and role models on confronting HIV/AIDS;
- training vulnerable populations, such as sex workers, truck drivers, prisoners, populations at border points, fishers, out of school youth, and migrants;
- training and supporting peer educators, such as youth counselors;
- launching awareness campaigns, ranging from mass media dissemination of information, including television and radio programs and magazines, to dance programs, plays, and door-to-door visits;
- providing voluntary counseling and testing and other services in the workplace;
- counseling people living with HIV/AIDS, among others; and
- conducting social marketing of condoms, including demonstration of condom use.

Access to care and treatment

Although treatment is not a focal area of MAP, some communities support the diagnosis, testing, and treatment of sexually transmitted infections (STIs) and HIV/AIDS. Communities provide support to people

on treatment through home-based care activities, which range from nursing and palliative care to counseling, nutrition, and food support. Community initiatives have sought to support efforts to increase access to these health services by building the capacity to refer people to the right institution and ensuring that they follow through with treatment if needed.

Impact mitigation

Most countries have invested in activities that involve people living with HIV/AIDS, their associations, and federations in prevention and lobbying efforts. They also provide direct support to people living with HIV/AIDS and their families and contribute to the support of orphans, vulnerable children, and widows. Activities include nutrition support to people living with HIV/AIDS and their families; support to associations of people living with HIV/AIDS; investments in income-generating activities or asset building for people infected with or affected by HIV, such as business or agricultural cooperatives; and support to self-help groups, burial associations, grain loan schemes, and rotating credit and loan clubs.

Benefits and Characteristics of Community Initiatives

Communities are the custodians of their initiatives and hence have ownership of the entire process. Members of a community are in the best position to know which households are most severely affected by HIV/AIDS and what sort of assistance is appropriate. Communities know who is ill, who has died,

Box 11.1: The Gambia MAP Experience

In The Gambia, the Municipal HIV/AIDS Community conducted capacity-building activities for “Multidisciplinary Facilitation Teams” on proposal development and writing, as well as on HIV/AIDS and STIs. The Divisional AIDS Community trained people in procurement, financial management, monitoring and evaluation, and other basic aspects of project and program management. This effort was considered important in the country’s drive to sustain the response at all levels and to enhance the quality of information dissemination at the decentralized level. The Gambia also trained traditional healers, religious leaders, CSO executives, and women’s group leaders on participatory monitoring and evaluation, financial management and procurement, and the basics of HIV/AIDS, further strengthening local capacities.

who has been taken in by relatives, who is living alone, and who is hungry (Child Protection Society 1999). Together community members identify which of their members are most in need of urgent assistance and provide them with support.

Evidence from a variety of studies suggests that community coping activities share certain characteristics. Each is described below (adapted from Foster 2005b).

Reciprocity

Many traditional societies share long traditions of social support groups that assist members at times of special need, such as illness, death, and marriage. This type of community safety net—formal or informal mechanisms that mitigate the effects of poverty and other risks on vulnerable households during times of severe stress (Foster 2005b)—is a common response to both manmade and natural disasters.

In a World Bank study of households in Tanzania that lost breadwinners through AIDS, Mutangadura, Mukurazit, and Jackson (1999) find that 90 percent of their material and other assistance came from relatives and community groups (such as savings clubs and burial societies), with only 10 percent supplied by NGOs and other agencies. More than 60 percent of sampled households in Zimbabwe sought help from relatives, friends, and neighbors, particularly during hard times. Extended family and community safety nets provided significant proportions of medical expenses (27–57 percent of households) and funeral expenses (59–85 percent of households). Community safety nets are extremely important in Sub-Saharan Africa, because public safety nets either do not exist or are unable to reach extremely poor people and people living with or affected by HIV/AIDS (Gillespie and Kadiyala 2005).

Consensus-based decision making

Community members usually assess and discuss matters before they reach consensus. Through village councils or community hall meetings, members prioritize the support needed and determine who should receive it and how it should be delivered. There is always a risk that a few members dominate discussions and that decisions are made without the active involvement of key stakeholders who are marginalized within their communities. This problem is particularly relevant to HIV/AIDS, which disproportionately

affects already marginalized groups, including women, sex workers, and refugees. UNAIDS recommends that whenever possible, widening the established discussion or decision-making mechanisms of the community (for example, the village council or community hall meeting) to accommodate these groups should be tried first. In some cases reserving seats for them at these meetings or on the governing bodies of community organizations may be all they need to participate fully.

Self-reliance and voluntarism

Resources for community initiatives are often mobilized from within the community. Donations are obtained from local businesses, religious organizations, traditional leaders, and individual benefactors. In addition to providing financial resources, many community members also volunteer their time.

Voluntarism is the backbone of many community initiatives. Community initiatives often begin with a few motivated individuals or groups of individuals who become aware of a shared concern or common need and decide to take action in order to create shared benefits. The fiscal contribution of FBO volunteers throughout Africa was conservatively estimated to be worth \$5 billion a year in 2006, an amount similar in magnitude to the total funding provided for HIV/AIDS by all bilateral and multilateral agencies (Tear Fund 2006).

Local leaders

Local leadership ultimately determines the quality and magnitude of responses and the possibilities of broad participation. Just as committed leaders at the highest level have been critical at the national level, community leaders have been essential in mobilizing their communities, especially where they are respected. Leadership directly or indirectly affects the capacity of groups to undertake specific actions in a sustained, accepted, coordinated, and effective manner (Phiri, Foster, and Nzima 2001).

According to Birdsall and Kelly (2005), popular opinion leaders are drivers of change within communities. Diffusion theory postulates that innovative trends in population behavior are often instigated when a sufficient number of a community's opinion leaders—people who are naturally liked, popular, and likely to be emulated by others—establish and are known to endorse behavioral innovation. This model is used in many peer-to-peer education programs.

Box 11.2: Saving Lives in Ethiopia: The Critical Role of FBOs

By drawing on communities' knowledge of what was needed and who was in need, Ethiopia not only improved service delivery, it also demonstrated to communities that FBOs can be trusted to provide services and manage funds. The Dawn of Hope/Nazareth Branch, a group of people living with HIV/AIDS, identified three priorities: income-generating activities to help their members survive (and in some cases to prevent individuals from resorting to sex work in order to feed themselves and their families); support to 380 AIDS orphans (who had to demonstrate proof of their status); and establishment of a "recovery center," where people with HIV/AIDS who had been starving were fed back to life. Although most of the patients were receiving antiretroviral therapy, their lives were at risk because of lack of food. Out of 190 patients referred to the center by the local hospital with just hours left to live, 180 survived, thanks to the excellent care and food they received at the recovery center.

Innovation

Responding rapidly to rapidly changing situations has often required going beyond traditional customary systems to establish new institutions and mechanisms. This can be seen by the many newly formed associations and self-help groups providing support to vulnerable children, households headed by children, people living with HIV/AIDS, youth, and women.

Reliance on FBOs

Religion is an integral feature—often the most important feature—of a community's life. It is central to all of the critical milestones in most individuals' lives, including birth, marriage, and death. According to UNAIDS, quoted in F. Dimmock, Christian associations in Africa provide about 48 percent of health services in Tanzania, 47 percent in Liberia, 45 percent in Zimbabwe, 40 percent in Kenya and in Lesotho, and 30 percent in Zambia. FBOs have credible leadership, existing structures, and effective channels of communication within communities (box 11.2).

Challenges and Constraints in Scaling Up Community Initiatives

The advantages of community initiatives in terms of access, coverage, and ownership within communities are undisputed. A more pertinent issue is whether the quality of services and the services themselves address the needs

of the community adequately. The following section describes some of the challenges and constraints to scaling-up community initiatives. These are summarized in three broad categories: (1) determining the impact of community initiatives, (2) integrating community initiatives within the national response, and (3) ensuring the sustainability of community initiatives.

Determining the impact of community initiatives

Addressing issues of quality and costs of services and the impact of community initiatives remains problematic for several reasons. The myriad community initiatives underway in different settings addressing varying needs make comparisons across and within initiatives challenging. Moreover, because community initiatives are highly context specific and usually arise from local initiative, setting a benchmark of minimal standards for service provision is not possible. In the absence of benchmarks, it is difficult to objectively measure the quality of services provided and the effectiveness of an initiative.

Determining cost-effectiveness is even more challenging. A review of the literature on the costs of providing home-based care at the community level reveals a multitude of costing approaches on a variety of services to differing populations over different time periods, making it very difficult to compare initiatives. Cost differences may not reveal differences in efficiency between programs, especially as most are working with scarce resources. Costing and evaluation studies in this area have been targeted toward CBOs that receive funds from a specific donor. These studies usually estimate costs from a provider perspective, excluding the labor contributions of the family and community members involved (Johnson and others 2001).

Community initiatives are idiosyncratic to the environments from which they emerge; as such they are not necessarily replicable on a larger scale or in different environments. For this reason, while qualitative studies of the impact of community initiatives may suggest how well an initiative is performing, the results will not be generalizable in other settings.

Singer and Marxauch-Rodrigues (1996) summarize the challenges of HIV/AIDS initiatives as follows:

The starting point for AIDS prevention is recognition that AIDS is only a cover term for a complex set of intertwined local epidemics that differentially impact diverse subgroups in varied local settings based on their sociopolitical location, social and sexual networks, specific configuration of risk behaviours

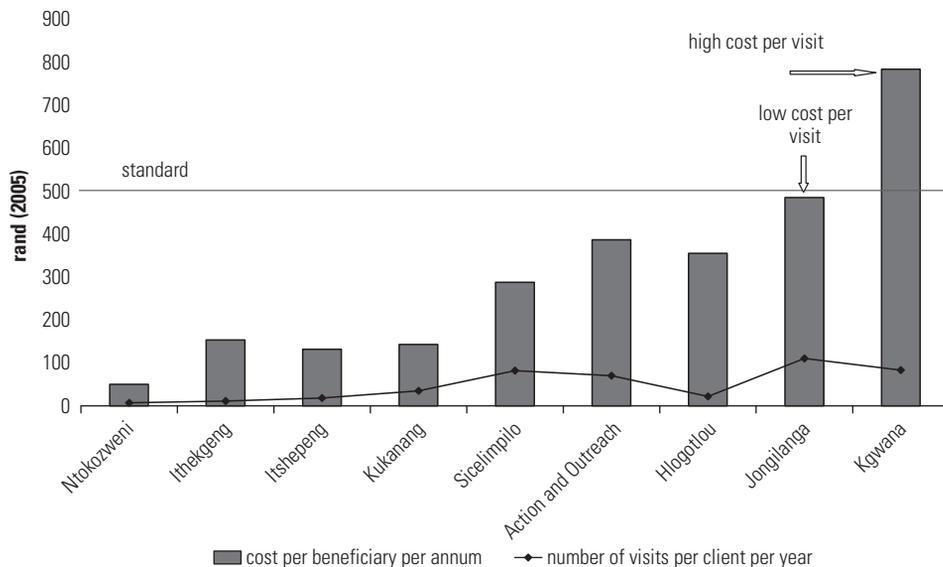
(e.g., sexual practices and patterns), attitudes and beliefs, and prior health status (for example, stressors, nutrition, exposure to other sexually transmitted diseases) (Trickett and Pequegnat 2005).

The example below of a study of nine home-based care initiatives providing services to orphans and vulnerable children throughout South Africa serves to illustrate this point. Figure 11.2, which summarizes the costs per beneficiary and the number of visits per beneficiary, illustrates a large variation in the number of visits made to each beneficiary (between 5 and 100 visits) annually, as well as significant cost differences per beneficiary (between R50 and R800).

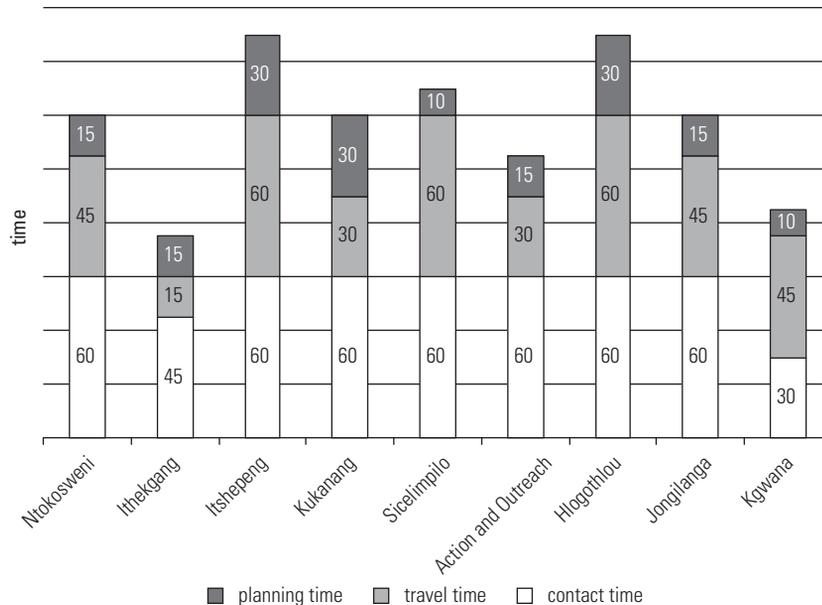
These cost differences may be attributable to the differences in the time spent by caregivers with the beneficiary on each visit. Figure 11.3 shows that the time spent by caregivers on each visit can range from an hour and fifteen minutes to two and a half hours on average between initiatives. Note that the amount of time spent by caregivers on travel to the homes of beneficiaries is approximately an hour for a third of the initiatives.

One explanation for the differences in the amount of time spent with each beneficiary could be the type of services provided by the caregivers.

Figure 11.2: Cost Comparisons between Different Community Initiatives in South Africa



Source: Naidu and Mayer 2006.

Figure 11.3: Time Allocation across Initiatives

Source: Naidu and Mayer 2006.

Table 11.1 shows the varying types of services provided for children including counseling, bathing the children, accompanying them to school as well as assisting with immunization for infants. Some providers such as Jongilanga provide as many as nine different services whereas other such as Hlogothlou provide four types of services.

The varying costs, types of services, and time allocation across these community initiatives make it challenging to compare the initiatives. Further, it is difficult to assess the quality of services provided by each of these initiatives, making cost-effectiveness comparisons difficult.

Producing community-level change by aggregating the impacts across subgroups presents particular challenges to evaluation in defining relevant subgroups and mapping differential risks, barriers, contexts, and resources. Many community-level HIV prevention efforts are targeted toward specific subgroups (based on age, gender, immigration status, sexuality, and occupation). The cumulative impact of multiple components of community initiatives, each targeting a different subgroup, is key to evaluating community impact but difficult to model when each component is “contaminated” by the others (Yoshikawa and others 2005).

Table 11.1: Services Provided across Initiatives

	NTOKOZWENI	ITHEKGENG	ITSHEPENG	KUKANANG	SICELIMPILO	ACTION & OUTREACH	HLOGOTLOU	JONGILANGA	KGWANA
Supervision of homework	✓	✓	✓	✓	✓	✓	✓	✓	✓
Counseling	✓	✓				✓	✓		✓
HIV and AIDS & health, nutrition, children's rights	✓	✓	✓	✓	✓	✓	✓	✓	✓
Assistance with identity documents	✓	✓	✓	✓	✓	✓	✓	✓	✓
Teach OVC to cook	✓			✓		✓			
Cooking			✓					✓	
Bathe children									✓
Accompany children to school									✓
Accompany children to clinic/hospital	✓				✓				✓
Accompany children to play									✓
Domestic chores	✓	✓							
Spiritual education					✓				
Establish food gardens				✓					
Safety education				✓					
Infants to clinic for immunization									✓
Checking appropriate use of grants			✓				✓		
Monitoring of ARV and other medication				✓					✓

Source: Naidu and Mayer 2006.

The independence of communities and the high likelihood of spillover effects also complicates community-level impact evaluations. The assumption that a community with no HIV prevention activities (the comparison group in an impact evaluation) is independent of another community's HIV initiatives is highly unlikely given that members in a community may frequent multiple settings. Moreover, it is difficult to match communities with ample distance between them that do not have similar ongoing initiatives. Similar initiatives in the comparison communities create a bias toward the null hypothesis (no difference between the intervention and comparison communities), creating type-2 errors (DiClemente, Crosby, and Wingood 2005).

Community-level impact evaluations are unique in that they typically involve few units of analysis. Though the units of observation are individuals, who may be numerous, these comprise the unit of analysis (the community), which are usually limited in many studies. The small number units of analysis in community initiatives imply low statistical power, because there are insufficient numbers of assignment units to ensure that randomization has the opportunity to evenly distribute potential sources of bias across intervention conditions (DiClemente, Crosby, and Wingood 2005). Even after compensating for low statistical power, most community intervention studies have been underpowered, yielding only modest evidence to support effectiveness. According to Fishbein et al. (1997), this means that evaluations of community interventions are often unable to identify even modest, let alone small, effects. This is unfortunate, because small effects in community interventions may be very meaningful at the population level.

Research on community initiatives may benefit from the application of multiple research methods and techniques. These include ecological assessments of community settings; multilevel quantitative analyses that take account of within- and across-setting variation; ethnographic and other qualitative methods; policy analytic methods, such as cost-benefit analysis; and, most important, collaborative approaches to working with community members and institutions (Fishbein et al. 1997).

Another challenge to evaluating impact is the weakness of monitoring and evaluation systems. A review of the World Bank's MAP reveals that the capacity of NGOs to design, implement, and evaluate HIV/AIDS interventions in virtually all participating countries was overestimated.¹ The efficacy of their efforts is rarely measured; to the extent that Bank-sponsored AIDS activities by NGOs have been monitored, results have generally been measured in terms of outputs.

Box 11.3: The Case of Uganda: Challenges in Attributing Success

Uganda collected data on HIV/AIDS in three consecutive Demographic Health Surveys (DHSs), in 1998 1995, and 2002. The results indicate that HIV prevalence declined significantly during the 1990s and that the incidence HIV also fell (albeit less rapidly) during the late 1990s. The declines could not be tied to specific interventions by public services, although a key factor in the decline in incidence in Uganda seems to have been “the strategic policy approach to enable nonstate actors in their individually targeted messages about prevention” (quoted in Parkhurst 2002).

The process of social change is complex. Some categories of the population increased their numbers of sexual partners (apparently feeling safer as a result of using condoms); others delayed their first sexual relations. The evolution was complex and differentiated, in a country with a high prevalence rate.

Many indirect forces formed a context for and contributed to the decline. They included broad social factors, including political commitment and support at the highest level; widespread media campaigns; and various interventions to educate all sectors of the population and to fight stigma and discrimination against people living with HIV/AIDS. Some observers claim that abstinence and monogamy played a much more important role in the decline of HIV prevalence and incidence in Uganda than did increased condom use.

Source: Singh, Darroch, and Bankole 2002.

In a study by Foster (2005a), communities interviewed indicated that monitoring requirements of donors were unreasonable and that it was impossible to comply with the bureaucratic demands imposed on them by donors. They also felt that the data collected for reporting purposes to donors were not useful.

While most donors emphasize the need for both quantitative and qualitative indicators, in practice there seems to be an overemphasis on numbers. Coverage indicators, for example, are the numbers of people treated, with no reference to the quality of treatment; process indicators may include the number of community health workers trained, with no reference to the quality of services they provide or their relevance in addressing the needs of a community. The emphasis on quantity partly reflects the difficulty of collecting outcome indicators.

A method that seeks to engage local people, including beneficiaries, in the monitoring process is the Lot Quality Assurance Sampling (LQAS) approach, based on industrial quality control procedures. By establishing a baseline measure for key indicators of performance and the quality of interventions, the approach allows local managers and beneficiaries to steer and

guide their activities by making tactical changes when needed (Mukaire and others 2004). Rather than estimating the coverage proportion for an indicator, LQAS measures whether a program catchment area has reached a performance target. LQAS serves as a performance assessment tool for managers at the implementation level; it also provides data for national and donor reporting.

The benefits of such an approach are that beneficiaries steer the monitoring process and are able to collect information in a timely manner that allows for learning and adapting the program accordingly. However, the approach is able to show only whether or not benchmarks are reached; it does not identify symptoms or reasons why performance is below the benchmark. Other challenges associated with the method include the selection of a control group and the determination of appropriate targets given differences in programs.

Local monitoring by communities is different from that required by donors (United Nations Research Institute for Social Development—UNRISD). Communities conduct ongoing, informal monitoring that allows frequent program adjustments to be made. It is far more flexible than the midproject evaluations that often lead donors to make major program corrections. Moreover, community activities do not come to an end or wind down at the end of a specified period, as is the case with donor-funded projects.

Integrating community initiatives within the national response

During the April 2004 Consultation on Harmonization of International AIDS Funding, bilateral and multilateral agencies agreed with national leaders to apply the “Three Ones” at the country level. Although its involvement in the initial development of the Three Ones was limited, the community sector has gradually become more engaged in order to ensure that its concerns are well represented, respected, and integrated. In many contexts, however, either the sector remains an outsider or it has been coopted as an extension of the government, excluding it from decision making (UNAIDS 2004). This has resulted in the centralization of decision making and funds within government structures, thus reducing accountability, transparency, representation, and coordination of the national response.

The community sector plays a critical role in implementing the Three Ones, for several reasons (box 11.4). First, the active and meaningful

Box 11.4: Benefits of Community Sector Involvement for National Response to HIV/AIDS

Community sector involvement can help ensure that national responses are based on real needs and strategically focused. The community sector is far reaching, flexible, and responsive to crises; creative and effective; nonstigmatizing and nondiscriminatory; rights based; participatory, accountable, and transparent; and cost-efficient.

- *Based on real needs and strategically focused.* The community sector understands the needs of people most affected. Its hands-on work and technical knowledge are instrumental in identifying the services and support that will make a difference. The sector has strong links with and includes marginalized groups that are key to the dynamics of HIV/AIDS—groups other sectors are often unable or unwilling to reach.
- *Far reaching, flexible, and responsive to crises.* The community sector can reach and engage a broad range of individuals, groups, and communities, including those in remote areas and those that are not usually involved in HIV/AIDS work. It can therefore recognize and respond rapidly to changes in local environments and epidemics and adapt its approaches and priorities accordingly. It is also often able to maintain action within extreme situations, such as war, where official government activities may not be possible.
- *Creative and effective.* The community sector has developed ground-breaking and risk-taking responses to HIV/AIDS, often in difficult environments and with few resources. Many of these interventions have been carefully monitored and improved over the years and are now recognized as global good practice.
- *Nonstigmatizing and nondiscriminatory.* The community sector is best placed to mobilize action against stigmatizing attitudes and behaviors by tackling the root causes within communities. It can often identify and challenge discriminatory practices and policies.
- *Rights based.* The community sector has been at the forefront of promoting rights-based approaches to HIV/AIDS that respect and protect people living with HIV/AIDS and other marginalized groups.
- *Participatory.* The community sector has pioneered empowering approaches to HIV/AIDS that encourage the participation of a broad range of individuals, groups, and institutions at all stages and levels of responses.
- *Accountable and transparent.* The community sector has experience with systems that ensure the ethics and accountability of its work. It also has experience acting as a watchdog, holding other sectors to account for their actions.
- *Cost-efficient.* The community sector is accustomed to making the most of limited funding and developing cost-effective approaches that complement and maximize the benefits of existing local efforts.

Source: ICASO 2007.

representation of the community sector within national coordinating bodies ensures that the sector shares ownership, responsibility, and commitment to delivering on the HIV/AIDS national strategic framework. Second, involving the community sector fosters a culture of equity and

transparency, and it helps it hold other sectors accountable to their commitments. Third, by coordinating and collaborating with other sectors, the community sector is able to draw on technical expertise and information it would otherwise not have access to. Fourth, inclusion of monitoring and reporting information from community responses in the national database is critical if there is to be a single, comprehensive, national monitoring and evaluation system.

Ensuring sustainability

In a rapid in-country review of community-level organizations in Mozambique, South Africa, Swaziland, and Zimbabwe, Foster (2005a) identifies the following obstacles faced by communities in obtaining funding:

- Small, rural communities often find it hard to identify funders.
- Funding by donors does not reflect the target populations or types of services identified by communities.
- Communities find the application process cumbersome and budgeting requirement tilted the application process in favor of established NGOs.
- Communities report receiving little or no feedback from funders following the submission of applications.

For their part, donors believe that community groups lack the capacity to account for funds. Furthermore, donors find it difficult to administer small grants in view of the high transactional costs and their limited capacity.

Tracking the distribution of funds. Tracking resources for HIV/AIDS is poorly developed in many African countries and in some cases seen as outside the purview of the donor. According to Taylor (2005), senior staff at the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund) indicated that the Fund's commitment is to maintain transparent monitoring only with respect to its principal recipients (national-level entities) and that it is the role of in-country civil society to follow up on the use of funds. The multibillion dollar President's Emergency Plan for AIDS Relief (PEPFAR) does not track the amount and proportion of resources reaching communities (Foster 2005a).

Providing long-term funding and strengthening community capacity. The sustainability of community initiatives has come into question given the short-term infusion of funds by donors. The lack of a long-term commitment to support communities can often undermine community coping mechanisms. In one country, for example, efforts by a remote rural community that mobilized volunteers to support vulnerable children were undermined by a city-based organization that trained and made substantial payments to community members to establish support activities for orphans and vulnerable children for a limited period (Foster 2005a). This undermined the voluntarism within the community and risked compromising the community ownership for child support activities that had been painstakingly established over time.

Supporting empowering initiatives involves designing programs and processes that enhance community capacity, with a view to an exit strategy at an appropriate point. External agencies should focus on linking programs with community resources in a capacity-enhancing manner; doing so involves adopting a time frame that is significantly longer than current donor funding cycles. Increasing community capacity and developing resources to serve communities over time is an ongoing commitment.

How can external agencies identify communities that are “ready” to be supported? What conditions are required within a community to scale up its initiatives? The hypothesis that communities with higher levels of social and economic capital are more likely to engage in community mobilization has not been investigated across communities (Yoshikawa and others 2005). Assessment of community characteristics associated with effective mobilization concerning HIV initiatives could be linked to ongoing surveillance data (such as number of community initiatives) to test such an hypothesis. External agencies need to make decisions about where their funds have the greatest impact. But communities without strong social and economic capital—and thereby weak social safety nets—are those most in need of assistance. This calls for fresh thinking on how best to approach individual-focused interventions for the more vulnerable and less vocal in communities.

Motivating local volunteers. Many local initiatives depend heavily on community volunteers, who have many other demands on their time. In a six-country study of 690 FBOs, more than 9,000 volunteers were reported to be involved in the care and support of some 156,000 orphans

and vulnerable children. The vast majority of home-based caregivers are 25- to 50-year-old women of faith (Foster 2004).

In developing countries, volunteers are often of low socioeconomic status and must balance the time they spend volunteering with the time they need to spend working in order to feed themselves and their families. Sometimes volunteers are unemployed people whose first priority is to find a job (UNAIDS 1997). Others are themselves HIV positive. Community initiatives often need to find new ways to keep volunteers' enthusiasm high and to help volunteers continue to identify with the problem and recognize their importance in moderating some of the impacts of HIV/AIDS. The issue is amplified by the fact that many of the volunteers themselves are HIV positive and it is hard to maintain motivation when highly valued colleagues become ill.

Providing incentives and increasing the number of volunteers are crucial to the scaling up of community-based initiatives. Care must be taken to ensure that incentives do not undermine altruistic motivation, however, and that capacity exists to manage increased numbers of volunteers (Phiri, Foster, and Nzima 2001). Volunteers themselves should have a support network to address illness, fatigue, and loss of motivation.

Recommendations for External Funding Agencies

Communities continue to respond to the impacts of HIV/AIDS on an ad hoc, unstructured basis, in some cases in ways not known beyond the confines of the community. They are at the forefront of influencing behavior change by individuals by establishing, maintaining, enforcing, and changing cultural norms, social environments, beliefs, roles, and practices. The benefits of community involvement are clear, but determining how to scale up efforts and integrate community responses within the national effort remains a challenge in much of Sub-Saharan Africa.

The following recommendations may help external funding agencies provide or increase funding of HIV/AIDS-related community initiatives:

1. *Gain a better understanding of the community, and shape external support to complement community strengths based on a more robust evidence base.* External funding agencies need to be sensitive to the scope and types of community initiatives. It is unrealistic of external agencies to think that communities

have the same infrastructure and fiduciary capacity to deliver services and monitor progress as large NGOs. Given the scale of the HIV epidemic in Sub-Saharan Africa, the response requires the concerted actions of families, households, and communities. The huge potential that exists at the community level needs to be nurtured and supported. Doing so requires being flexible to innovative approaches and allowing communities to determine which activities they should implement and how to do so. External agencies have a role to play in ensuring that marginalized groups within the community are adequately represented in the decision-making process. More effort should be placed on understanding the various community initiatives that exist, determining the costs of such initiatives, and evaluating their effectiveness. Funding agencies should be cautious about trying to extrapolate such information to different local settings; they must appreciate and embrace diversity across programs.

2. *Strengthen community capacity to monitor and evaluate their programs.* External agencies should work with communities to identify the monitoring and evaluation processes that already exist and determine how they can be strengthened. Capacity should be built in a collaborative manner, with an emphasis on collecting information that could be useful to the communities once the donor-funded project ends. Both quantitative and qualitative indicators should be monitored and evaluated, in order to provide a holistic picture of a program's effectiveness. External agencies should work within the ambit of what communities are willing and able to collect in terms of data; monitoring systems should be strengthened through a bottom-up approach rather than being dictated by international donor requirements.
3. *Address the longer-term sustainability of community initiatives.* External agencies should begin to track their funding from allocations to actual disbursements at the community level, with a focus on the types of activities funded. Foster (2005a) explores various mechanisms for channeling funds to communities, including use of "intermediary" NGOs, umbrella network NGOs, and religious coordinating bodies, which have potential but do not provide adequate technical support. External agencies should support empowering initiatives geared toward enhancing community capacity. Increasing community capacity and developing resources to serve communities over time must be an ongoing commitment. Care must be taken to ensure that volunteers remain motivated by providing incentives that do

not undermine altruistic motivation and creating a support network to address illness, fatigue, and loss of motivation among volunteers.

4. *Support community representation in the development and execution of the national HIV/AIDS strategic framework.* External agencies should encourage and support community sector representation in the development, evolution, and annual review of the national HIV strategic framework. In most instances, the national AIDS authority would be the most regular national interlocutor with the community. It should solicit community sector views on planning, programming, budgeting, and social accountability. Given the growing importance of other mechanisms, such as the Global Fund and its Country Coordinating Mechanism, it will be crucial to designate the appropriate role for the community sector in HIV/AIDS deliberations and decision-making forums. It is important to understand how communities are organized and how the voices of various communities can be heard at the national policy, planning, and programming level.

Note

1. MAPS channelled more than half of the \$1.5 billion spent by NGOs/CBOs for HIV since 2000.

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PART IV

STRENGTHENING NATIONAL HEALTH SYSTEMS

HIV/AIDS and Human Resources for Health

Christopher H. Herbst, Agnes Soucat, and Kate Tulenko

Over the past few years, the international community and governments have stepped up development assistance for Sub-Saharan Africa to scale up HIV prevention, treatment, and care programs. Such efforts require sufficient numbers and appropriate types of competent health workers, including health, management, and support workers, to absorb and translate investments into health services. This chapter discusses the extent to which HIV has exacerbated the health worker crisis in many countries in Sub-Saharan Africa by pushing up demand for health workers while sometimes decreasing the supply. It analyzes the existing situation and highlights key policy levers to increase the supply of health workers for HIV/AIDS treatment and care. It suggests that policies intended to address the HIV crisis in Sub-Saharan Africa should aim at a twin strategy that both reduces the demand for and increases the supply of health workers.

The chapter is organized as follows. The first section discusses the demand for health workers in relation to the response to the HIV epidemic. The second section describes the inadequate supply of and performance by health workers in many countries. The third section discusses the extent to which HIV may be exacerbating supply and performance problems in many countries. The fourth section briefly discusses some of the key policy levers for reducing demand for and increasing the supply of health workers. The fifth section discusses the importance of an enabling political and fiscal environment to ensure innovative policies and programs can be developed and implemented. The last section provides some concluding comments.

Demand for Health Workers in Sub-Saharan Africa

The demand for health workers in Sub-Saharan Africa has increased steadily in response to the HIV epidemic.

HIV/AIDS and development assistance

HIV/AIDS and resurgent epidemics of tuberculosis and malaria have increased the burden of disease in Africa, where communicable diseases account for nearly three-quarters and HIV/AIDS accounts for nearly one-fifth of the total disease burden. The increase in the disease burden as a result of HIV, as well as tuberculosis, malaria, and malnutrition, have led to reductions in life expectancy in some countries (UNAIDS 2008).

People living with HIV/AIDS generate a disproportionate share of total health care demand (Sauerborn, Berman, and Nougara 1996; Over 2004). Several studies suggest that prime-age adults with HIV/AIDS tend to use more health care than those with other prolonged illnesses (Over 2004). A study of 350 HIV-positive outpatients in Rwanda finds that the average patient visited the hospital 10.9 times in the course of a year—more than 36 times the 0.3 visits for the population as a whole (Nandakumar, Schneider, and Butera 2000).

In recent years the international community, together with national governments, decided to respond to the increased demand for HIV-related health care and resources. In June 2006, at the UN Special Session on HIV, member states agreed to work toward the broad goal of universal access to comprehensive prevention programs, treatment, care, and support by 2010. This goal has galvanized governments and international agencies into action and is already bearing fruit in terms of increased resources and political commitment. The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) was established in 2003 for \$15 billion and reauthorized in 2008 for \$48 billion to fight HIV through prevention, treatment, and care programs. Both the Global Fund to Fight AIDS, tuberculosis and malaria and the World Bank are critical partners in this endeavor. The vast majority of this money has gone toward work in Africa.

HIV/AIDS programs and human resources for health

HIV interventions require health systems able to absorb and translate resources into actual services for those who need them. The benefits health

systems can deliver depend largely on a sufficient and appropriate supply of well-performing health workers.

Several studies highlight the human resource intensity of HIV/AIDS scale-up efforts, particularly those related to antiretroviral therapy (ART). Health worker projections highlight the clinical complexity of ART, upon which many scale-up efforts are based.¹ Hirschhorn and others (2006) estimate that providing highly active antiretroviral therapy (HAART) to 1,000 patients in Africa requires one to two physicians or clinical officers, two to seven nurses, and less than one to three pharmacy staff. Van Damme and others (2007) estimate that 2.06 full-time equivalents of doctors would be required in Cambodia at the inception of a treatment program for 522 patients. A more complex, demand-driven projection model, which was applied to Mozambique, projects that a sixfold increase among certain health cadres would be needed over three years to reach the goals of the national ART roll-out program (Hagopian and others 2008) (table 12.1).²

Non-ART programs also require health workers, albeit less intensively. A study by Furth, Gass, and Kagubare (2006) projecting health worker requirements for voluntary counseling and testing services finds a significant need for counselors and laboratory technicians. Home-based care, end of life care, and orphan care are also very transaction intensive. HIV/AIDS interventions increase the demand for any given level of skill, because they require a great deal of continuity of care and support and cooperation across all levels of the health system.

Table 12.1: Estimated Health Resources Needed to Provide ART in Mozambique

CLINICIAN TYPE ^a	END OF YEAR 1	END OF YEAR 3
Number of non-OB encounters with clinicians	5,753/month	30,089/month
OB encounters with clinicians ^b	712/month	3,428/month
Full-time equivalent required to meet this demand based on our productivity assumptions	11.5 non-OB clinicians	60.2 non-OB clinicians
	1.4 OB clinicians	6.9 OB clinicians
	10.3 nurses	46.7 nurses
	28.4 social workers	140.5 social workers
	9.9 pharmacists	66.4 pharmacists
	12.7 phlebotomists	67.1 phlebotomists
	14.9 peer counsellors	99.6 peer counsellors

Source: Hagopian 2008.

Note: At end of year 1, 8,000 people would receive ART; at end of year 3, 58,000 people would receive ART.

a. Clinician calculations in table relate primarily to incremental requirements for HIV care

b. This category combines both ART decision-making clinicians and ART follow up care providers, which are separated in the spreadsheet model

The type of skill mix needed depends largely on the type of model on which HIV health services are based. Programs focusing on complex treatment models may require a larger number of senior-level professionals, such as physicians. Other models—such as those emphasizing prevention and support or those using standardized, decentralized delivery models, including simplified treatment protocols and clinical monitoring—require lower-level professionals. Accompanied by standardized, specialized training, supportive supervision, and well-functioning referral systems, health services based on such models can be delivered by a range of lower-level providers, maximizing the role of health workers with less training and fewer qualifications (WHO 2007).

There is growing recognition that many of the diverse skills required to scale up HIV programs can be provided by lower-level cadres, provided they receive relevant pre- and inservice training as well as supervision. A recent World Health Organization (WHO) study determined that very few of the more than 200 different tasks related to prevention, care, and treatment of HIV/AIDS require physicians. These include the following:

- recommendation and prescription of first-line ART;
- substitution of drugs in first-line regimens;
- provision of treatment options for children who fail ART;
- prescription of second- and third-line ART;
- management of a switch to second-line ART;
- selection of appropriate third-line ART;
- management of tuberculosis;
- management of severe opportunistic infections;
- management of acute care for life-threatening complications of ART in children;
- assessment and management of nervous systems and developmental manifestations of HIV and HIV-associated malignancies in children; and
- supervision of other cadres.

Provided they receive the appropriate training and supervision, nonclinical physicians (midlevel cadres with more skills than nurses but fewer skills than

doctors), nurses, and community health workers were deemed potentially capable of executing all other tasks in a manner that is both safe and effective (WHO 2007).

HIV/AIDS funding and human resources for health

The increase in financing of HIV activities led to an increase in demand for health workers. ART scale-up efforts often led countries to expand health care spending while the pool of qualified health workers remained stable. The extra demand for health workers has exerted upward pressure on the price of health care and is likely to have increased the income of all physicians.

In HIV-affected poor countries with weak health systems, channelling resources into HIV programs is challenging. It has been suggested that attempts to direct vast resources into new programs in poor countries could result in either failure to disburse or substantial leakage of resources into avenues not included in the program design (Over 2005).

Moreover, the vast scale of human resources required to scale up HIV prevention and treatment programs in some countries triggers substitution, pushing up overall demand for health care workers. Because of delays in adjusting supply policies or rigidities in the health labor market, insufficient numbers of new workers are available on the market. In the absence of new workers, more experienced workers may be reassigned from their previous activities or “poached” by NGOs or service providers delivering HIV services. A study in Kenya finds that the number of HIV patients more than doubled in certain hospitals, while the number of admissions for HIV negative patients shrank 20 percent (Floyd and Gilks 1996). The decline was attributed not to a sudden increase in HIV prevalence but to the increased specialization in HIV services, among others, reduced health worker capacity to deliver health services other than HIV.

Supply and Performance of Health Workers in Sub-Saharan Africa

A key barrier to scaling up HIV/AIDS services and programs in many countries in Sub-Saharan Africa is the inadequate supply and performance of health workers. This section examines both issues.

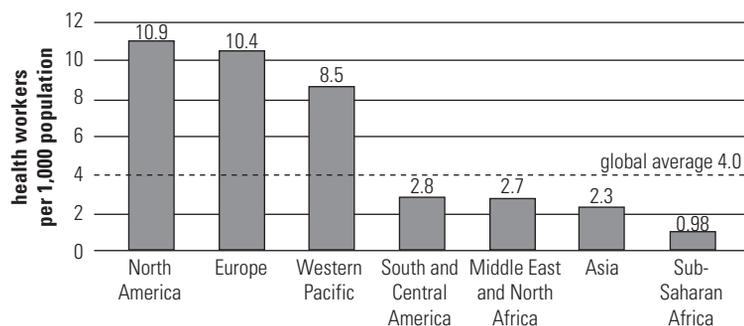
The health worker shortage

Both the WHO (2007) and UNAIDS (2008) report that shortages of appropriate health workers represent a key bottleneck to scaling up HIV programs in poor countries. The number of health workers is much lower in Sub-Saharan Africa than in other countries, with an estimated average of 0.98 health workers per 1,000 population (figure 12.1). This is far below the global average of 4.0 and the minimum estimated requirement of 2.5 health workers per 1,000 population to achieve the MDGs (Joint Learning Initiative 2004). Within Sub-Saharan Africa, shortages vary from country to country and cadre to cadre. Soucat and Herbst (2008) find that health worker shortages are generally higher in anglophone than in francophone countries, with some countries, such as the Republic of Congo and Nigeria, showing aggregate nurse and doctor densities above the minimum benchmarks.

The shortage of health workers is particularly critical in countries experiencing severe HIV/AIDS epidemics. The WHO identifies five countries—the Central African Republic, Lesotho, Malawi, Mozambique, and Zambia—in which adult HIV prevalence rates exceed 10 percent and the shortage of health workers is acute (figure 12.2).

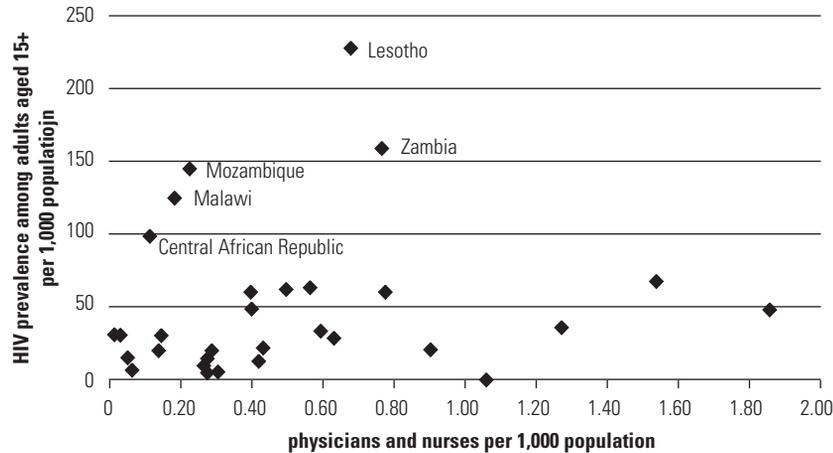
Throughout Sub-Saharan Africa, the health worker crisis is most pronounced in poorer, more rural areas. The Food and Agricultural Organization (FAO) estimates that more than two-thirds of the population of the 25 African countries most affected by HIV live in rural areas (FAO 2008). Doctors, however, tend to live in urban areas. In Burkina Faso, for example, the cities of Ouagadougou and Bobo-Dioulasso, which account for just 10 percent of the population, are home to 54 percent of the country's doctors, 57 percent of its

Figure 12.1: Health Workers per 1,000 People, by World Region, 2004



Source: Compiled from WHO (2004).

Figure 12.2: Countries in Sub-Saharan Africa in Which Prevalence of HIV Is High and Shortage of Health Workers Acute



Source: Calculation based on WHO and World Bank data.

midwives, 59 percent of its pharmacists, and 33 percent of its nurses (WHO 2006). In Zambia, the density of health workers per district ranges from 0.14 per 1,000 in the rural district of Chilubi to 2.7 in the urban district of Livingstone (Herbst and Gijsbrechts 2007). Physicians in richer Maputo City have an average patient load of 342, while doctors in rural, poorer areas have an average patient load of 6,496 (Hagopian and others 2008). Such patient loads exceed any reasonable standards.

Several studies find the existing stock of health workers in many countries to be insufficient for HIV scale-up efforts, even if used at 100 percent capacity. Smith (2005) finds 7 out of 14 countries included in the study unable to meet the needs of ART scale-up using 100 percent of their existing workforce. Using the formula of Hirschorn and others (2006), McPake (2008) finds that Malawi would not have enough pharmacists and technicians to provide HAART to everyone in Malawi who needs it even if all pharmacists and pharmacist technicians were to participate in such care. Had these studies disaggregated urban from rural, the insufficiency would be even starker.

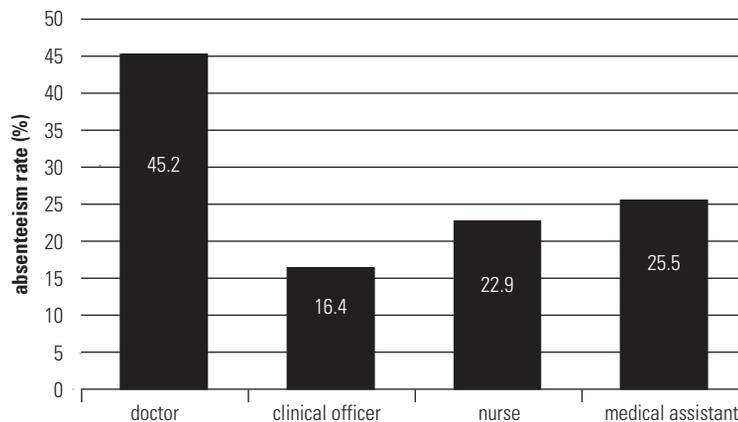
There is some evidence that the stock of health workers in many countries may not be able to absorb large financial flows. A pipeline analysis of donor flows in health in Malawi in the mid-1990s reveals that donors were able to spend less than 61 percent of their annual health sector commitments of about \$350 million (Picazo 2002).

The performance problem

Efforts to scale up HIV services are unlikely to reach equity and efficiency goals unless the health workforce delivering these services performs adequately. Performance can be defined by availability (absenteeism and waiting lines); competence (ability to adequately diagnose and provide services and institutional performance indicators); responsiveness (respect, communication, and attention given to patients); and productivity of health workers (WHO 2006).

Health worker absenteeism is a problem in many countries (figure 12.3). Results from surveys in five countries show that on average 35 percent of health workers are absent at any given time (Chaudhury and others 2006). Studies on Ethiopia (Ethiopian Ministry of Health 2006); Rwanda (Lievens and Serneels 2006); and Zambia (Picazo 2007; Herbst and Gijsbrechts 2007) also find high levels of absenteeism at the facility level, particularly in rural areas and among higher-level cadres. In Zimbabwe, more than a quarter of health workers believed that longer waiting times because of shortage of available staff had resulted in deaths that prompt attention could have prevented (Chikanda 2004). Another study finds that waiting times were serious problems in four African countries and that some health facilities had reduced opening times since the HIV/AIDS epidemic, especially in rural areas (Awases and others 2004). In the Democratic Republic of Congo, several clients of health facilities reported waiting one to three hours, and one waited half a day to obtain services (Crigler, Sebikali, and Salentine 2008).

Figure 12.3: Percentage of Health Workers Absent from Health Facilities in Zambia



Source: Herbst and Gijsbrechts 2007.

Some evidence also points toward insufficient health worker competence. A study in Kenya on the competence of health workers to carry out integrated management of childhood illness services finds that only 60 percent of children were receiving proper treatment (Lin and Tavrow 2004).

Responsiveness also seems to be a problem in some countries. Health workers themselves note the decline in such factors as respect for patients and caregivers, attention given to patients, and communication between health workers and clients (Awases and others 2004). In Ethiopia and Ghana, users reported being upset over health workers serving them slowly because they were talking with colleagues or friends or spending too much time on the phone (Lievens and others 2007; Lindelow, Serneels, and Lemma 2005).

Discrimination toward people with HIV accounts for lack of responsiveness. A study of health workers in Nigeria finds that 13.9 percent were unwilling to take vital signs and 12.7 percent were unwilling to carry out physical examinations on HIV-positive patients (Sadah and others 2006).

There is also some limited evidence pointing to health worker inefficiencies. A study conducted in Ghana finds that productivity, defined as equivalent patient days per health worker and salary cost per equivalent patient day, differs considerably by district (Vujicic 2006). A productivity study in Uganda that measured productivity based on the amount of staff time required to perform particular tasks finds that it ranges from 10.9 outpatient-equivalent service units per worker to 583.8, depending to some extent on facility ownership and location (Reinikka, Ritva, et al. 2003). The potential gains in productivity are thus significant: one study estimates the potential gains from increasing the productivity of existing staff to be as high as 35 percent in Tanzania and 26 percent in Chad (Kurowski and others 2003).

Impact of HIV/AIDS on the Health Worker Shortage in Africa

Countries in Sub-Saharan Africa are experiencing a shortage of well-performing health workers to serve the needs of their populations. In the most afflicted countries, HIV exacerbates existing and systemic weaknesses and problems related to health labor market characteristics.

Production of health workers

The production of health workers has a direct impact on the aggregate stock of health workers in a country. The type of students produced has a direct impact on the distribution of health workers. Students with rural

backgrounds and those training for front-line and midlevel posts are more likely to take up rural postings than those with urban backgrounds (Serneels and others 2005).

Africa produces far fewer health workers a year than other regions (figures vary by cadre and country). One study estimates that Africa produces just 6,100 doctors a year (0.0008 percent of the population)—far fewer than the 173,800 physicians in Europe (0.06 percent of the population) (Ekhert 2002).³ Very few of these physicians are general practitioners, rather they are specialists (Soucat and Herbst 2008), and many who are reported in the physician category are not physicians by international definition. This production of physician equivalents such as medical officers or clinical officers has been an effective way of matching clinician skills with local health needs. More than 25 countries in Sub-Saharan Africa produce these nonphysician clinicians, cadres with skill sets somewhere between nurse practitioners and physicians (Mullan and Frehywot 2007). In some of these countries, the annual output of midlevel cadres or nonphysician clinicians is considerably higher than the output of traditional physicians (Dovlo and others 2004) (table 12.2).

To a large extent, the low output of training institutions in Sub-Saharan Africa reflects the low capacity of many education institutions. Botswana, one of the wealthiest Sub-Saharan Africa countries, does not have a medical school. In Malawi, the low annual intake of nursing schools in 2002 was attributed to “a lack of hostel accommodation, inadequate classroom space, too few tutors, insufficient teaching and learning materials, and poor finance” (Muula, Nyasulu, and Msiska 2004). In Zimbabwe, the medical faculty sought to reduce enrollment from 120 to 70 students because of the lack of lecturers (Meldrum 2003). Lack of capacity in some education institutions may affect the motivations of potential applicants to enroll in the first place or contribute to students dropping out (Sy forthcoming in 2009).

Table 12.2: Estimated Annual Production of Physicians and Other Medical Professionals in Selected Sub-Saharan Countries, 2003

COUNTRY	CLINICAL OFFICER/MEDICAL ASSISTANTS	ASSISTANT MEDICAL OFFICER (POSTBASIC)	PHYSICIANS
Ghana	30	0	200
Kenya	300	30	200
Malawi	100	N/A	20
Mozambique	300	N/A	20–25
Tanzania	300	40	50

Source: Dovlo and others 2004.

Factors relating to weak governance and management as well as the wider political economy are also partly to blame. The production of insufficient numbers and types of health workers is sometimes attributed to inadequate planning as well as lack of coordination between different central government ministries (such as the ministries of health or education).⁴ Workforce planning by health ministries is sometimes unable to match staff requirements to the needs of the population and the health system as a whole (Martinez and Martineau 1998). In addition, the production of alternative cadres, such as midlevel cadres, is sometimes slowed by resistance from medical associations and civil society (Soucat and Herbst 2008).

In countries heavily affected by HIV, the disease can exacerbate the problem of low health worker production. Enrollment into training institutions may be low because of a reduced pool of applicants. The Democratic Republic of Congo, Ethiopia, Nigeria, and Tanzania—home to 45 percent of children in Sub-Saharan Africa who are not enrolled in secondary institutions—are all heavily affected by HIV. This low secondary school enrollment rate leads to a significantly smaller pool of applicants for health sciences tertiary training programs. There is anecdotal evidence that the perceived increased danger of infection of HIV may have made the medical professions less attractive in some countries, reducing the potential willingness of secondary school graduates to embark on medical careers (Tulenko and Farahani forthcoming). The reduced number of staff in training institutions because of HIV may also reduce the ability to enroll sufficient numbers of health workers. Finally, HIV may increase drop-out rates (and hence graduation rates), as students fall ill or leave school to care for their dependants (Buyla and others 1996). In Lesotho, high drop-out rates among medical students are considered a major problem (Equinet 2008).

Entry of graduates into the health labor market

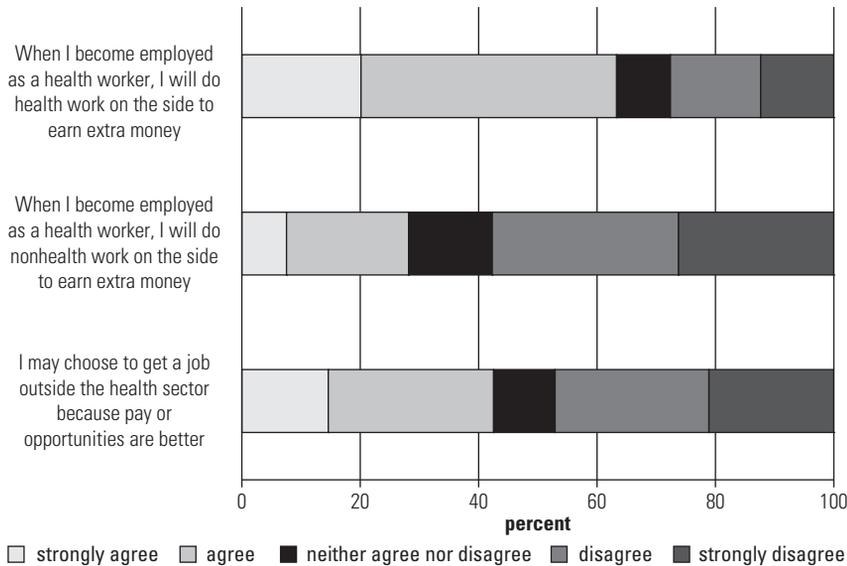
Some country-level evidence suggests that a significant portion of medical school graduates do not enter the national health labor market after graduation. In Benin, 12–17 percent of the pool of qualified health workers (and as much as 50–60 percent of doctors) **emigrate** after graduating (Lemiere 2008). In Rwanda, 16 percent of medical graduates did not enter the health market in 2006, up from 2 percent in 2005 (Sy 2008).⁵

The inability of governments and health facilities to attract health workers, as well as their inability to afford health workers, explains some of this loss. In Kenya, despite the large number of job vacancies, a WHO study (2003a) estimates that thousands of health professionals were unemployed, including 4,000 nurses, 1,000 clinical officers, 2,000 laboratory staff, and 160 pharmacists or pharmacy technicians. In South Africa, 35,000 registered nurses were inactive or unemployed in 2004 (OECD 2004). In some cases unemployment is attributed to the inability of governments and other health sector to adequately allocate, deploy, or reach health workers with vacancy information, resulting in information failure. This was the case in Rwanda, where some health workers were finding it difficult to find jobs after graduation (Lievens and Serneels 2006). Other explanations center on the inability of governments or public health facilities to afford to hire more health workers, which is sometimes attributed to budget caps imposed by the International Monetary Fund (IMF) and the World Bank (Ambrose 2006), and the inability of the private sector to absorb them (Herbst and Gijbrecchts 2008).

In some countries increased demand and recruitment efforts for health workers in sectors outside of health may also be at play. Although a small proportion of graduates may leave the country after graduation (see discussion on medical brain drain below), others may take up domestic jobs outside the health sector. A study of final-year medical students in Ethiopia finds that more than 40 percent of students choose jobs outside the health sector upon graduation (Serneels and others 2005) (figure 12.4). Increased opportunities outside the health sector and a changing environment, persistent economic growth, and increasing donor activities may increase the demand for highly skilled individuals in job markets not necessarily related to the national health sector.

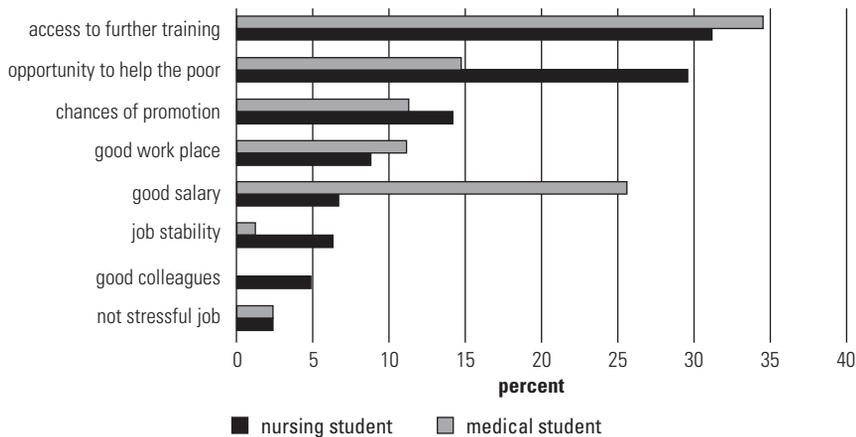
At least some career preferences may be influenced by HIV. A study in Ethiopia finds final-year medical and nursing school students' main criteria for entering a job after graduation to include a number of variables that may not be met by jobs in the health sector (Serneels and others 2005) (figure 12.5). It finds that career preferences of Ethiopian health workers are also influenced by a growing concern with HIV infection. Eighty percent of final-year medical and nursing students agree that the risk of contracting HIV is higher in the medical profession than in other professions. Forty percent report that they are "quite concerned," while 50 percent are "very concerned" about contracting HIV in the work place, with medical students more concerned than nursing students.

Figure 12.4: Attitudes of Final-Year Medical Students Regarding Working Outside the Health Sector upon Graduation



Source: Serneels and others 2005.

Figure 12.5: Importance of Various Job Characteristics to Health Care Workers in Ethiopia



Source: Serneels and others 2005.

Out-migration and brain drain

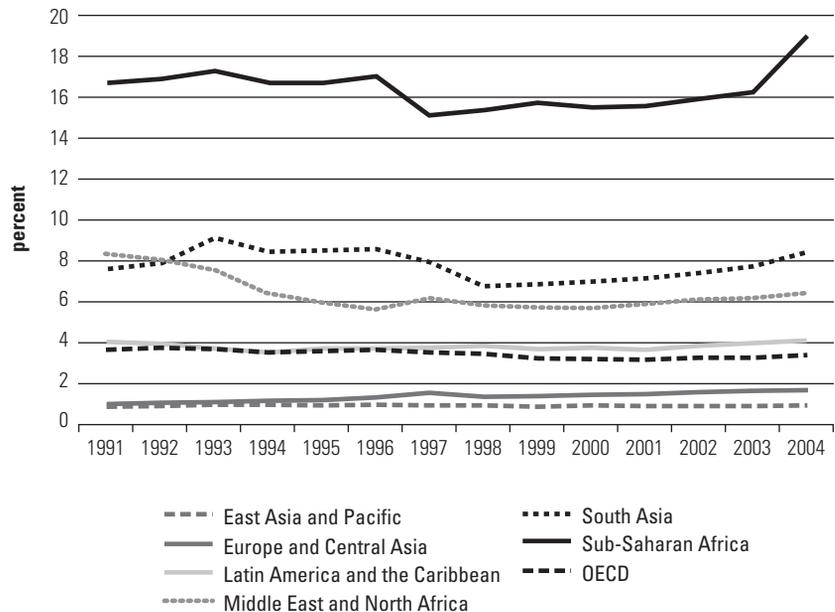
Out-migration of health workers is often argued to reduce the supply and lower the performance of health workers in a country by reducing the capacity to attract and retain health personnel, particularly in rural areas

(Dussault and Franceschini 2006). This is sometimes contested. Clemens (2007) finds that out-migration is associated with increased production of health workers. He argues that Africa's generally low staffing levels and poor public health conditions are the result of factors entirely unrelated to international movements of health professionals and that such results can be explained by segmentation of health workforce labor markets in sending countries.

Africa's immigrants consist of highly educated individuals: immigration of people with only primary education is almost nonexistent (Carrington and Detragiache 1999). This may have significant repercussions on the quality, competence, and workload of remaining health workers. At the same time, migrants who eventually return often bring new knowledge and skill sets, thereby strengthening institutions at home (Soucat and Herbst 2008).

Sub-Saharan Africa has more than twice the level of brain drain as the second-most affected region (South Asia), with 19 percent of doctors migrating in 2004 (Bhargava and Docquier 2007; figure 12.6). Several countries in Sub-Saharan Africa have more doctors in a single foreign country than at home (Clemens and Pettersson 2008). One study estimates that of a total output of 144 nurses in Swaziland in 2004, 100 (69 percent) were lost to out-migration (Kober and van Damme 2006).

Figure 12.6: Medical Brain Drain Flows, by Region and Year, 1991–2004



High levels of migration are sometimes attributed to high demand for health workers in the international labor market, as well as to active recruitment drives of governments in Western countries. An aging population in Europe means that health worker demand is high and likely to increase in the future. Some studies have shown significant levels of health worker vacancies in the developed world and predict that the drive to recruit health workers from developing countries will grow over the next years (Vujicic and others 2004).

Better pay and working conditions are major pull factors for many health workers in Sub-Saharan Africa. A survey of health workers intending to migrate or who had already migrated shows salary and living conditions were most important, with 80 percent of health workers surveyed in Cameroon citing inadequate living conditions and 72 percent of health workers in Uganda and 89 percent in Senegal citing salary as reasons for leaving the country (Vujicic and others 2004). The same survey finds that 36 percent of health workers in Uganda, 64 percent of health workers in Ghana, and 68 percent in South Africa might be persuaded to stay if working environments were to improve.

Inadequate management and particularly lack of specialized education capacity are additional reasons why health workers migrate. Better management, training, and career opportunities, as well as the attraction of centers of medical excellence abroad are pull factors. Fifty-five percent of health workers surveyed in Cameroon reported that they might be persuaded to stay in Cameroon if improvements to health care system management were made (Vujicic and others 2004). Another study (WHO 2003b) finds that 86 percent of health workers who had left Ghana reported migrating because of the lack of opportunity to advance professionally at home. Lack of post-graduate training opportunities is a major reason why health workers in Cameroon intend to leave their country.

HIV may give an added impetus to those intending to leave (table 12.3). Safer working environments in the developed world are one of many pull factors. Anecdotal evidence suggests that HIV-related risks at work are a major push factor for health workers to emigrate (Dussault and Franceschini 2006). Health workers in Rwanda report being concerned about the increased risks of HIV and tuberculosis to which they are exposed in clinical practice (Lievens and Serneels 2006). Health professionals in South Africa (57.5 percent), Uganda (61.5 percent), and Zimbabwe (58.4 percent) reported that they find it stressful to care for patients with HIV (Awases and others 2004).

Table 12.3: Push and Pull Migration Factors in Sub-Saharan Africa

PUSH FACTORS AWAY FROM AFRICA	PULL FACTORS TOWARD THE WEST
<ul style="list-style-type: none"> • Lack of postgraduate training opportunities • Poorly funded work facilities • Lack of work posts • Low pay • Poorly managed health systems • Pressure from extended family • Work-related medical risks (HIV/AIDS, tuberculosis) 	<ul style="list-style-type: none"> • Training and career opportunities • Attraction of centers of medical excellence • Better pay and working conditions • Availability of posts • Safer environment • Good management

Source: Authors.

Morbidity and premature death

Poor health of health workers or their dependants negatively affects health worker performance and is often linked to absenteeism, lack of responsiveness, and low productivity. Poor health may reduce the stock of health workers through early labor market exit. Premature death of health workers may affect not only the supply of health workers but also their performance, which may fall as managers need to recruit and train additional personnel to address and attend funerals when a colleague dies (Tulenکو and Farahani 2007).

Very few data are available on the proportion of health workers and dependants classified as being ill (with any disease). Estimates of premature mortality show substantial and widely diverging levels of premature death (Kinfu and others 2006). The crude death rates of physicians, nurses, and midwives in some countries is as high as 28 out of an active health workforce of 1,000 (table 12.4). Given many countries produce fewer than 100 physicians a year, the crude death rate of physicians of more than 20 in most countries is critical.

A significant proportion of health worker illness in Sub-Saharan Africa may be related to HIV/AIDS. In 2003, more than 15.7 percent of health workers in some provinces of South Africa were estimated to be HIV positive (Shisana and others 2003). There is some evidence that the number of work days lost because of personal illness from HIV, attendance at funerals, or caregiving to family members may be significant (Tulenکو and Farahani 2007). A study at two hospitals in Zambia finds that about 5.5 percent of annual work days of nurses were lost and thought to be related to HIV/AIDS (Foster 1997). In a South African district hospital, the average number of days nurses took off from work rose from 41.8 in 1998 to 57.5 in 2001, with the increase attributed to HIV (Unger, Welz, and Haran 2004). In Swaziland, of a total

Table 12.4: Estimated Rate of Premature Mortality in Selected African Countries

COUNTRY	CRUDE DEATH RATE PER 1,000 IN ACTIVE HEALTH WORKFORCE	
	PHYSICIANS	NURSES & MIDWIVES
Central African Republic	25	21
Congo, Democratic Republic of	23	19
Côte d'Ivoire	25	22
Ethiopia	23	20
Kenya	23	23
Liberia	24	20
Madagascar	21	20
Rwanda	25	19
Sierra Leone	26	22
Tanzania	24	22
Uganda	26	22
Zambia	28	22
Zimbabwe	28	24
Grand Total	24	21

Source: Kinfu and others 2006.

attrition of 144 nurses in 2004, 29 (20 percent) were lost to early resignation, retirement, or death as a direct result of HIV and only 15 as a result of normal retirement (Kober and van Damme 2006). In a study on Zambia, the costs associated with leave or early retirement because of HIV were found to average \$4,056 per doctor, \$3,674 per nurse, and \$2,678 per clinical officer (Feeley and others 2004).

HIV is estimated to account for 19–53 percent of all deaths of government health employees in some African countries (Tawfik and Kinoti 2001). In Malawi, where HIV prevalence is high, one study estimates that AIDS-related deaths account for more than 55 percent of health worker exits (in Ghana, where HIV prevalence is low, the figure is 1.1 percent) (Dovlo 2005). In 1997 alone, Malawi lost 44 nurses to AIDS, a figure equivalent to 44 percent of the annual number of nurses trained (Hongoro and McPake 2004). In Zambia, deaths among female nurses in two hospitals increased from 2 per 1,000 in 1980 to 26.7 per 1,000 in 1991 (Cohen 2002; Buve and others 1994). In Zambia in 1999, 185 nurses died of AIDS, equivalent to 38 percent of all nurses trained annually in the country (WHO 2004). In 2004, the average age at death for all health professionals in Zambia was 37.7 years. Clinical officers there die with 57 percent of their normal career remaining; nurses die halfway through the normal

careers (Feeley and others 2004). In 1997, the World Bank estimated that a country with a stable HIV prevalence of 20 percent would experience an annual loss of 2.1–4.4 percent of the health sector workforce because of death from HIV (World Bank 1997).

Job satisfaction and motivation

Lack of job satisfaction is often linked to inadequate performance, particularly absenteeism, lack of responsiveness, and high turnover in health facilities. Turnover may reflect a move from the public sector to the private sector, from rural to urban facilities, or exit from the country or the health profession (Dieleman and Harnmeijer 2006).

High rates of movement of staff in and out of health facilities in many countries raise several concerns (table 12.5). It disrupts staffing, requires new staff to adjust to the new workplace, and loses the institutional memory embodied in veteran staff members (Picazo 2007).

The motivation of health workers, defined as the “willingness to exert and maintain an effort toward organizational goals” (Franco, Bennett, and Kanfer 2002), is often directly linked to job satisfaction. In Kenya, the second-most important factor, “encouraging one to do one’s job well,” was professional/job satisfaction (Mathauer and Imhoff 2006) (figure 12.7).

There is some evidence that job satisfaction and motivation are low in some facilities and countries in Sub-Saharan Africa. In Ghana, for example, despite recent salary increases (which make health workers there among of the highest paid on the continent), focus group discussions reveal high levels of job dissatisfaction among some health workers (Lievens 2008). Similar findings emerge in Rwanda (Lievens and Serneels 2006). In Zambia, about half of health workers surveyed report being dissatisfied (figure 12.8).

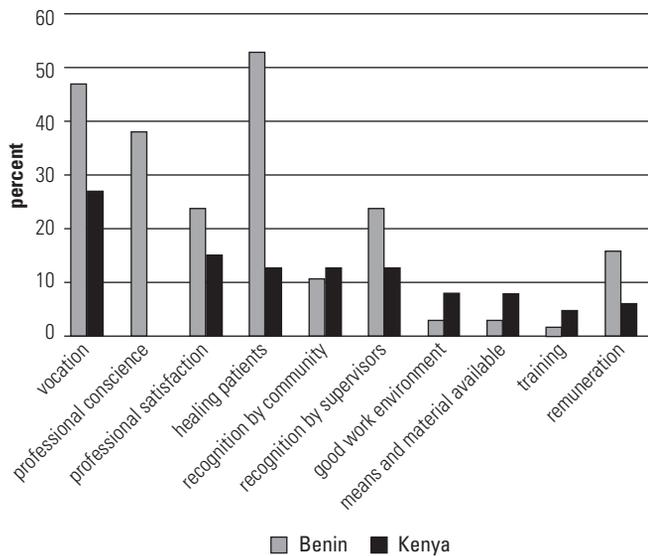
Table 12.5: Number of Staff Who Joined and Left Health Facilities in Zambia in 2006

STAFF TURNOVER	RHC	UHC	HOSPITALS	ALL
Total staff	688	1,756	1,442	3,886
No. of staff joined the facility	69	166	133	368
No. of staff who left the facility	148	172	60	380
Retired	15	20	7	42
Transferred	116	120	24	260
Resigned	10	22	14	46
Dismissed or suspended	7	10	15	32

Source: Picazo 2006.

Note: RHC = Rural health centers; UHC = Urban health centers.

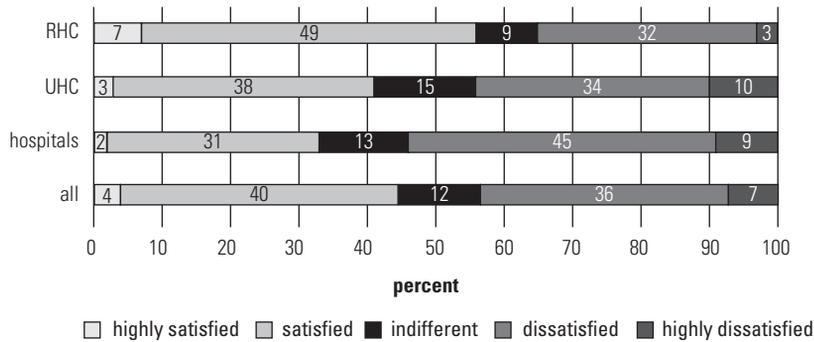
Figure 12.7: Factors Motivating Health Care Workers in Benin and Kenya to Perform Well



Source: Mathauer and Imhoff 2006.

Note: Sample size is 62 in Benin, 37 in Kenya.

Figure 12.8: Level of Job Satisfaction of Health Workers in Zambia



Source: Picazo 2007.

In countries most affected by the disease, HIV/AIDS may be one of many reasons for high levels of job dissatisfaction. In Rwanda, low pay relative to high efforts, poor working conditions, the lack of career perspectives, and the risk of contracting HIV were all stated as reasons for dissatisfaction and frustration (Lievens and Serneels 2006). In Zambia, reasons for dissatisfaction include poor facility management (7 percent), low salaries (34 percent), and

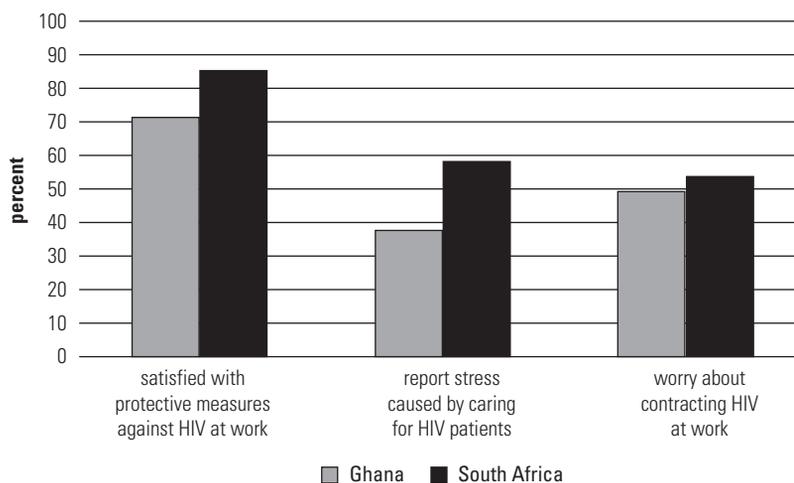
stressful workloads (42 percent), often linked to HIV (Picazo 2007). In Ghana, the most important causes of job dissatisfaction are the risk of contracting HIV, the lack of facilities and equipment, intimidation by colleagues and superiors, lack of promotion opportunities and access to further training, lack of incentives and adequate pay, lack of staff at the facility, the inability to provide good-quality care, and the need to follow too many clinical procedures (Lievens and others 2007). In Ghana and South Africa, significant numbers of health workers report stress caused by caring for people living with HIV and concern over contracting HIV (Vujicic and others 2004) (figure 12.9).

Dual practice

Multiple job holding is believed to adversely affect performance by affecting availability, competence, responsiveness, and productivity of health workers.⁶ In addition to being absent from a health facility when working elsewhere, health workers often feel exhausted from working multiple jobs (Lievens and others 2007).

A substantial number of health workers work more than one job in Sub-Saharan Africa (Ferrinho and others 2004). In Tanzania, 60–80 percent of

Figure 12.9: Attitudes of Health Care Workers in Ghana and South Africa toward Treating People with HIV/AIDS



Source: Vujicic and others 2004.

doctors employed in the public sector are believed to regularly moonlight in the private sector (McKinsey 2005). In South Africa in 1993, half of general practitioners in private practice had other employment. An average of 36 percent worked in the public sector (62 percent in rural areas and 21 percent in urban areas) (Volmink and others 1993). In contrast, in Mozambique, dual practice is common among urban but not rural health professionals (Backström and others 1998). In Zambia, income-augmenting activities occur both inside and outside the health facility (table 12.6).

Dual practice is most frequently said to be an individual coping strategy by health professionals dealing with unsatisfactory working and living conditions. In many countries dual practice has increased over recent years. The notion of the full-time civil servant exclusively dedicated to his or her public sector job is disappearing. Inadequate wages and salaries mean many physicians combine salaried public sector work with a fee for service private clientele. Inadequate equipment and working conditions, particularly in public sector health facilities, may be another impetus for dual practice (Ferrinho and others 2004).

Some explanations for high levels of dual practice center on inadequate governance and management. Some Sub-Saharan countries (such as Niger, Tanzania, Zambia, and Zimbabwe) explicitly encourage dual practice in public facilities as a way of retaining highly specialized doctors (usually those working in tertiary-care public hospitals) and generating additional revenues for public health facilities (Lemiere 2008). None of these policies

Table 12.6: Income-Augmenting Activities of Health Staff in Zambia, 2006

INCOME-AUGMENTING ACTIVITIES	RHC	UHC	HOSPITAL	ALL
Medical or health practice inside the health facility but outside official hours	3 (1)	7 (5)	5 (2)	5 (3)
Medical or health practice outside the health facility	12 (7)	21 (12)	24 (7)	18 (9)
Nonmedical, nonhealth activity inside the health facility	6 (6)	25 (7)	0 (0)	11 (6)
Agricultural work	41	32	45	39
Commercial or small-scale trade	18	37	35	29
Teaching	9	15	6	10
Other activities	7	4	19	9

Source: Picazo 2007.

Note: Numbers in parentheses refer to the average amount of time, in hours, devoted to the activity.

has been adequately evaluated. Moreover, it is sometimes said that rather than causing it, inadequate governance and management may facilitate dual practice, or absenteeism in general, because of the lack of accountability mechanisms and often highly centralized decision-making powers. A facility manager without the power to hire and fire health workers, for example, is not able to reprimand employees for not showing up at work.

Knowledge and skills

The level of education, knowledge, and skills of health workers affects their performance, particularly their competence and responsiveness to patient needs. Health workers without the basic knowledge or skills required for diagnosis and treatment may not be able or willing to attend to the needs of patients with HIV.

In Nigeria, only 77.1 percent of surveyed health workers correctly identified breastfeeding as a source of HIV transmission; 5.2 percent thought transmission was possible through mosquito bite, and 26 percent believed it could be transmitted by shaking hands. About 10 percent of trained nurses and 15 percent of auxiliary nurses were unaware that HIV could be transmitted to a newborn during delivery (Sadah and others 2006). In Rwanda, staff are not always aware of protocols regarding treatment of patients with HIV and protocols are often not implemented (Lievens and Serneels 2006). The lack of HIV-specific knowledge is revealed by the weak results of a knowledge test of nursing and medical students about to enter the labor force in 2008 (table 12.7). Less than half answered general questions related to HIV correctly.

Knowledge gaps are often attributed to insufficient education and training capacity. In addition to a lack of adequate teachers, the lack of research capacity and training of trainers in some countries means that health worker training strategies (curricula) are sometimes outdated and often do not adequately prepare workers for the conditions, demands, and needs of Sub-Saharan Africa (Soucat and Herbst 2008; Physicians for Human Rights 2004). Outdated curricula and training methods mean health workers are likely to confront conditions about which they have received little direct training. A study in Rwanda finds that nurses and auxiliary workers often feel they lack the skills they need to perform their jobs, particularly skills related to HIV (Lievens and Serneels 2006). Insufficient education capacity means inservice training is also often rare.

Table 12.7: Level of Knowledge of Medical and Nursing Students in Rwanda
(percentage responding correctly to general knowledge test)

	CHILD MORTALITY	MATERNAL MORTALITY	MALARIA	ILLNESS DUE TO HIV/AIDS AND TUBERCULOSIS	TECHNICAL KNOW-HOW	OVERALL
Medical students	51.1	52.2	38.9	47.2	51.1	49.0
Nursing students	42.9	22.8	33.2	40.2	53.9	42.5

Source: Sy and others 2008.

Inadequate governance and management capacity at all levels may also play roles in knowledge gaps. A large number of training institutions are not accredited or adequately regulated by the government. Entry requirements into the health profession, particularly the public sector (whether through civil service examinations or other means), may be too lax or based on criteria other than merit. A study in Rwanda finds that health worker requirements are considerably lower for the public sector than for the private sector (Lievens and Serneels 2006). In some cases lax job entry requirements may reflect the need to reduce standards in order to attract workers.

Performance management is also inadequate. Inservice training is not always related to training capacity. Training opportunities are sometimes allocated unfairly, with the same kinds of health workers receiving the same kinds of training over and over (Lievens and Serneels 2006).

In those countries most affected, HIV may also affect the quality of health workers who enter the labor market. Absenteeism by students and teachers as a result of HIV can limit students' knowledge base. A study on the impact of HIV on tertiary training institutions in Eastern Cape, South Africa, finds that it negatively affects the quality of service provided (18.2 percent of respondents), staff's ability to work (12.9 percent of respondents), and staff duties at work (12.5 percent of respondents). HIV had led to an increase in workload, a reduction in the quality of service, a decline in morale, an increase in absenteeism, and frustration over ill or absent staff members (Phaswana-Mafuya and Peltzer 2005).

Workload

Increased workload is often associated with reduced performance. Heavy workloads are thought to affect performance by leading to long waiting times for patients, rushed treatment, and sometimes the inability to see patients at

all (Chikanda 2004). In some cases excessive workloads have resulted in health workers not offering HIV counseling and other services in which they have been trained (CRHCS, UNAIDS, and SARA 2004). There is evidence from Zimbabwe that health workers turn away patients to reduce workload (Chikanda 2004). Increased workload is also closely associated with job satisfaction, which in turn is associated with high turnover rates and potential brain drain.

Evidence from some countries suggests that the workload of health workers has increased. Focus group participants in Rwanda report that their workload had increased substantially (Lievens and Serneels 2006). In Ghana and Zimbabwe, workloads increased considerably, with the workload of midwives doubling in five years (Awases and others 2004). Similar increases in workloads were observed in the Democratic Republic of Congo, where nurses were found to work significantly more, sometimes performing twice the workload they once did (Lombela 1996, cited in Kinoti 2002). In Malawi, 90 percent of health workers interviewed felt that their workload had increased (Tulenko 2007). In Zambia, heavy workloads created long working hours, which more than 47 percent of staff reported (Picazo 2007).

Workload generally increases where demand for health services is high and health worker supply low, a situation that is common in countries with both high HIV prevalence and severe health worker shortages. Several studies attribute increased workload in the Democratic Republic of Congo and Malawi to the HIV disease burden (Lombela 1996, cited in Kinoti 2002; Tulenko and Farahani, forthcoming in 2009). A study on Côte d'Ivoire illustrates the time-consuming nature of some HIV services, noting that doctors in facilities reporting on ART services saw on average of 13 HIV/AIDS patients a day, spending an average of 30 minutes with each (Butera and others 2005). On the supply side, the fewer workers there are to take on health-related duties at the facility level and the more workers fail to perform their duties, the greater the burden placed on the remaining workers. Nurses have to cover more beds, and physicians are pressured to see more patients with more-complex medical problems (Tulenko 2007).

Skill substitution

Performance, in particular competence indicators, may be negatively affected if health workers assume duties for which they are not trained (Lievens and others 2007; Chikanda 2004; Awases and others 2004).

Skill substitution is likely to occur most in situations in which demand for health services is high and the supply of appropriate health cadres low. As with workload, this scenario is most likely in countries affected by both high HIV prevalence and severe health worker shortages. In several countries in Sub-Saharan Africa, “young recruits are often left alone to carry out work without supervision, at the risk of making incorrect diagnoses and prescribing inappropriate treatment, while unqualified personnel are left to perform duties that are specialized, and beyond their scope of practice (Awases and others 2004, p. 10). In Cameroon and Zimbabwe, both of which have high HIV prevalence rates, there is evidence that less qualified or nonqualified workers, such as nurses aides, perform tasks that are beyond their ability (Chikanda 2004). Clients complain about the quality of care received from underqualified staff at rural health clinics in Ghana, where ward assistants reportedly perform the jobs of enrolled nurses and nonpharmacists dispense drugs (Lievens and others 2007).

Reducing the Demand for and Increasing the Supply of Health Workers

HIV/AIDS scale-up efforts in Africa will not succeed unless there is a sufficient supply of adequate health workers to meet needs-based demand. Although many countries in Sub-Saharan Africa are grappling with health worker shortages, particularly in rural areas, policy makers continue to ignore the ability of the health sector to absorb massive volumes of funding. Vertical HIV programs are often coupled with a focus on short-term results, which has meant a reluctance to invest in health care workers, who are viewed as fungible, multipurpose resources. Many governments are focusing on rapid testing kits, ART, and pharmaceuticals for treating opportunistic infections. Many policy makers may perceive a dichotomy between horizontal and vertical programs when the two are intertwined and neither can be successful without the other (Tulenko 2007).

Programs and interventions for addressing the HIV crisis in high-prevalence countries with severe health worker shortages should aim to reduce the demand on health services while increasing the supply and improving the performance of health workers. Decreasing demand for health services will require a continued effort to design programs based on available human resources. Increasing the supply of health workers will require developing policies and programs designed to address the major

determinants of entry, participation, and exit, which include the willingness of health workers to perform in the labor market, the ability and willingness of training institutions to admit and train, and the ability and willingness of employers to employ health workers.

Reducing demand

Reducing the (needs-based) demand for health services—and thus health workers—requires that HIV prevalence rates are addressed in the hardest-hit countries. HIV prevalence among the general population in much of Sub-Saharan Africa remains extremely high. Although just over 10 percent of the world's population live in this region, 68 percent of all adults and nearly 90 percent of children with HIV live there. In 2007, 76 percent of global deaths caused by HIV-related illnesses occurred in Sub-Saharan Africa (UNAIDS 2008).

Several steps can be taken to reduce the demand for specific types of health workers. Each is described briefly below.

Prioritize prevention. Programs intending to address the HIV/AIDS crisis should be designed based on countries' unique health worker capacity. For countries experiencing both severe health worker shortages and HIV/AIDS epidemics, a focus on public health-orientated programs and technically less demanding and effective intervention efforts may be warranted. Although treatment of HIV/AIDS remains important, a focus on HIV/AIDS prevention may have to be prioritized in certain settings.

Prevention efforts require fewer health workers (particularly higher-level professionals) than other interventions, and they may be more effective than treatment. Marseille, Hofmann and Kahn (2002, p. 1853) find that “for every 1 life-year gained with HAART, 28 life-years could have been gained with prevention.” They conclude that “as long as population coverage with good prevention programs is low, money available for prevention should not be allocated to HAART.”

Shift tasks. To implement HIV programs in countries with shortages of health workers, new profiles may need to be developed for health workers. Relying less on senior health workers is one option. Many programs (particularly non-HAART programs) may be carried out by existing health workers (particularly lower-level cadres) with additional training or by newly created

midlevel or frontline cadres. The development of new skill mixes should be part of, not replace, the development of a sustainable, fully functioning health care system.

Evidence on the efficiency and safety of shifting HIV-related responsibilities to newly created or lower-level cadres is limited, but there is room for cautious optimism. The experiences described in box 12.1 are associated with good health outcomes, rapid increases in access to HIV services,

Box 12.1: HIV-Related Task Shifting in Sub-Saharan Africa

Task shifting means taking more of a team approach to the provision of health care and fully integrating all health workers from front-line community health workers to subspecialists into patient care. Task shifting represents a more rational division of labor with each cadre of health care worker doing the tasks that are most appropriate to their skills and training. Whereas most developed countries had task shifted in the 1980s and 1990s, much of Africa still had a traditional task structure. The sense of urgency created by the HIV epidemic resulted in many African countries taking task shifting measures in order to maximize the number of people who could be treated. Below are some recent examples of HIV-related task shifting in Africa.

Nurses

In 2007, the government of Malawi approved ART initiation by nurses rather than exclusively by doctors or other clinical staff. For the nurses this meant a large increase in clinical responsibilities linked to providing ART and added responsibility for supervising health surveillance assistants (Philips, Zachariah, and Venis 2008).

Nonphysician clinicians

In Malawi, nonphysician clinicians prescribe ART. In Ethiopia, the Federal Ministry of Health guideline for implementation of ARV therapy was updated for Health Officers to initiate prescriptions, diagnosis, staging, and care management (Frehywot and Mullan 2008) (WHO 2007).

Traditional birth attendants

In rural Cameroon, birth attendants were trained to provide prevention of maternal-to-child HIV transmission services, including voluntary counseling and testing, posttest counseling, oral HIV tests, and administration of single-dose nevirapine to pregnant HIV-positive women during labor and to their newborns. Ongoing supervision is provided by nurse supervisors (Wanyu and others 2007).

Community health workers

Ethiopia has implemented a plan to hire community health workers to expand the workforce delivering HIV services (WHO 2007). In Malawi, the scope of practice of some cadres of community health workers has been extended to allow them to perform HIV counseling and testing (WHO 2007).

and high levels of patient satisfaction. Such findings are consistent with those of other studies on the effectiveness of task shifting for the delivery of health services in both high-income and resource-constrained countries (WHO 2007). Much of the evidence on midlevel cadres or nonphysician clinicians is based on high-income countries and needs to be further explored, particularly in relation to specific HIV/AIDS interventions and tasks. Lower-level or informal sector cadres with new skills acquired through inservice training could potentially perform certain tasks in ART delivery, but their roles need to be carefully designed and supervised (Philips, Zachariah, and Venis 2008).

Consider the opportunity cost to countries receiving increased HIV funding. The opportunity costs to receiving increased HIV/AIDS-related funding need to be considered when scaling up HIV/AIDS funding, particularly in countries where health worker capacity is weakest. The health costs of diverting human resources from other parts of the health care system to HIV care must be taken into consideration, as pressure on human resources for HIV activities can reduce the supply of health workers in other areas. Directing massive amounts of funding directly toward the existing pools of (some) physicians may also lead to governance issues and negatively influence performance. A recent study stressed that vigorous national and international attention to the effects of HIV scale-up funding on people and institutions in recipient countries is necessary to maximize the potential to reduce demand on health worker (Over 2004).

Countries with low HIV prevalence but severe shortages of health workers should balance the massive investments into HIV while strengthening the areas in which the need for health care is largest. Doing so will often require using a portion of HIV funds for system strengthening.

Increasing supply and improving performance

Increasing the supply and improving the performance of health workers in Sub-Saharan Africa will require channeling some HIV investments into specific areas. Several options are discussed below.

Use HIV/AIDS funding to strengthen production and education. In most countries HIV/AIDS interventions need to ensure simultaneous investment into scaling up programs and strengthening areas that will help secure the

success of the scale-up efforts, such as increasing education capacity. Weaknesses in physical, technical, and organizational capacity negatively affect the characteristics related to health worker entry into, participation in, and exit from the health labor market. Although the extent of weaknesses in training capacity varies from country to country, capacity-building efforts related to health worker education, particularly in the public sector, are crucial in some countries.

Africa has by far the lowest number of training institutions of any region of the world. Two-thirds of Sub-Saharan African countries have only one medical school, and some have none (WHO 2006). Most training institutions are located in urban settings and hence attract few rural students.⁷ A study by Sy and others (forthcoming) of Rwanda finds that medical and nursing schools, classrooms, laboratories, and dormitories are overused: classrooms at the medical faculty at the National University of Rwanda were found to be overused by more than 15 percent, laboratories were overused by more than 78 percent.

The shortage of qualified teachers is also problematic in many countries (Sy and others 2007). In Rwanda, for example, very few teachers hold PhDs, resulting in limited research capacity and specialization possibilities (table 12.8). At the Faculty of Medicine at the National University of Rwanda, none of the 37 permanent faculty holds a PhD; in the department of pharmacy, only 1 holds a PhD. The lack of research capacity means curricula are often outdated and insufficiently geared toward the local context (such as primary and community care and prevention efforts). Most faculty have no formal training in teaching skills (Sy and others 2007).

Table 12.8: Permanent Trainers with PhDs at the Faculty of Medicine, National University of Rwanda, 2006

INSTITUTIONS	BEGINNING OF ACTIVITIES	PERMANENT TRAINERS				
		GENDER	NUMBER	DEGREE	NUMBER	TOTAL
Faculty of Medicine	1975	Men	33	MSc	37	37
		Women	4	PhD	0	
				Other	0	
Department of Pharmacy	1981	Men	7	MSc	6	9
		Women	2	PhD	1	
				Other	2	

Source: Sy and others 2008.

Many countries also lack equipment, books, and scientific journals. In Rwanda, as in many other countries, few institutions provide Internet access to their students (such access is provided in pharmacy and medical schools). At the Medical Faculty of the University of Rwanda, 26 percent of computers and 40 percent of projectors were found to be overused (Sy and others forthcoming).

Strengthen governance and management capacity. Investments to strengthen all areas of governance and management are required. At the macro level, the capacity to adequately carry out health worker policy and planning, health worker management and administration, and human resource development is often low, sometimes because of inappropriately designed organigrams and lack of sufficient personnel, in both quality and quantity (table 12.9). Many countries have been slow to set up human resources divisions within health ministries. In most Sub-Saharan Africa countries, facilities and health

Table 12.9: Management Functions Related to Human Resources for Health

HEALTH POLICY AND PLANNING	HEALTH MANAGEMENT AND ADMINISTRATION	EDUCATIONAL DEVELOPMENT
Prepare and develop policies and policy manuals; conduct evidence-based planning; conduct and use evidence obtained from assessments.	Performance: Write job descriptions, supervise workers in a supportive manner, and conduct performance evaluations. Personnel: Classify jobs; recruit and hire workers; handle transfers, promotions, compensation, benefits, incentive plans, grievance procedures, accreditation; write policy manuals; interact with associations; and ensure compliance with regulations, including of the private sector. Budget: Manage the Human Resource budget accounting function.	Provide training related to staff requirements, plan continuing education to strengthen leadership management, liase with educational establishments to ensure their courses meet Human Resources for Health requirements,
Liase with other departments to ensure unity effort.	Liase with other departments to ensure unity effort.	Liase with other departments to ensure unity effort.

Source: Adapted from Breffni (2007).

worker are managed by clinicians with little or no management training (there are no management cadres within the health system). This lack of recognition of management skills as essential within the health system reduces the effectiveness of the health sector compared with other sectors.⁸

In Zambia, weaknesses in managing salaries has resulted in salary delays for health workers (Picazo 2007). Numerous studies in Sub-Saharan Africa find that monitoring and supervision of health workers is often extremely weak (Lievens and Serneels 2006; Lievens and others 2007). In some countries the introduction of innovative accountability mechanisms, such as Zambia's performance improvement review system (Shaw 2005), Uganda's vigorous quality assurance efforts (Egger and Ollier 2005), and Rwanda's performance-based contracting mechanisms (which Zambia is in the process of instituting)—are becoming more common, but it remains unclear how effective performance audit and feedback are.

Management weaknesses at all levels in Sub-Saharan Africa are caused in part by outdated management structures, which remain highly centralized in many countries (Tulenko 2007). Much decision-making power remains at the level of the ministry of health. In principle, the transfer of power, resources, and responsibilities from macroagencies to microunits or facilities could substantially improve management and accountability. In practice, decentralization poses important risks and challenges, because it often must be combined with efforts to reform obsolete and bureaucratic civil service structures and require capacities that are not always available. Moreover, the shift in role by the ministry from manager to steward requires significantly more capacity than often thought. Finally, most health workers in Sub-Saharan Africa are civil servants, who are not paid or promoted on the basis of performance (Soucat and Herbst 2008).

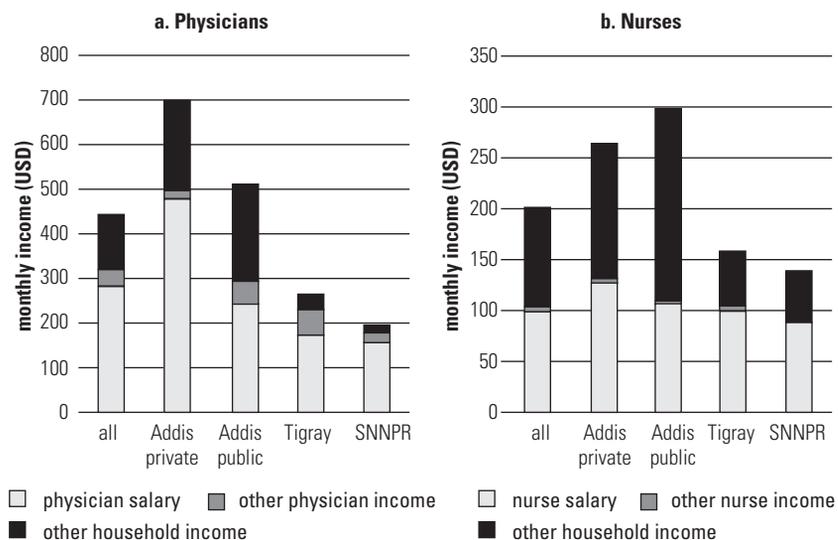
Improve working and living conditions. To increase the supply of health workers, interventions are needed to address low compensation, particularly in the public sector and rural areas. One of the factors identified as influencing entry into, participation in, and exit from the labor market is compensation, which is generally low in many, although not all, countries; often lower in rural than in urban areas and public sector facilities than in private facilities; and often considerably lower than in the West. Ghana is one of the few countries in which recent salary increases for health workers put public sector salaries on par with those of the faith-based sector (not taking into account bonuses) and the private for-profit sector, (Lievens and others

2007); it has also closed salary differences between rural and urban regions. In contrast, doctors working in private facilities in Addis Ababa earn twice as much as doctors with similar qualifications who work in the public sector. Salary differences within the public sector are even higher between Addis and the rural regions⁹ (Jack and others 2008) (figure 12.10).

Infrastructure, logistics, and supplies at the facility level, particularly in rural and public facilities, are inadequate and require investment and attention. Health infrastructure is often sparse in remote parts of many countries or generally inadequate. Many facilities in Sub-Saharan Africa lack clean water, adequate lighting, heating, vehicles, drugs, working equipment, and other supplies. Only 66 percent of public sector health facilities in Addis Ababa have equipment to test for HIV, for example (table 12.10). Investments in health infrastructure need to go hand in hand with increases in the stock of human resources for health, as health facilities are worthless unless they can be staffed.

Investments in adequate protective equipment, such as rubber gloves, are also crucial. Blood screening and better hygiene will help prevent the spread of infectious diseases other than HIV. Such measures will also reduce the occupational risk of contracting HIV and other diseases health care workers face.

Figure 12.10: Monthly Income of Physicians and Nurses in Ethiopia, by Region



Source: Jack and others 2008.

Table 12.10: Facility-Level Infrastructure, Logistics, and Supplies in Ethiopia

	ALL SURVEYED REGIONS	ADDIS ABABA		SNNPR	TIGRAY
		PUBLIC	PRIVATE ^a		
Number of sampled facilities (with at least one physician)	77	8	31	21 ^b	17
Facility size					
Number of doctors	834	217	380	189	48
Doctors per facility	3.8 (4.9)	6.9 (10.6)	2.6 (2.4)	5.2 (4.8)	2.6 (2.2)
Number inpatient beds	79.5 (91.7)	141.5 (112.2)	21.5 (40.1)	114.5 (63.5)	121.3 (105.6)
Number inpatient beds per doctor	20.9	20.5	8.3	22.0	46.7
Number outpatients	104.4 (93.3)	181.5 (86.9)	38 (43.0)	139.8 (77.0)	143.9 (106.8)
Number outpatients per doctor	27.5	26.3	14.6	26.9	55.3
Hours travel to regional capital	—	—	—	6 (5.5)	5.3 (5.0)
Facility conditions (%)					
Reliable electricity / phone	99.3	100	100	97.4	97.9
Functioning X-ray machine	91.3	77	81.6	85.2	83.3
Functioning laboratory	100	100	100	100	100
Functioning operating theatre	62.1	61.8	42.6	92.6	97.9
Equipment to test for HIV	83.6	66.4	86.8	92.6	100
Sufficient water supply	74.5	23	96	87.3	85.4
Sufficient medicine	79.1	88.5	72.9	88.4	50
Sufficient equipment	87.1	83.9	84.5	100	70.8

Source: Jack and others 2008.

a. Includes for-profit and nonprofit NGO and missionary facilities.

b. Includes 3 private facilities. Statistics are calculated using frequency weights corresponding to total number of doctors by region working in (1) public hospitals, (2) private hospitals, (3) government health centers, and (4) private, NGO, or missionary clinics.

Dire living conditions for health workers, particularly in rural areas, also need to be taken into consideration or addressed. Housing, other infrastructure, and roads; employment opportunities; and education remain suboptimal in many countries. In Ethiopia, for example, several sample facilities in Tigray are six hours from the nearest urban center (the regional capital), and facilities in SNNPR are more than five hours away (Jack and others 2008). Continued emphasis on long-term rural development as opposed to urban development is crucial, as are innovative short-term policies or arrangements to offset the drawbacks associated with being geographically remote.

Treat HIV-positive personnel. Reducing HIV in the general population will contribute to increasing the supply of health workers (by reducing the dissatisfaction that causes them to leave). In addition, the design of HIV interventions should build up the supply of health workers (particularly in rural areas) by targeting prevention and treatment of health workers and their dependants.

One study argues that the higher levels of affluence and mobility of educated professionals places them at a greater than average risk from HIV (Potts 2003). The same study finds that in Malawi, despite higher levels of awareness among health professionals and the religious conviction of health care staff, there is no evidence that they are less prone to HIV infection than the general population. Without HIV prevention and treatment, the negative impact the epidemic has on entry, participation, and exit of health workers will increase sharply. One study finds that unless health workers are treated soon, the proportion of those dying from AIDS may reach 40 percent by 2010 (Cohen 2002).

Need for Supportive and Enabling Fiscal and Political Environments

Government ministries will not be able to implement the interventions needed to increase labor market demand (not to be confused with needs-based demand) and supply without supportive fiscal and political environments. Needs-based approaches that ignore the ability of the public or private sector to employ new graduates may result in the waste of training budgets when unemployed graduates are hired in nonhealth sectors or migrate in order to find health sector jobs. Sufficient budgets, nonear-marked external support and aid, the lifting of wage bill conditionalities, and the support of professional associations are all critical.

Increase budget allocations toward health

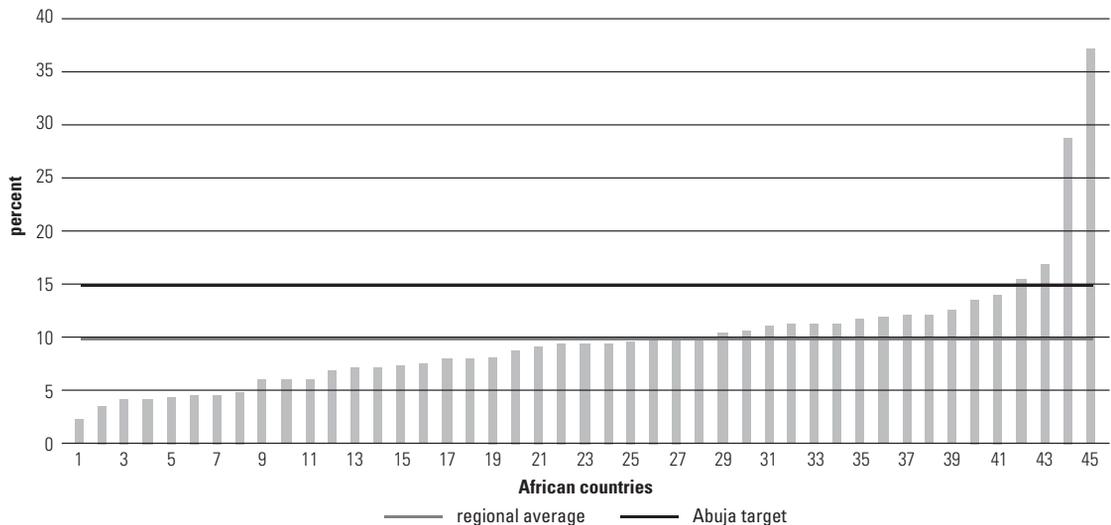
The attempt to scale up ART until 3 million people in Sub-Saharan Africa have enrolled will present serious challenges to most countries. More than \$2 per capita will have to be spent in some countries to achieve their goal (Over 2004). Significantly more spending will be required to ameliorate health problems not related to HIV.

Overall spending on health is low in Sub-Saharan Africa: the regional average is about 10 percent of total government expenditure, well below the 15 percent envisaged by the Abuja targets for total government health expenditures (figure 12.11). Increased spending is required to address some of the factors leading to low health worker supply. Some progress has been made. Although some countries have reduced government health expenditures since the Abuja Declaration, more than half of the countries in Sub-Saharan Africa increased or held steady the percentage of the national budget allocated toward health.

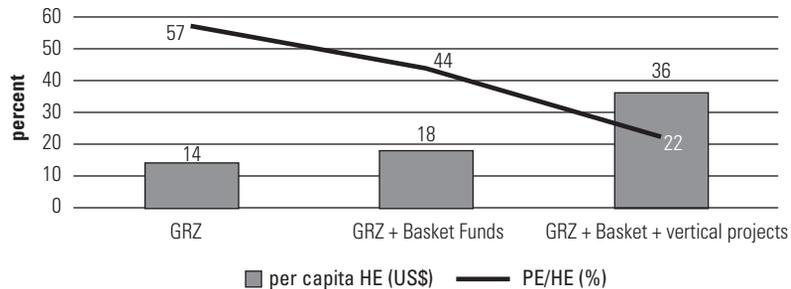
Limit earmarking of HIV funding

Financial flows of aid to some countries in Sub-Saharan Africa have increased, but funding tends to be earmarked, which may have a distorting effect on health workers (and hence combating HIV). Sub-Saharan Africa receives three times more foreign aid per capita than developing countries in other regions (Devarajan, Rajkumar, and Swaroop 1999). Evidence from

Figure 12.11: Government Expenditure on Health as Percentage of Total Budget in Selected Countries in Saharan Africa



Source: Preker and others forthcoming.

Figure 12.12: Annual per Capita Health Expenditures in Zambia

Source: Picazo 2007.

Zambia suggests that as total per capita health expenditures increase with the addition of more funding into the health system, the ratio of personal emoluments to total health expenditures declines (even as the proportion of personal emoluments to ministry of health expenditures increases) (figure 12.12). The inability of basket funds, health projects, and vertical financing to formally finance personal emoluments and other aspects intended to increase the supply of human resources for health causes “so much money chasing so few workers” (Picazo 2007, p. 18).

Wage ceilings and hiring caps

It is sometimes argued that many countries are prevented from expanding their budgets to hire more health workers or increase salaries because of wage bill conditionalities and budget ceilings “imposed” by the IMF. Inflation reduction and deficit reduction targets set by the IMF and the World Bank, the argument goes, preclude countries from using grants to scale up health services.

Some form of public sector wage bill conditionality is included in 11 of 18 countries in Sub-Saharan Africa with Poverty Reduction Growth Facility (PRGF)-supported programs (Fedelino, Schwartz, and Verhoeven 2006). In all countries, however, health and education benefit from some form of exemption. The form of conditionality and the extent to which sectors such as health and education are exempt from these caps and conditionality varies widely across countries. A comprehensive analysis of wage bill caps in three countries finds that even when such caps do exist, they do not necessarily hamper efforts to increase the public sector health workforce. Wage caps can

thus not always be blamed for insufficient hiring or low wages in the health sector (Vujicic 2008).

Win the political support of civil society and professional associations

Policies and interventions on health workers depend largely on a supportive political environment, without which governments may not be able to achieve their goals. A policy to increase the number of health workers recruited in rural areas by reforming the curriculum to produce midlevel cadres, for example, may improve the capacity of health institutions to produce more appropriate types of health workers. Adopting and implementing such a policy requires the support of medical or nursing associations. Despite high need, however, nurses organizations in Uganda have protested against moves to develop a new comprehensive cadre that would perform the tasks of both nurses and midwives (Ssenkooba and others 2003). Professional associations have at times opposed policies that would allow lower-level cadres to perform tasks performed by higher-level professionals. In Zambia, the government's efforts to remove health workers from the civil service pay structure was resisted by professional groups and eventually lost momentum (HLF 2004).

Conclusion

Scaling up efforts to address HIV in Sub-Saharan Africa requires larger numbers of well-performing health workers. Current numbers and performance are inadequate in many countries and in rural areas in all countries. HIV exacerbates the health worker shortage in many countries, because it increases the demand for and reduces the supply of health workers. Interventions are required that simultaneously address both issues.

Reducing the demand for health services, particularly in countries facing both HIV epidemics and severe health worker shortages, may require scale-up efforts that take into consideration the inadequate supply of health worker by prioritizing prevention over treatment models and developing alternative profiles that respond to the growing demand for health workers. More-balanced funding mechanisms are also needed—mechanisms that support sound health worker supply policies and strengthen health systems

to address all the major killers, including malaria, diarrhea, and respiratory infections, which in many countries are bigger problems than HIV.

Increasing the supply of health workers calls for their treatment, particularly in rural areas. It also requires increasing education and training capacity, strengthening governance and management capacity, and improving working and living conditions. Both reducing demand for health services and increasing supply of appropriate health workers will require funding and external assistance through flexible means (rather than earmarked support for HIV only), a more flexible approach to wage policy and hiring of health workers, and a supportive political environment.

Notes

1. Most projections are not generally reliable, because they are simplified, do not focus on actual outcomes, focus only on narrow outcomes, or do not adequately take into account the country-specific and numerous other variables required for projections.
2. A demand-driven staffing model was used, using simple spreadsheet technology, based on treatment protocols for HIV-positive patients who adhere to Mozambican guidelines. The model was designed to project the need for health workers in Mozambique using three different sets of goals: the number of patients to be placed on ART, the number of HIV-positive patients to be enrolled for treatment, and the number of patients to be enrolled in a treatment facility per month. The model can be adjusted for the volumes of patients at differing stages of their disease, varying provider productivity, proportions of pregnant women, attrition rates, and other variables.
3. These data may not be accurate, because aggregate data of annual health worker production in Sub-Saharan Africa are largely unreliable.
4. Indeed, in many Sub-Saharan African countries, preservice training institutions are administratively controlled and funded by the ministry of education, which means that there is usually limited involvement of the ministry of health in setting the production capacity or adjusting curricula.
5. Data were available for only two years and only for medical students entering the labor market through government facilities, the private sector, or NGOs and donor-sponsored projects.
6. Multiple job holding could also improve worker performance, if workers acquire new knowledge and skills in the private sector that they then bring to the public sector (Ferrinho and others 2004).
7. In some countries the gap in public training institutions is being partially filled by private training institutions.

8. A variety of ideas has been proposed for dealing with this problem, including elevating the value of health management and leadership, increasing health management training capacity, creating incentives within the health system to seek management training, and encouraging a focus on efficiency in the management of health systems.
9. Note: Tigray and SNNPR are regions within Ethiopia.

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Linkages between HIV/AIDS, Sexual and Reproductive Health, Tuberculosis, and Nutrition

Elizabeth L. Lule, Richard M. Seifman, Carolyn J. Shelton, and Tim Clary

Although HIV/AIDS significantly affects—and is affected by—multiple factors relating to sexual and reproductive health (SRH), tuberculosis, and nutrition, synergies between these programs are rarely exploited. This chapter examines the reasons why decision makers and practitioners should consider such linkages as they make policy, resource allocation, and service delivery decisions. Although the three issues are presented separately for organizational purposes, the main message of this chapter is that the three are fundamentally interconnected at many levels, requiring better-integrated responses from sectoral experts, national and subnational leaders, and donors.

Over the past decade, efforts to address HIV in Africa have included increased awareness and knowledge; greater access to treatment, care, and prevention; and unprecedented increases in global funding and national resource commitments. This progress has uncovered significant weaknesses in responding to HIV/AIDS, including the imbalance between prevention, treatment, and care and missed opportunities for maximizing linkages between HIV/AIDS and SRH, tuberculosis and other disease programs, nutrition, and national health systems.

The case for examining these synergies is strong and urgent. The emphasis for each is distinct. Both SRH and nutrition are critical to achieving the Millennium Development Goals (MDGs) on reducing maternal and child mortality and focusing on preventing sexually transmitted infections (STIs), including HIV; preventing mother to child transmission; addressing the SRH needs of people living with HIV; and improving nutrition. Linkages to tuberculosis are critical because of the highly communicable nature of the disease and the fact that it is a major killer of people living with HIV.

Each program faces challenges in addressing key populations at higher risk, as a result of poverty, location, gender and other inequities, social biases, and social marginalization. At the global level, the commitment to achieving the MDGs underscores the commonalities in combating disease, promoting gender and empowering women, improving maternal health, reducing child mortality, and reducing poverty and hunger. The 2005 Paris Declaration on Aid Effectiveness commits donors to improve coordination, strengthen country development priorities, strategies and associated operational frameworks, and make country activities as cost-effective as possible. With the expansion of HIV/AIDS funding—and increasingly funding for tuberculosis and other communicable diseases—the window for external partners to act on these commitments and exploit the synergies is widening.

Although not addressed explicitly in this chapter, there is great need for health system strengthening in most of Sub-Saharan Africa to reach HIV/AIDS, SRH, tuberculosis, and nutrition goals. Many health systems are weak or failing as well as inadequately planned, managed, funded, and staffed. They lack adequate infrastructure, outreach capabilities, effective monitoring and evaluation, and fiduciary and supply chain systems, and face chronic shortages of health workers. Stronger linkages in each program area would likely strengthen health systems and make them more efficient.

Even as political commitment has improved and resources dramatically increased for HIV/AIDS in the past decade, linkages to SRH, tuberculosis and other disease programs, and nutrition have been neglected in most Sub-Saharan countries. This chapter describes the benefits of linking other disease and health programs with HIV/AIDS. It identifies the limitations to linking programs, reviews experiences to date, and makes recommendations for addressing challenges.

Linking Sexual Reproductive Health and HIV/AIDS Programs

Nearly 15 years ago, the 1994 International Conference on Population and Development (ICPD) emphasized that empowering women and investing in education and health, including reproductive health, are necessary for individual welfare and protection of human rights. The ICPD called for universal access to an integrated comprehensive package of reproductive health services, including HIV/AIDS services, through the primary health care system.¹ The 2000 UN Millennium Declaration reaffirmed the goals of reducing poverty, providing universal education, achieving gender equality, improving maternal health, reducing child mortality, and curbing the spread of HIV/AIDS. While ICPD and other international declarations (see WHO and UNFPA [2004]) widely accept that jointly addressing SRH and HIV/AIDS has the potential for better health outcomes, progress on improving linkages between programs has been minimal in many Sub-Saharan African countries. Much more needs to be done.

In the past 30 years, countries and donors have invested billions of dollars in vertical family planning and reproductive health programs. While recognition of HIV/AIDS occurred as early as the 1980s, many countries were initially in denial about its existence, and political commitment from countries and donors to address such a highly stigmatized disease was slow to gather momentum. Although SRH services are critical to HIV prevention, the infrastructure and skills of existing SRH programs were not adequately exploited to address the emerging AIDS epidemic. Subsequently, there was also a reluctance to address SRH in HIV/AIDS programs, which were funded vertically, often by the same donors, and viewed as competing for the same resources. This was a missed opportunity and a costly mistake.

Between 1997 and 2007, financial resources for HIV/AIDS prevention, treatment, and care services in Africa totaled \$9.9 billion (World Bank 2008),² while donor support for family planning declined by \$100 million between 1995 through 2003 (Cleland and others 2006). With increased political commitment, financial resources and recognition of missed opportunity, countries and donors are giving more attention to strengthening the linkages between SRH and HIV/AIDS programs. The following section describes the rationale, examines entry points and barriers, and identifies the actions required from both countries and donors to move SRH and HIV/AIDS program linkages forward.

Why linkages are important

Unlike other regions of the world, the majority of people living with HIV in Africa—61 percent—are women. Women ages 15–25 are three times more likely to be HIV positive than men their age (UNAIDS and WHO 2007). Because of social and economic gender inequalities, women are more vulnerable to HIV. They often lack the skills or power to negotiate safe sex, including condom use; have poor access to the means to prevent HIV or other STIs; and are prone to other SRH-related threats (World Bank 2008). HIV/AIDS has also contributed to increasing maternal mortality and morbidity in high prevalence countries (McIntyre 2003). Furthermore, women with HIV have a 20–45 percent chance of passing the virus on to their children (UNICEF 2008). This feminization of the epidemic in Africa may be the single most important reason for linking HIV/AIDS and SRH programs.

While increasing access to HIV testing and treatment has contributed to growing numbers of people who know their status and are receiving treatment—the majority of people living with HIV lack access to SRH services and their reproductive health rights are often ignored. Furthermore, voluntary counseling and testing (VCT) services and treatment programs do not routinely include SRH services and referral mechanisms are weak.

Reproductive health needs in Africa are enormous and are expected to increase. More than 40 percent of Africa's population is under age 14 while larger cohorts are entering into their reproductive years every year (UNDP 2006). Contraceptive prevalence in many African countries remains low with little improvement over the last 20 years, and on average is about 15 percent. While success stories in Zimbabwe (39.1) and Kenya (22.7) are noteworthy, these averages mask disparities between rich and poor and rural and urban cohorts (MACRO International 2008). In Africa, unmet need for contraception is high (second only to Southeast Asia), with more than 1 in 10 unmarried women indicating an unmet need for contraception (Sedgh and others 2007). Unmet need is even higher for HIV positive and high-risk women, reportedly 84 percent among pregnant women in South Africa receiving prevention of mother-to-child-transmission (PMTCT) services, and 59 percent among women receiving HIV counseling and testing in Kenya, 66 percent in Tanzania, and 77 percent in Zimbabwe (Cohen 2008). Although high percentages of women attend antenatal care and are receiving VCT and PMTCT services, family planning and other SRH services and information are rarely provided.

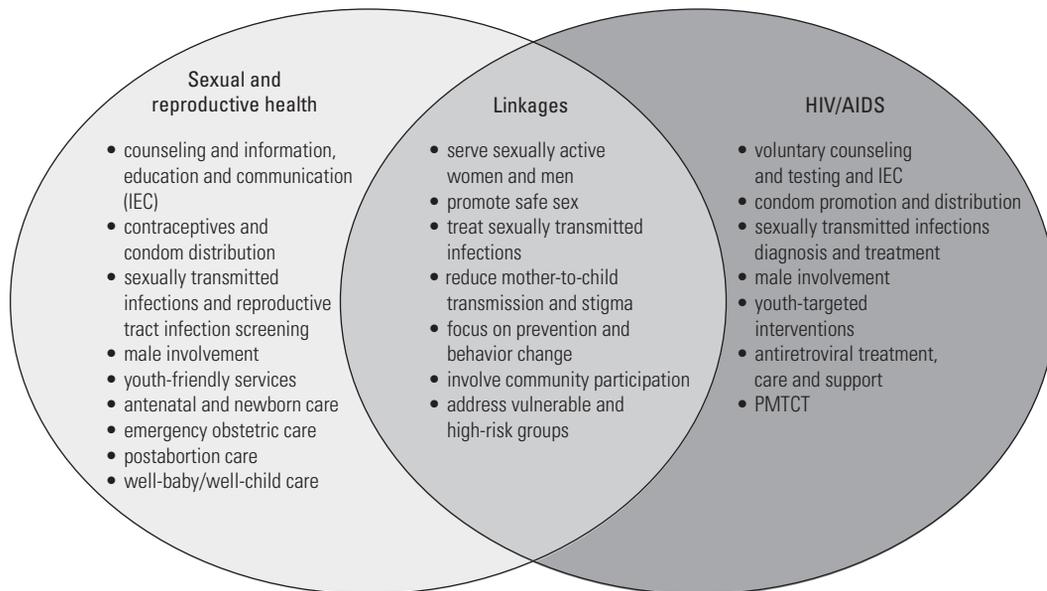
Maternal mortality in Sub-Saharan Africa is higher than anywhere else in the world. In 2006, WHO estimated that on average 47 percent of women deliver with skilled care (WHO 2006c). In 2005, more than 275,000 maternal deaths occurred in Sub-Saharan Africa (WHO and others 2007). Nearly 40 percent of all pregnancy-related deaths worldwide occur in Sub-Saharan Africa—where 10 percent of the world's women reside—and an estimated 12 million unwanted or unplanned pregnancies occur every year (UNFPA 2005). Poor maternal health has a strong impact on child survival: 1.2 million neonatal deaths and more than 1 million stillbirths occurred in Africa in 2000 (WHO 2006b).

STIs not only cause morbidity or mortality for women and their infants, they are also a cofactor in the spread of HIV and can increase the risk of both acquiring and transmitting the virus by a factor of up to 10 (WHO 2007b). According to WHO (2002b), new cases of STIs in Sub-Saharan Africa account for 20 percent of total global estimates of new cases each year. In Africa, 2–15 percent of all pregnancies occur in women with untreated syphilis (World Bank and CDC 2007). Furthermore, women with HIV are at increased risk for cervical cancer, the most common cause of cancer mortality among African women (World Bank and CDC 2007).

Rationale for program linkages

Linking SRH and HIV/AIDS services offers clients the opportunity to address multiple needs more efficiently and provides a broader outreach to underserved groups (figure 13.1). Both programs serve similar target groups of sexually active women and men, promote safe sexual behavior, treat STIs, rely on prevention and behavior change, and promote and distribute condoms within and outside clinics and health services. These linkages have the potential to increase protection from both unwanted pregnancy and HIV transmission and reduce mother-to-child transmission and stigma. Both programs often use similar communication channels, including a reliance on community participation to address sensitive sexuality issues and sociocultural determinants of behavior change. Both programs are interested in addressing the vulnerability and high-risk behaviors of young people that fuel the AIDS epidemic. Both require and use similar medical and public health skills and facilities and require efficient supply chains.

Given the severe human resource shortage in Africa, greater efficiency needs to be achieved by implementing better coordination at the policy

Figure 13.1: Components of Sexual Reproductive Health and HIV/AIDS Programs

Source: Authors Lule and Shelton.

and planning level, sharing facilities and supplies, minimizing duplicated administrative tasks, and maximizing scarce human resources by training workers to perform multiple tasks or engage in task shifting. Linking services may reduce clients' out-of-pocket payments, transport costs, and opportunity costs. Most important, forging program linkages offers a better chance of achieving health outcomes that have positive impacts on men, women, and children.

Linking SRH and HIV/AIDS programs

The feasibility of linking SRH and HIV/AIDS programs depends on the country epidemiological context, maturity of the AIDS epidemic, prevalence of other STIs, contraceptive prevalence, level of unmet needs, and the degree to which HIV/AIDS and SRH programs are well established. Other systemic factors include how health care is organized and structured, policy frameworks, leadership, institutional and financial arrangements, health infrastructure, availability and capacity of human resources, and procurement and logistics systems, including the availability of reproductive health commodities.

Policies, strategies, and program interventions must adjust as the AIDS epidemic evolves and new evidence and technologies emerge, taking into account country context. Not all services can or should be integrated equally and everywhere. There is no blue print for what type of services should be linked. Understanding the diversity of the epidemic, modes of transmission and target groups within the country should influence linking decisions.

Table 13.1 illustrates the country typology describing the status of HIV prevalence and contraceptive use and provides a framework for program linkages based on a country's epidemiological profile. Generally, the higher the HIV prevalence and contraceptive prevalence rate, the more appropriate the linkages between SRH and HIV/AIDS programs. In high-prevalence countries, SRH services need to be strengthened within existing HIV/AIDS programs and vice versa. In low HIV and contraceptive prevalence countries, existing SRH services need to be scaled up, but may have limited success in reaching men and other key populations at higher risk that are stigmatized or socially marginalized. However, where services for higher risk groups are provided through NGOs and

Table 13.1: Typology of Countries by HIV and Contraceptive Prevalence Rate

CONTRACEPTIVE PREVALENCE RATE (MODERN METHODS)	HIV PREVALENCE AMONG ADULTS AGE 15-49			
	HIGH HIV PREVALENCE (>8%)		LOWER PREVALENCE (<8%)	
High contraceptive prevalence rate (>20%)	Botswana	South Africa	Cape Verde	
	Lesotho	Swaziland	Kenya	
	Malawi	Zambia	Mauritius	
	Mozambique	Zimbabwe		
	Namibia			
Low contraceptive prevalence rate (<20%)	Central African Rep.	Angola	Congo, Dem. Rep. of	Mauritania
	Gabon	Benin		Niger
		Burkina Faso	Eritrea	Nigeria
		Burundi	Ethiopia	Rwanda
		Cameroon	Guinea	Senegal
		Central African Rep.	Gambia	Sierra Leone
		Comoros	Ghana	Tanzania
		Congo, Rep. of	Guinea-Bissau	Togo
		Côte d'Ivoire	Liberia	Uganda
		Chad	Madagascar	
			Mali	

Source: MACRO International 2008, WHO 2006c, UNAIDS and WHO 2008.

other technical agencies, SRH services and referrals should also be provided to meet their SRH needs.

Lessons learned and barriers to program linkages

Despite numerous international commitments and recent modest progress in strengthening the linkages between SRH and HIV/AIDS, many policy, institutional, program, and service delivery barriers persist. We highlight a few barriers below.

Changing AIDS architecture. Donors have created multiple global health partnerships, introduced sectorwide approaches (SWAs) and other health reforms, and are increasingly working through budgetary support. This has sometimes resulted in major coordination challenges, limited or reduced domestic resources for SRH, and fragmented approaches. HIV/AIDS and SRH programs continue to be funded and delivered vertically. Both family planning and AIDS programs often have separate logistics and distribution systems, with various aspects managed by separate and poorly coordinated departments within the ministry of health in budgeting and planning, creating rivalry for budgetary control. Coordination between national AIDS commissions and ministry of health–managed services remain weak with lack of clarity on roles and responsibilities and division of labor. The introduction of the “Three Ones” for HIV/AIDS,³ the recently established International Health Partnership and country SWAs provide an opportunity to improve coordination and promote better linkages between programs within the context of country priorities.

Addressing service delivery challenges and bottlenecks. Human resource shortages, capacity, and distribution are major barriers to increasing coverage and exploiting the synergies within primary health care. Linkages have also been hindered by leadership, lack of joint planning structures, operational guidelines, protocols, effective supervision, incentives and accountability for results. Frequent stock-outs of drugs and other supplies is also a major obstacle. Weak public private partnerships and minimal civil society participation may limit the success of linking programs.

Reaching those at greatest risk for HIV. Groups that do not use SRH services focused on maternal and child health—young people, who are usually reluctant to use formal health facilities; men; and other high-risk groups (sex

workers, men having sex with men, intravenous drug users)—are at high risk of contracting HIV. While some progress has been made to expand youth-friendly services (in Burkina Faso, Ethiopia, and Swaziland, for example) (World Bank 2007a), insufficient attention has been paid to vulnerable men, such as men who have sex with men and injecting drug users, and the social exclusion and stigmatization they experience. Special targeted services may be more relevant to reach high-risk groups, but require strong referral linkages. In countries where the contraceptive prevalence rate is high and sterilization is the main method of contraception, as is the case in southern Africa, many women do not frequent family planning/maternal and child health clinics. The challenge is to reach women who have achieved their desired family size with information about HIV.

Removing the stigma associated with accessing care. People living with HIV may prefer to receive narrowly focused services that remain confidential rather than avoid being stigmatized and rejected by providers and other clients in public sector facilities. Health service providers and programs are key players in advocacy efforts to reduce the stigma and discrimination people living with HIV often experience. Doing so is central to a health programs' ability to broaden its reach to serve clients from key populations at higher risk for HIV.

Reaching the poor. Use of SRH services by the rich and the poor differs widely, particularly in Sub-Saharan Africa (Lule and others 2007). Lack of access to information, prevention, and treatment services increases risks to HIV infection and high mortality and morbidity from poor reproductive health. HIV/AIDS has also contributed to impoverishing many families and communities. Addressing these inequalities, providing safety nets for the poor and orphans and user fee waivers to increase access to basic health services remain limited in scope. Access, affordability, and equity remain major constraints in reaching the poor with linked SRH and HIV/AIDS services.

Involving men. Public SRH and HIV/AIDS services and delivery systems often bypass men; very few interventions target them directly. Encouraging male participation across all aspects of HIV prevention, testing, care, and support should be a key component to comprehensive HIV/AIDS programs. Without male involvement, women have a harder time negotiating

safe sex, condom use, and access to services (USAID 2004). Providing reproductive health services for men including male circumcision, an effective intervention for HIV prevention, continues to be a challenge.

Opportunities for HIV/AIDS and sexual reproductive health linkages

While the focus on short-term results through vertical programs remains important, future actions for moving linking efforts forward and achieving longer term and sustained health outcomes will require addressing the barriers mentioned above. There is no blueprint for program linkages, but opportunities exist to effectively implement them. Each is described below.

Integrating HIV/AIDS and SRH in national development agendas. SRH and HIV/AIDS are not always integrated in national planning processes or adequately addressed in poverty reduction strategies, financing is not allocated in midterm expenditure framework, nor are expenditures tracked. Financing for HIV/AIDS and family planning is, largely off national budgets. Ensuring financial sustainability for both programs will require incorporation of these issues in national planning processes.

Improving HIV/AIDS and SRH policies. Progress toward strengthening linkages between programs will be slow without a conceptual policy framework for such programs to effectively work together at the national level. Most countries lack an adequate legislative or policy framework that makes linking feasible, protects human rights, or encourages reduction of stigma and discrimination. Using evidence from program evaluations and operations research to identify priority interventions to link and integrate would help drive resource allocation within health budgets. Policies that enable scaling up of successful approaches to reach often-neglected groups (such as men and youth) are also required. Policies need to be translated into national strategies that are prioritized and costed with annual operational plans.

Developing institutional capacity and structures as the foundation for better linkages. To improve coordination and avoid competition between programs, roles and responsibilities between national AIDS commissions, country coordinating mechanisms (CCMs) and ministries of health will

need to be clarified and a division of labor established and agreed upon. Restructuring vertical ministry of health units to allow for closer collaboration should be considered for forging effective linkages between programs as countries often set up SRH and HIV/AIDS program units with separate funding, budgets, personnel, and administrative structures. Donor orientation and priorities often encourage such vertical structures, discouraging program managers from considering opportunities to link when it makes most sense to do so (Lule 2004; Lush 2002). Experience from Kenya illustrates the importance of leadership, advocacy, and national strategies that highlight linkages, a task force for joint planning, capacity building of managers and providers, and joint monitoring and evaluation (Family Health International 2007).

Developing operational guidelines and joint training materials. In linking services, programs must consider staff training needs and capacity for both service providers and program managers. Health staff in SRH programs may not have the background or skills to provide both services (Foreit, Hardee, and Agarwal 2002). Some linked services may require less training and more emphasis on referrals. SRH workers may not have the empathy skills found in HIV/AIDS programs, and health workers may be reluctant to address sexuality, have a bias against condoms, stigmatize people with HIV/AIDS or other STIs, and regard linked services as additional work (Lule 2004). The development of protocols and operational guidelines that assess the risks of HIV/AIDS and other STIs for all clients is crucial to avoid stigmatization and to ensure that all clients' needs are assessed (USAID 2004).

Creating strong health management systems. Both SRH and HIV/AIDS programs have suffered from low levels of human and financial resources and poor program management. Human resource shortages have been exacerbated by AIDS-related morbidity and mortality and migration (brain drain). Poor quality of care; weak monitoring and evaluation; lack of privacy for counseling; lack of motivated providers; and inconsistent stocks of drugs, contraceptives, and supplies make it difficult to appropriately respond to clients' needs (Lush 2002; Lule 2004). An assessment of all levels of the health system—planning, manpower needs, facilities, services, logistics and distribution, and monitoring and evaluation—is therefore needed.

Forging partnerships to strengthen health systems. Supporting SRH commodity security and availability of other essential HIV/STI drugs within countries would support better identification of critical commodity gaps and supply management issues. An effective supply chain for SRH supplies, STI drugs, HIV tests, and ART would also promote better use of services. Logistics and distribution systems for contraceptives could also be used for ART, although the aim should be to strengthen an integrated system for essential drugs.

Adopting new and improved operations research, monitoring, and evaluation. Coordinating monitoring and evaluation with specific indicators to measure linked services would contribute to measuring and accountability of results. Improved management and tracking of public health expenditures should be part of routine monitoring and evaluation. Limited evidence is available about the costs and effectiveness of linked strategies, particularly their impact on ultimate objectives and outcomes, such as pregnancy and disease prevention. More analytical work is required to identify approaches that will improve health outcomes, and have broader impact in addressing SRH and HIV/AIDS challenges. Especially for new approaches, enhanced monitoring and evaluation, including indicators for linked services and operations research, is needed to identify good practices and impact.

Encouraging community participation. Community-based services have been instrumental in increasing contraceptive use and are vital for reducing stigma. Community participation is required to promote safe sexual behavior and protection against unwanted pregnancy and HIV/STI infection. Demand for linkages between voluntary counseling and testing, family planning, and PMTCT services and managing HIV/AIDS syndromes cannot be met solely through health facilities. Home-based care will increasingly become a critical intervention for providing follow-up support to women on ART and their families. The COPHIA project in Kenya pioneered this approach in the slums of Nairobi and added community-based family planning to home-based care (Pathfinder International 2006).

Improving donor coordination and harmonization. Predictable, long-term financing that is not tied to donor interest or ideological principles would eliminate barriers to improving program linkages and joint health outcomes. Donor policies and funding contribute to a separation of programs

and fragmentation of service delivery as accountability shifts to donors supporting vertical programs. This fragmentation weakens the ability of governments to coordinate programs and increases the burden of reporting to multiple donors. Donor support, coordination, and in-country collaboration are key factors in building better linkages between programs. Efforts to harmonize procurement, financial management, monitoring and evaluation, and reporting procedures through the Three-Ones are steps in the right direction to foster improved program linkages. Donor accountability and compliance with the Paris Declaration and the Accra Agreement and other agreements will facilitate improved program linkages.

The future for HIV/AIDS and sexual and reproductive health linkages

Although financial resources for HIV/AIDS have increased massively in the past decade, funding remains insufficient to address health problems associated with HIV/AIDS, weak health systems, and inadequate management and technical capacity. Effective programs will depend on how additional funds are used to build capacity, strengthen health systems and how well programs are coordinated. The challenge is to meet the needs of the largest-ever generation of youth, address the growing demand for family planning and other reproductive health services, and curb the spread of HIV and other STIs. Countries and donors must strive to maximize the use of scarce financial and human resources and better respond to countries' needs; they must also reduce the opportunity costs of utilizing health care. Forging private and public partnerships to address demand side aspects and developing innovative mechanisms provide an opportunity to scale up and improve coverage.

New challenges and opportunities are arising as the HIV/AIDS epidemic evolves, technologies change, and individuals and societies respond to these changes. Reaching the reproductive health goals set by the international community will require scaling up cost-effective approaches and shifting the focus to health outcomes rather than inputs. Linking SRH and HIV/AIDS services is an efficient way to promote wanted healthy pregnancies, improve child and maternal health, and prevent HIV transmission. Countries can no longer afford to pass up missed opportunities to address the range of unmet needs that can be met by improved SRH and HIV/AIDS program linkages.

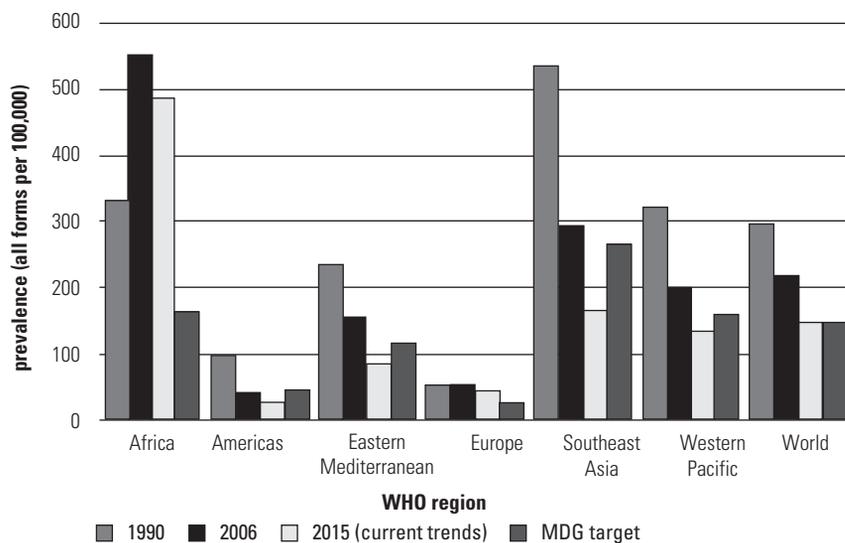
Linking Tuberculosis and HIV Programs

This section addresses the epidemiological impacts of tuberculosis and issues of tuberculosis and HIV coinfection, globally and within Sub-Saharan Africa; reviews the response in linking tuberculosis and HIV programs; provides a strategic framework for moving forward and concrete examples of joint programming; discusses the challenges, limitations, and lessons learned from three World Bank-supported country programs; and recommends areas for improved integration.

Meeting the ambitious MDG targets of halting and beginning to reverse the spread of HIV, the incidence of malaria, and other major diseases by 2015 remains an enormous challenge. Even after excluding cases associated with HIV, new tuberculosis cases are on the rise (figure 13.2), and while HIV prevention efforts are proving successful in some places, the number of deaths and new infections continues to increase in Sub-Saharan Africa (figure 13.3).

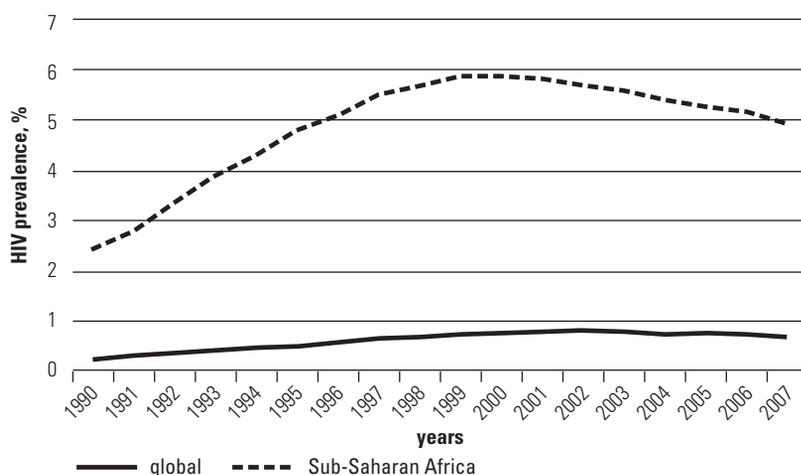
In support of the MDGs, new associations, such as the Stop TB Partnership, have been created. To reach its goal of dramatically reducing the global burden of tuberculosis by 2015 in line with the MDGs, the Stop

Figure 13.2: Actual, Projected, and MDG Target Prevalence of Tuberculosis



Source: WHO 2008b.

Figure 13.3: Estimated Prevalence of HIV among Adults Ages 15–49 in Sub-Saharan Africa and Globally, 1990–2007



Source: UNAIDS and WHO 2007.

TB Partnership set intermediate targets. It aims for participating countries to detect at least 70 percent of new sputum smear-positive tuberculosis cases and cure at least 85 percent of them by 2015. The Stop TB Partnership also set additional targets that exceed the MDGs, including the goal of reducing the prevalence of and death from tuberculosis by 50 percent relative to 1990 by 2015 and eliminating tuberculosis as a public health problem (less than one case per million population) by 2050 (WHO 2006d).

Other development institutions have renewed and reinvigorated their efforts in their response to tuberculosis and HIV, and new organizations have been created to combat the two diseases. In 2003, the U.S. government signed into law the U.S. Leadership against Global HIV, Tuberculosis, and Malaria Act, the legislative authorization for the President's Emergency Plan for AIDS Relief (PEPFAR), a five-year, \$15 billion commitment to combating the disease around the world. In 2005, the World Bank published its Global HIV Program of Action, which lays out its perceptions of the continuing challenges in the response to HIV/AIDS and the Bank's comparative advantages in responding to the epidemic including its role in addressing tuberculosis. In addition to its ongoing programs for HIV, UNAIDS has also moved tuberculosis to the forefront of its agenda in issuing a statement from its April 2008 Program Coordinating Board that calls

on member states to deliver integrated tuberculosis and HIV services that provide adequate tuberculosis infection control in HIV care settings. Perhaps one of the most important public health initiatives at the start of the 21st century was the creation, in January 2002, of the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund). After the 2001 UN General Assembly Special Session on HIV, a worldwide commitment was made to create a fund that could channel additional resources. By 2007, the Global Fund had approved about \$10.74 billion in grants and made disbursements of about \$5.59 billion (Global Fund 2008).

Epidemiological overview

Tuberculosis is a major cause of illness and death worldwide. Globally, 9.2 million new cases and 1.7 million deaths from tuberculosis occurred in 2006, of which 0.7 million cases and 0.2 million deaths were in HIV positive people. Globally, the number of new cases per capita appears to have fallen since 2003. If this trend is sustained, the world as a whole will be on target to meet the MDG of having halted and begun to reverse the incidence of tuberculosis by 2015. However, the Africa region is not on track to reach this target (WHO 2008b).

Of growing concern is the increasing number of cases of multidrug-resistant tuberculosis (MDR-TB) and extensively drug-resistant tuberculosis (XDR-TB). The most recent estimates suggest that globally there were about 489,000 cases of MDR-TB in 2006. Twenty-seven countries (15 of which are in Eastern Europe) account for 86 percent of the total (WHO 2008b). MDR-TB now accounts for about 5 percent of the total new tuberculosis cases worldwide each year (WHO 2008a). XDR-TB, a virtually untreatable form of the disease, has been recorded in 45 countries.

The true magnitude of MDR-TB and XDR-TB remains unknown in many regions of the world. In Sub-Saharan Africa, the region with the highest incidence of tuberculosis, only six countries have been able to provide drug resistance data (WHO 2008a). Both MDR-TB and XDR-TB are much more expensive and difficult to treat than tuberculosis and outcomes for patients are much worse (WHO/Stop Tuberculosis 2007). The WHO estimates that \$4.8 billion is needed for overall tuberculosis control in low- and middle-income countries in 2008, including \$1 billion for MDR-TB and XDR-TB to treat 125,000 patients (WHO 2008c). When outbreaks of XDR-TB have occurred in Africa, especially among people who are

HIV positive, they have been extremely lethal. In KwaZulu Natal, South Africa, for example, 52 of 53 patients died, and the median survival time was just 16 days (Gandhi and others 2006).

What has become of increasing concern in addressing the tuberculosis and HIV epidemics is that the two diseases are often intimately linked. Tuberculosis is the leading infectious killer of people with HIV, and it accounts for an estimated 13 percent of AIDS deaths worldwide (WHO 2008c). HIV and tuberculosis are so closely connected that they are often referred to as coepidemics or dual epidemics. The epidemics drive and reinforce one another: HIV activates dormant tuberculosis in a patient, who then becomes infectious and able to spread the tuberculosis bacillus to others. Untreated, someone with active tuberculosis will infect an estimated 10–15 people a year.

An estimated 13 million people globally living with HIV are at risk of developing tuberculosis, while up to half of tuberculosis patients in Africa are HIV positive. In some regions of Africa, up to 80 percent of adult tuberculosis patients are HIV positive. Collaborative activities are thus essential to ensure that HIV positive tuberculosis patients are identified and treated appropriately and that tuberculosis is prevented in people with HIV. Treatment of tuberculosis can prolong and improve the quality of life of people with HIV, while late diagnosis of tuberculosis and untreated HIV in some countries results in one third of HIV positive patients dying within weeks of being treated for tuberculosis (WHO 2008a).

Africa has borne the overwhelming burden of both epidemics and is also bearing the weight of managing issues of coinfection. This region has both the highest incidence of tuberculosis (363 per 100,000 versus 139 per 100,000 globally) and the highest prevalence of the disease (547 per 100,000 versus 219 per 100,000 globally) in the world.

These statistics may actually underestimate the extent of the disease given the difficulty of disentangling the effect of improved program performance from the effect of the HIV epidemic on notifications (WHO 2008b). The estimated prevalence of HIV infection in tuberculosis patients is 22 percent in Africa—three times the global rate of 7.7 percent.

New smear-positive case detection rates by directly observed treatment, short course (DOTS) programs in 2006 were lowest in Africa (46 percent), where the treatment success rate was 76 percent (WHO 2008b). Deaths were estimated at 83 per 100,000 population in 2006—nearly four times the target rate set by the Stop TB Partnership. Treatment success

has been increasing in Africa, although cohorts of DOTS patients continue to have high death and default rates, with one or both of these indicators exceeding 10 percent in Mozambique, Nigeria, South Africa, Uganda, and Zimbabwe (table 13.2). Poor outcomes in Africa are undoubtedly linked to weak health services, drug resistance, inadequate patient support, and high rates of HIV infection.

Despite progress made in combating the tuberculosis and HIV epidemics in Africa, substantial hurdles remain. Some African countries account for a strikingly large number of coinfection cases relative to their population. South Africa, for example, has 0.7 percent of the world's population but 28 percent of the global number of HIV positive tuberculosis cases; it also accounts for one-third of Sub-Saharan Africa's cases of HIV infection. (WHO 2008b).

The annual change in tuberculosis incidence runs almost parallel with the change in HIV prevalence in the general population in Sub-Saharan Africa. Since 1990, both HIV prevalence and tuberculosis incidence have been increasing more slowly each year and by 2006 both indicators were falling. The correspondence between declining HIV prevalence in the general population and reported tuberculosis cases is especially close in data from Malawi, Tanzania, and Zimbabwe (WHO 2008b).

Treatment outcomes in HIV positive and HIV-negative tuberculosis patients in 25–47 countries show lower success rates among HIV positive patients, whose death rates and, to a lesser extent, default rates are higher. These countries were almost exclusively in the Americas and Europe, while only three African countries (Comoros, Gabon, and Mauritius) had the needed data (WHO 2008b).

Table 13.2: Classification of Countries in Sub-Saharan Africa by Level of HIV and Tuberculosis Prevalence

HIV PREVALENCE	TUBERCULOSIS PREVALENCE	COUNTRIES
High	More than 500/100,000	Burundi, Central African Rep., Chad, Republic of Congo, Côte d'Ivoire, Dem. Republic of Congo, Ethiopia, Lesotho, Liberia, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Swaziland, Uganda, Tanzania, Zambia, Zimbabwe
High	Less than 500/100,000	Botswana, Burkina Faso, Cameroon, Equatorial Guinea, Gabon, Kenya, Malawi
Low	More than 500/100,000	Mali, Mauritania, Senegal, Sierra Leone, Togo
Low	Less than 500/100,000	Algeria, Angola, Benin, Cape Verde, Comoros, Eritrea, The Gambia, Ghana, Guinea, Guinea-Bissau, Madagascar, Mauritius, Niger, São Tome & Príncipe, Seychelles

Linkages between tuberculosis and HIV program components

Even countries with well-organized national tuberculosis programs have seen an increase in tuberculosis cases because of increasing HIV prevalence. Some of this increase can be attributed to the historically weak linkages between national tuberculosis and HIV programs, including a nearly single focus on implementing the DOTS strategy for tuberculosis control among people living with HIV. This short-term measure targets only the last step in the sequence of events through which HIV fuels tuberculosis, the transmission of mycobacterium tuberculosis infection by infectious tuberculosis cases, and misses a large number of opportunities for preventive activities.

National HIV programs have tended to focus on caring for people living with HIV. But the vast majority of people in developing countries living with HIV do not know they are HIV positive. In a random population sample in Zambia, for example, only 6.5 percent of adults had ever had an HIV test (WHO 2003). In countries with the highest rates of tuberculosis and HIV coinfection, professionals involved primarily with tackling tuberculosis and those involved primarily with tackling HIV have common cause in building linkages between their programs.

This suggests that tuberculosis control will not have much impact in HIV-prevalent settings unless HIV control is also achieved (WHO 2003). At the service delivery level, potential synergies exist between different service providers. Documented evidence suggests that people receiving voluntary counseling and testing for HIV have a high rate of tuberculosis and would therefore benefit from tuberculosis screening and treatment; tuberculosis patients have a high rate of HIV and would therefore benefit from voluntary counseling and testing and associated services (WHO 2002a). Recognizing the urgency of the dual epidemics and the need to provide guidance to the various stakeholders involved in tuberculosis and HIV programs, the WHO issued its interim policy on collaborative tuberculosis and HIV activities (WHO 2004a).

Some tuberculosis and HIV interventions (such as DOTS expansion) clearly fall under the responsibility and expertise of national tuberculosis programs; others (such as prevention of mother-to-child HIV transmission, voluntary counseling and testing services, and safe blood supply) fall under the responsibility and expertise of national HIV programs (WHO 2002a). Most activities fall within a continuum between the two programs, with potential overlap. Isoniazid preventive therapy, for example, naturally lends itself to collaborative efforts, because the tuberculosis services need

Table 13.3: Potential Tuberculosis and HIV Interventions Based on Level of Care

LEVEL OF HEALTH CARE SYSTEM	TUBERCULOSIS/HIV INTERVENTIONS
<i>Home and community</i> (for example, community-based organizations, nongovernmental organizations, faith-based organizations, and government community health programs)	<ul style="list-style-type: none"> • Tuberculosis, HIV and STIs' information, communication, and education activities^a • Condom promotion^a • Nutritional advice and support^a • Psychological support^a • Community DOTS for tuberculosis • Community-based palliative and terminal care^a • ART^b • VCT
<i>Primary care</i> (for example, government health centers, mission health centers, and private health centers)	<ul style="list-style-type: none"> • Tuberculosis case finding and treatment^c • Intensified tuberculosis case finding^{a,d} • IPT and CPT provision^{a,d} • Condom promotion^{a,d} • STI treatment (syndromic management)^a • Syndromic management of HIV-related opportunistic infections and palliative care • PMTCT^a • ART^b
<i>Secondary care</i> (for example, government hospitals, mission hospitals, and private hospitals)	<ul style="list-style-type: none"> • Diagnosis and treatment of HIV-related diseases^d • In-patient palliative care • ART^b • Safe blood

Source: WHO 2003.

a. Collaborative tuberculosis and HIV program activities.

b. The level in the health system at which ART needs to be made available is a national policy issue and is debated in many countries. Whenever ART is provided to tuberculosis patients, this is considered a collaborative tuberculosis and HIV activity.

c. The provision of single-use sterilized syringes for streptomycin injection as required per regimen is a collaborative tuberculosis and HIV program activity.

d. Interventions available at home and community level as part of the community-based prevention and care services provision.

to supply the isoniazid while HIV voluntary counseling and testing clients will benefit from it.

The vast majority of people living with HIV seek health care from general health service providers (WHO 2002a). Therefore tuberculosis and HIV programs must strengthen general health service providers' ability to respond to the health care needs of people in populations with a high prevalence of HIV. Households, communities, and secondary and tertiary providers also have significant roles to play (table 13.3).

Given that all health systems face resource constraints, systematic, rational, and explicit ways of identifying priorities are necessary. In prioritizing possible linked interventions, certain questions must be asked:

- Is the intervention associated with important externalities (for example, do the benefits and costs of the intervention extend beyond the individual receiving the intervention)? For example, curing tuberculosis cases will have benefits beyond the individual treated because of reduced transmission of the disease.
- Will the intervention mitigate a catastrophic economic condition? A catastrophic economic condition can occur when the costs of an intervention are high in relation to individual or household income and failures in the health insurance market mean that insurance coverage for such risks is not available. This failure could include the unwillingness of insurers to cover people assessed to be bad risks, which could include people known to be HIV positive or at high risk of becoming infected. Another failure could be the possibility that individuals have imperfect information regarding their risk status.
- Are the outcomes associated with the intervention unacceptable? Outcomes could be considered unacceptable for a variety of reasons, including poor quality of care and treatment outcomes in the private sector and equity concerns regarding who receives treatment.

The most concrete and well-studied example of linking tuberculosis and HIV programs comes from the ProTest projects, which were piloted in Malawi, South Africa, and Zambia (WHO 2004b). The projects demonstrated that HIV and tuberculosis control programs can work effectively toward the same goal at all levels, providing comprehensive prevention, care, and support services for people with HIV, tuberculosis, or both. Project results convinced policy makers, planners, and program managers that these collaborative activities are necessary and feasible and that they contribute to improving health services for people with HIV and tuberculosis.

Several lessons emerge from the ProTest project:

- Joint tuberculosis/HIV planning is essential in all countries with epidemics of HIV-related tuberculosis. This planning must include a description of the roles and responsibilities of tuberculosis and HIV programs, a formal mechanism for cooperation and collaboration, and the mainstreaming of tuberculosis/HIV activities into national tuberculosis/DOTS expansion plans and HIV strategic development plans.

- Programs that improve surveillance of HIV seroprevalence among tuberculosis patients and of tuberculosis among people living with HIV need to be strengthened and standard tools developed for monitoring and evaluating collaborative tuberculosis and HIV activities.
- Tuberculosis transmission among people living with HIV can be reduced through intensified tuberculosis case-finding (screening for tuberculosis) in settings such as voluntary counseling and testing centers.
- Programs that improve prevention and care services for people living with HIV, management of opportunistic infections in HIV-positive clients, and increase access to ART for HIV-positive clients with tuberculosis need to be linked.
- Linked, multicenter operational research studies can produce a wealth of information to assist policy makers and implementing agencies in deciding on the most efficient manner of delivering interventions.

Case study evidence from Ethiopia, Kenya, and Tanzania

In 2007, the World Bank commissioned three case studies to examine opportunities for and obstacles to implementing collaborative tuberculosis and HIV activities in World Bank-supported Multi-Country AIDS Projects. The three countries (Ethiopia, Kenya, and Tanzania) provide examples of how tuberculosis and HIV programs have been able to cooperate, identify challenges and gaps in implementation, and highlight important lessons learned. While each of the three countries is at a different stage of developing linkages, certain themes have emerged that can inform future joint planning.

Ethiopia. Ethiopian stakeholders demonstrated a strong commitment and sense of urgency regarding the need to address tuberculosis/HIV issues. In 2003, a tuberculosis/HIV national consensus meeting was held. Also recently, guidelines for isoniazid preventive therapy and comprehensive national tuberculosis/HIV implementation were developed and distributed. Ethiopia has also demonstrated its commitment by hosting the Fourth Global Tuberculosis/HIV Working Group Meeting in 2004, the Stop TB Partnership Board meeting in 2005, international tuberculosis/HIV managers' courses, and a workshop on HIV surveillance in tuberculosis patients.

Additional examples of tuberculosis/HIV collaboration in Ethiopia include the following:

- a functional, multistakeholder national tuberculosis/HIV advisory committee;
- development of national tuberculosis/HIV guidelines;
- tuberculosis/HIV activities in all ART hospitals and more than 300 health centers;
- a large number of general health staff trained in provider-initiated HIV counseling and testing and tuberculosis/HIV collaboration; and
- increasing coverage of routine HIV testing of tuberculosis patients and referral for HIV care and treatment (Hombergh 2008a).

Kenya. Despite continued human resources' capacity gaps, Kenya was among the first countries to successfully introduce and roll out some aspects of tuberculosis/HIV collaborative activities, albeit only after significant delay during the initial stage of implementation. By June 2007 all 10 provincial tuberculosis control zones and 71 of 77 districts were reportedly participating in functional tuberculosis/HIV collaboration (Hombergh 2008b). These developments were facilitated by increased funding and the fact that Kenya was among the first countries to benefit from the global Stop TB Partnership's Intensified Support and Action Countries (ISAC) initiative.

Of particular note were the implementation of monitoring and evaluation of collaborative tuberculosis/HIV activities and the use of an integrated tuberculosis/HIV recording and reporting system. The new tools allow three core tuberculosis/HIV indicators to be recorded and reported: the number and proportion of tuberculosis patients tested for HIV; the number and proportion of tuberculosis patients tested who are HIV-positive; and the number and proportion of HIV positive tuberculosis patients who are provided with cotrimoxazole and referred for HIV care and treatment. A national monitoring and evaluation plan for tuberculosis including tuberculosis/HIV is being developed (Hombergh 2008a).

Other developments included the following:

- a clear policy on HIV testing in clinical settings and the availability of sufficient financial and other resources to support the policy;

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- a coordinating body for tuberculosis/HIV activities that is effective at all levels (all eight provinces have a provincial tuberculosis/HIV steering committee);
- joint tuberculosis/HIV information and education campaign materials, including newsletters, brochures, pamphlets, posters, and radio programs;
- more effective service provision, including greater availability of equipment and supplies, better operational coordination, and improved management of personnel issues.

Tanzania. Beginning in 2005, Tanzania accelerated its tuberculosis/HIV efforts by introducing provider-initiated HIV counseling and testing in 45 of 126 districts; increasing the numbers of tuberculosis patients routinely tested for HIV and referred for HIV care if found positive; and revising the National Tuberculosis and Leprosy Program (NTLP) manuals, recording and reporting formats, and registers to capture essential HIV data in the routine tuberculosis monitoring and evaluation system. Following encouraging results from this pilot phase, efforts to link tuberculosis and HIV services were underway by 2006, with the goal of reaching all districts by 2008. Forty-seven health facilities were selected to start implementing collaborative tuberculosis/HIV services. In 2005 and 2006, HIV care and treatment was provided by all hospitals in Tanzania. By the end of 2006, a national coordination committee was established and a draft national policy prepared (the draft policy is still awaiting official endorsement). HIV efforts to accelerate tuberculosis and HIV collaboration are facilitated by new funding opportunities, including several Global Fund grants. Recently, the Global Fund approved grants to Kenya (\$148 million), Ethiopia (\$612 million), and Tanzania (\$407 million) to combat tuberculosis and HIV.

Challenges to integrating tuberculosis and HIV programs

Ethiopia, Kenya, and Tanzania all faced a number of common challenges in integrating tuberculosis and HIV programs. All three countries were confronted with surveillance and monitoring and evaluation gaps; a lack of thorough planning and effective coordination; systemic health system organizational weaknesses resulting in cost-ineffectiveness; and human resource limitations.

Surveillance and monitoring and evaluation have been longstanding challenges for all development sectors. While there is increased recognition of the importance of “knowing your epidemic,” many countries still do not have funded, functioning, monitoring and evaluation systems that have been developed through coordination with development partners. Kenya has weak data management at all levels; Ethiopia and Tanzania have weak monitoring and evaluation systems and no reliable nationally aggregated data on tuberculosis and HIV (Hombergh 2008a, 2008b, 2008c). In Kenya, organizations providing care and treatment often have their own reporting structures, in the best case parallel to the national system, leading to duplication of effort. The large number of recording formats along with the lack of computerization in many areas severely hampers efforts to better understand Kenya’s epidemic. In many cases, linking the monitoring and evaluation systems for tuberculosis and HIV overburdens staff, who are unable to track indicators of mutual interest for the two systems.

The UNAIDS “Three Ones” principles (UNAIDS 2004) are an important step forward in unifying stakeholders around one national coordinating body for HIV; no parallel effort exists for unifying and coordinating the varied stakeholders around linking tuberculosis and HIV planning and programs. For many countries, the Global Fund country coordinating mechanism attempts to serve this function, but it is often unwieldy. In ideal circumstances, planning and coordination would take place within the ministry of health, but this is rarely done, because human resource constraints and vertical programs impede collaborative efforts. Disjointed coordination at a higher level can flow down to lower implementation levels, delaying progress as roles and responsibilities are determined. In Ethiopia, for example, coordination and joint planning are inadequate given the large number of stakeholders and technical partners in tuberculosis/HIV; private sector, civil society, and community involvement in planning and implementation is low; and the procurement and supply chain management system is weak and needs restructuring (Hombergh 2008b). As a result of these weaknesses, some U.S. government partners work relatively independently of the Ministry of Health.

The rationale for further integration of tuberculosis and HIV health systems—including better service delivery, patient care, and cost-effectiveness through economies of scale—is convincing. But serious financial, technical, and managerial obstacles need to be overcome. Limited funding may lead to competing programs; healthcare providers need to be trained in topics

outside their normal area of specialization. These weaknesses lead to substantial delays in program implementation and integration.

Recognizing the limitations of separate granting mechanisms for tuberculosis and HIV, the Global Fund recently instituted a policy that will allow countries to apply for grants that strengthen health systems for the two diseases simultaneously. The burdens associated with maintaining two separate systems often fall on those least able to cope with them. In Kenya, for example, HIV positive tuberculosis patients may have to comply with two different drug supply and control visit systems, one in the comprehensive care center and one in the tuberculosis clinic, with all the implications for adherence and burden falling on the patient (Hombergh 2008b). Thus the already difficult task of expanding service provision to a greater number of clients is hindered by community members' hesitancy to access services because of unnecessary bureaucratic obstacles.

The implementation gap caused by a lack of human resources and capacity is an enormous challenge. While funding increases have been significant, the absorptive capacity of countries is stretched by the lack of dedicated human resources to implement activities, let alone integrate programs across diseases, which involves extensive recording and reporting requirements as well as increased coordination, training, and service provision.

Lessons learned from country reports

Without continued strengthening of collaborative efforts, the long-term sustainability of either separate or joint tuberculosis and HIV efforts is questionable. This need is particularly urgent in Kenya, where it was recognized that partnership coordination needed to be maximized in line with the "Three Ones" principles (UNAIDS and WHO 2005) and that greater involvement of all stakeholders, including community-based organizations, civil society organizations, people living with HIV, and politicians, was needed (Hombergh 2008b). In addition to higher-level coordination, it was recommended that tuberculosis/HIV collaborative activities be extended to all health facilities, including nonpublic and community providers, at the site level.

Human resource capacity also needs strengthening. Doing so involves not only providing additional technical skills to health care providers but also creating supervisory systems and developing training materials for all stakeholders.

The supporting infrastructure for collaborative tuberculosis and HIV efforts needs to be strengthened. In Kenya, not only the facilities for tuberculosis and HIV control, such as laboratory networks, but also the Ministry of Health's financial management systems are in need of reform to facilitate efficient implementation of tuberculosis and HIV programs. In Tanzania, physical facilities need to be built, upgraded, or expanded, and a comprehensive and effective laboratory network needs to be established. In addition, financial management capacity at the government level needs to be improved.

Delivery of tuberculosis and HIV services occurs at several levels, including the community. Implementation of community-based activities can be difficult. In Kenya, real involvement by the community had not yet been achieved. Given that the community forms the basic context in which services are delivered, lack of community involvement is of concern.

The future for HIV and tuberculosis linkages

The urgency of moving forward in developing new programs, activities, and interventions to respond to HIV/AIDS and tuberculosis has never been greater. With the dramatic increase of MDR-TB and XDR-TB, the problems and costs associated with tuberculosis and HIV programs will intensify if action is not taken now. MDR-TB and XDR-TB are clear signals that current tuberculosis and HIV health care systems are not sufficient to stop the two epidemics. Efforts to combat the two diseases must be coordinated, programs harmonized, and linkages constantly examined, not only for evaluative purposes but also to develop better, more inventive, and cost-effective modes of reaching beneficiaries. This will require a tremendous effort at all levels, starting with international donors and technical institutions reaching all the way down to the district health care worker. In implementing DOTS, one of the first requirements is that political commitment accompany increased and sustained financing (WHO 2006d). The same vision is now necessary for linking tuberculosis and HIV programs.

Linking Nutrition and HIV/AIDS Programs

Food insecurity and malnutrition are endemic in Africa. An estimated 200 million children and adults in Africa are undernourished—an increase of almost 20 percent since the early 1990s. Lack of nutrition is a major factor

in more than 28 percent of all deaths in Africa, some 2.9 million annually (Jamison and others 2006). The underlying determinants of undernutrition are inadequate access to food at the household and individual level, inadequate access to health services, and unhealthy environments. Africa is the only region in which the number and proportion of malnourished children are expected to rise over the next 20 years. While crop production in Africa has been increasing, crop yields (production per hectare) are falling behind those in other regions, and higher global demand for basic foods has led to price rises, resulting in higher export prices and reduced food assistance.

The interactions between undernutrition, HIV/AIDS, and opportunistic infections are multiple and intertwined, with failure of the immune system, heightened infectious disease vulnerability, and undernutrition feeding on one another. The connection between HIV/AIDS and nutrition was recognized early on, with some describing the immune system weakening as Nutritionally Acquired Immune Deficiency Syndrome (NAIDS) (Piwoz and Preble 2000).

The geographical distribution of undernutrition—measured in terms of dietary energy supply, food production, and population of underweight children—differs from that of HIV/AIDS in Africa. Southern Africa is the epicenter of the HIV/AIDS epidemic, while countries in western and eastern Africa (particularly Chad, Niger, and Sudan) have low HIV prevalence but very high levels of malnutrition and food insecurity, particularly among children and women of childbearing age. Levels of undernutrition and food insecurity are often exacerbated in countries with past or ongoing conflict histories, ineffective governance, or both. While the extent of undernutrition varies from subregion to subregion, from country to country, and within countries, it is a pervasive problem throughout the continent, reducing national GNP. Because undernutrition affects both the individual's ability to cope with HIV infection and the household's ability to maintain its socioeconomic status as a result of loss of productive capacity and income, it is a critical factor in virtually any HIV/AIDS response.

Despite its importance, nutrition as a national strategy is often given low or no priority. The fact that halving undernutrition is an element of the first MDG is a clear reflection of its pervasive and perverse effect on poverty. However, with less than one quarter of developing countries on track to achieve this goal, undernutrition is properly referred to as the “neglected” MDG. Undernutrition is a multisectoral problem without an

obvious institutional public sector home. National decision makers are faced with competing demands, country priorities, political attention, and popular health issues, which generate funding for HIV/AIDS, tuberculosis, and malaria. Undernutrition is not a highly visible problem; for example, micronutrient deficiencies have been described as a “hidden hunger.” Many Sub-Saharan African countries have national nutrition policies and plans, but they are seldom implemented because of the lack of clear institutional authority and accountability (World Bank 2005).

Of the 20 countries with the highest burden of undernutrition, 9 are in Sub-Saharan Africa (Bryce and others 2008). While the effects of reduced food availability, price responses and immediate nutritional impact are not known, historically reduced food availability and higher prices have greatest impact on the nutritional status of poor households. Of the 30 high-risk countries in need of external food assistance, the World Food Program identifies 22 in Sub-Saharan Africa (Gillespie 2008). Effective interventions are available to respond to undernutrition. If implemented at a sufficient scale, such interventions would have significant impact on disability-adjusted life years (DALYs) (Black and others 2008).

Rationale for linking nutrition and HIV/AIDS

Adequate nutrition is necessary to maintain the immune system, manage opportunistic infections, optimize the response to medical treatment, sustain healthy levels of physical activity, and support an optimal quality of life for people living with HIV. Good nutrition may also help slow the progression of the disease (Castleman, Seumo-Fosso, and Cogill 2004). Nutritional interventions can also help optimize the benefits of ART and may increase compliance with treatment regimens.

For HIV positive women, optimal nutrition during pregnancy increases weight gain and improves maternal nutrition, which improves birth outcomes. Adequate nutrition can reduce the risk of transmission of HIV from mother to child (WHO 2005b). For HIV positive children, safe feeding practices and improved dietary intake are critical to regain weight lost during opportunistic infections. Periodic vitamin A supplementation in HIV positive children reduces illness and death and improves growth (Piwoz 2004).

Supporting the linkages

The case for linking nutrition with other critical health and reproductive outcomes has been known for some time but not translated sufficiently into action. This section examines international, regional, and national efforts; sectoral efforts; programming; costing; and knowledge sharing. Taken as a mosaic, it presents the key ingredients for a more effective and intensive approach for addressing both undernutrition and HIV/AIDS.

International efforts linking nutrition and HIV/AIDS. In 2005, the Consultation on Nutrition and HIV/AIDS in Africa conference in Durban, South Africa, brought together experts and country representatives to review current evidence and studies; identify practices and initiatives regarding the special nutritional needs of people living with HIV, including HIV-positive mothers and children; and discuss the relationship between HIV/AIDS and nutrition. Key scientific evidence, programmatic gaps, and practices were discussed, with countries urged to develop policies and practices that promoted the integration of nutrition into comprehensive HIV/AIDS responses (WHO 2005b).⁴ Underscored during the discussions and subsequent national actions is the growing realization that the relationship between HIV/AIDS and nutrition is complicated, with HIV/AIDS affecting how and when to address undernutrition in HIV/AIDS endemic areas (Black and others 2008). Complex interactions require multisectoral studies and policy analysis, adoption of new initiatives, and scaled-up interventions. Like the other linkages examined in this chapter, an effective HIV-related nutrition response will encompass strategies that include sectoral efforts in health, maternal and child welfare, education, and rural and community development.

Sectoral efforts. National authorities in key sectors must be sensitive to the need for and benefits from nutrition inclusion as a feature of the national strategy, framework, plans, resource commitments, and executed programs. One special feature of the nutrition and HIV/AIDS mosaic is its links to the agricultural sector and in particular food production, food distribution, and trade policies. Food security policy is an area of national interest and is of major political and programmatic interest in much of Sub-Saharan Africa. It deals with food production, availability, access, and utilization at the national, provincial, and household levels. Agricultural production, food imports, and food distribution and food assistance are of particular

importance in terms of providing appropriate foods and supplements to people living with HIV, those at risk of exposure to HIV, as well as dependents of HIV positive people. In Sub-Saharan Africa, agriculture is often an important productive and employment component of the economy, with young and growing populations in need of access to food staples. Many countries have, however, limited local capacity to produce agricultural goods, provide agricultural inputs (such as seeds and fertilizer), or support distribution channels, and therefore face difficult choices between supporting domestic food crops and cash crops for export (such as coffee, tobacco, or flowers), which have complicated equity and food access implications. The importance of nutrition and the skyrocketing of food prices suggest the need to focus on the nutritional aspects of the food security challenge. Food-based policies and stakeholders may or may not be willing to cooperate with and constructively engage in the national HIV/AIDS effort.

The health sector and health systems policy are basic elements of any national nutrition/HIV/AIDS effort. Inclusion of nutrition as an essential topic in national health strategies, planning, and budgeting is an important stepping stone to better integrated responses at the national, regional, and local levels. It is rarely used as such, however. The health sector may not be best situated to deal with a host of important prevention and care issues or implement behavior changes that affect disease transmission. The health sector is, however, the central point for epidemiology, diagnostics, protocols and treatment, and aspects of service delivery. It is also where SRH, tuberculosis, nutrition, and HIV/AIDS programs have historically been placed in the public sector and where most expertise can be found. Linkages between nutrition and HIV/AIDS rely on health sector systems to carry out key programmatic activities; provide the supplies and distribution of commodities; and collect, monitor, and evaluate data.

Maternal and child health policy is often espoused as a high-priority national goal, but the responsible agencies are usually not strong or given adequate resources. From the nutritional perspective, supporting households in achieving optimal infant and young child nutrition status has multiple facets, going well beyond adequate dietary intake to encompass hygiene practices; social infrastructure, such as water and sanitation; and access and utilization of the health system, each of which has direct or indirect linkages to tuberculosis and SRH.

One policy and program crossroad is breastfeeding. It is generally accepted that “breast is best,” but there are exceptional circumstances.

When a mother knows that she is HIV positive, replacement feeding is recommended if there is an alternative that is acceptable, feasible, affordable, a sustainable and safe (the AFASS principle; WHO 2006a). This is a cross-cutting issue that bears on informed decision making by the mother and those providing reliable HIV testing and counseling, and a realistic infant food replacement. How it is addressed and by whom has important repercussions in terms of HIV transmission from mother to child.

Research and interventions. National research and program efforts to tackle HIV/AIDS and nutrition are increasing throughout Sub-Saharan Africa. Ethiopia's home- and community-based care program is a part of a multi-sectoral approach to HIV/AIDS and nutrition, assisted by Family Health International (Drimie, Tafasse, and Frayne 2006). To avoid the stigma attached to HIV, the program assists people with other chronic illnesses rather than HIV/AIDS alone. Traditional neighborhood associations and community structures are used to implement the program.

A study of HIV positive pregnant women was conducted in Tanzania to determine the effects of daily supplements of vitamin A (preformed vitamin A and beta carotene); multivitamins (vitamins B, C, and E); or both on the progression of the disease. The study determined that multivitamin supplements delay the progression of HIV/AIDS and are a low-cost means to slow the start of ART (Fawzi and others 2004).

The AIDS Support Organization (TASO) provides support and service centers to HIV positive people throughout Uganda. TASO began implementing a nutrition effort in 2002 whereby all HIV positive beneficiaries received appropriate food for a maximum of five people in the household, including the main beneficiary. Beneficiaries were taught hygiene, nutrition, and recipe preparation. The program increased the number and variety of meals, reduced morbidity among primary beneficiaries, and increased observance of treatments. The majority of beneficiaries reported weight gain, improved complexion, and increased economic activity and savings (Muzoora, Coutinho, and Mugume 2004).

Sharing service delivery knowledge and effort. Many public and nonpublic service providers are involved in responding to both nutritional concerns and HIV/AIDS. Many of these actors are the very same people responsible for the reproductive health and tuberculosis agendas. What cuts across all of these programs is the need for consistent and complementary information,

education, communication and behavior change messages, counseling, and interventions. For nutrition and HIV, individual monitoring of nutritional status, particularly in the antenatal and early child development years, coupled with the ability to provide micronutrient, replacement feeding, and food supplementation (where warranted) represent essential elements of a minimum package of services. Generic technical information and guidance on the nutritional care and support needs of individuals living with HIV and families and communities affected by HIV/AIDS are available from various sources, including *HIV/AIDS: A Guide for Nutrition, Care and Support* (FANTA and AED 2004) and *HIV/AIDS, Nutrition and Food Security: What We Can Do? A Synthesis of International Guidance* (World Bank 2007b). These reference materials provide comprehensive information on such areas as nutrition support for HIV positive adults, pregnant and lactating women, and infants and young children.

For the health sector, cohesion at the operational level is needed. More-comprehensive HIV/AIDS prevention, care, and treatment can be provided by integrating minimum nutrition packages. Doing so may involve nutrition supplementation; nutrition counseling integrated with voluntary counseling and testing services; and mitigation services tailored to meet the needs of HIV positive people, including pregnant and lactating women and young children. This may mean strengthening referral mechanisms to support clients in accessing nutrition and HIV/AIDS services provided by the public or nonpublic sector.

Programming and costing. Basic nutrition programs that have been shown to be effective include nutrition promotion and behavioral change, micronutrient fortification and supplementation, provided through both government and nongovernment channels. The means of supporting highly vulnerable nutrition populations and the costs of doing so vary widely, depending on whether the program provides primarily counseling about nutrition or direct benefits (such as micronutrients, food supplements for food insecure populations, or conditional cash transfers), the extent of geographic and target group coverage, and an approach for exiting the program over time.

For people living with HIV, nutrition programs seek to rehabilitate a malnourished person, maintain his or her nutritional status, and prevent mother-to-child-transmission through AFASS feeding of infants and children. In order to translate objectives into realistic programs, program planners need to take into account which direct or indirect beneficiaries are to

be assisted and for how long, the time and point of entry for food or micronutrient supplementation, and the criteria for exiting the program. Costs will depend on many factors, including the kind of food required, whether local or imported food is provided, logistical costs, and seasonality. Costing tools exist for HIV and nutrition planners to estimate these factors and prepare budgets.

In the health sector, the incremental costs of nutrition would be incurred principally for nutritional education and counseling materials with respect to safe feeding/food preparation practices, the training of health and nonhealth professionals, the inclusion of micronutrients in the arsenal of basic health care, and the allocation of staff time and operating costs. Basic training and beneficiary education materials for nutrition exist in many countries. They would require review and revision to take into account HIV/AIDS and messages with regard to breastfeeding and the feeding of young children.

Challenges

Principal responsibility for integrating nutrition and HIV/AIDS into the national development agenda, providing the financial and human resources, and managing the multisectoral response rests with country leadership. Both nutrition and HIV/AIDS are cross-cutting development and poverty-related issues that lend themselves to placement in the macroeconomic and fiscal dialogue and frameworks. External partners, such as the World Bank, the Global Fund, the Bill & Melinda Gates Foundation, and major bilateral contributors, can play important roles only in support of national efforts along these lines. The “Three Rs”—namely, how to get national leadership to move from rhetoric to resource transfers and a focus on results—remain a fundamental challenge.

Progress will be possible if there is an evidence base at the global and country level that is sufficiently robust to support financing of service delivery and to serve as the basis for a road map of expected results. Countries will need to undertake HIV/AIDS and nutrition assessments that provide evidence to support priority actions in early and accessible interventions for pregnant women and appropriate feeding practices for children of women living with HIV as well as integrating more comprehensive nutrition support to people being treated for HIV/AIDS. Research will be needed to examine the consequences of different types and levels of poor nutrition,

impairments to the immune system, increased vulnerability to infections, and increased nutrition needs because of poor absorption and decreased food intake, and to address infections and viral replication (Shekar, Heaver, Lee 2006). While there is broad agreement on a good deal of what works, less is known about how to implement effective programs at scale. Thus there is need for testing practical operational tools for the practitioner so that their actions effectively mainstream nutrition in HIV efforts and vice versa. All this will require resources for planning, system strengthening, training, piloting, expanded service delivery, and monitoring and evaluation.

The future for HIV/AIDS and nutrition linkages

Agriculture, trade, food security, economic growth, the health sector, and HIV/AIDS are typically high on national agendas. They are key areas for program and strategy implementation. Nutrition is part of each, but under-nutrition is the neglected MDG, typically not seen as the central concern of any sector or ministry. Changing the mindset of decision makers and integrating nutrition into national policies, strategies, and actions represents a major challenge.

Evidence underpins the important linkages between nutrition and HIV/AIDS. Research on specific aspects of the nutrition–HIV/AIDS interaction and how to improve and sustain service delivery will help make a stronger case for these connections. Policy integration and cooperation in achieving national HIV/AIDS objectives needs to be strong. Both traditional and other sectors, such as the agriculture and food policy constituencies, could play important roles but rarely do so. Strengthened nutrition and HIV/AIDS programs could create a multiplier effect in achieving different policy and program goals. To paraphrase President John F. Kennedy’s famous statement, “a rising tide of HIV, SRH, tuberculosis, and nutrition collaboration could lift all boats.”

Conclusion

From an HIV/AIDS perspective, SRH, tuberculosis, and nutrition are of sufficient significance to warrant heightened policy, resource, and service delivery attention. Failure to take these aspects into account and identify opportunities for better linkages will weaken the response to HIV/AIDS

making it difficult for Sub-Saharan Africa to achieve the MDGs, national goals, or individual beneficiary goals.

Common barriers to integration and heightened effectiveness affect HIV/AIDS, SRH, tuberculosis, and nutrition. At both the international and national levels, there is often a lack of in-depth understanding of potential synergies with regard to complementary policies, strategic planning and budgeting, and use of existing institutional structures to take advantage of opportunities for mutually beneficial results. Many national programs have tended to address these areas vertically or with less priority than warranted; for their part, external donors have not viewed building on these potential synergies and building capacity as high priorities in achieving multiple goals, including the MDGs. These linkages require more intensive analytical attention and greater commitment of human and financial resources from countries and the global community.

Notes

1. The ICPD Program of Action redefined the scope of reproductive health services to include services related to family planning, maternal and child health, and sexually transmitted infections. The term *sexual reproductive health* encompasses all of these aspects.
2. Funding originated from three main international sources: The Global Fund to Fight AIDS, Tuberculosis and Malaria; the U.S. President's Emergency Plan for HIV/AIDS Response (PEPFAR); and the World Bank.
3. The Three Ones refers to the policy of a harmonized response among development partners for one national strategy, one coordinating body, and one national monitoring and evaluation framework.
4. Based on the Durban conference recommendations, several African countries prepared and updated new guidelines. Kenya, for example, published guidelines targeting service providers and the health, agricultural, education, and social sectors.

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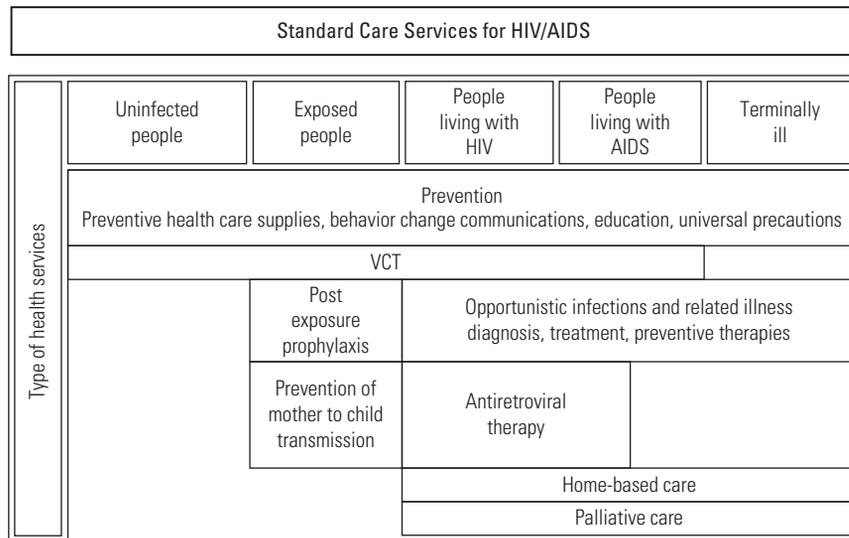
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Strengthening Health Systems: The Role of Supply Chains in Addressing the HIV Epidemic

Sangeeta Raja and James Bates

Sub-Saharan Africa remains the region most heavily affected by the AIDS epidemic, with more than 22 million people (including adults and children) living with HIV (UNAIDS 2008). The catastrophic impact of morbidity and mortality of the disease has already been witnessed in increased household vulnerabilities, and in the depletion of skilled human capital. The strain of confronting the pandemic has brought some national health systems to the brink of collapse and has brought the deterioration of supply chain systems—victims of years of neglect—to the forefront.

As the international public health community has groped its way through the maze of problems posed by HIV/AIDS, treatment models have evolved. The arrival of resources to support antiretroviral therapy in resource-constrained environments has enabled the development of a comprehensive disease management model, also known as the “continuum of care” (figure 14.1) (Joan McNeil, in World Bank 2003). This continuum of care model requires the availability of thousands of medical products found in existing primary healthcare systems such as condoms, contraceptives, and vaccinations, to newer screening tests and treatments such as HIV test kits and antiretroviral therapy. Hence, more than ever, the success of this model depends on a strong logistics system that ensures a dependable, regular stream of health care medicines and supplies—a supply chain that ensures

Figure 14.1: Standard Care Services for HIV/AIDS “Continuum of Care” Model

Source: Adapted from presentation by Joan McNeil (World Bank 2003).

continuous stock availability at service delivery points. The lack of such a system not only endangers the lives of patients—through the risk of drug resistance—it also jeopardizes the prevention and treatment program itself.

Despite its importance, the role of logistics is often underemphasized and underfunded in the planning of public health initiatives (USAID | DELIVER PROJECT 2006). For prevention and treatment programs to function efficiently and, one day, independently, assistance programs must balance between directly providing commodities and services and reinforcing the infrastructure of the overall health care supply chains. This balance of supply provision, service delivery, and systems strengthening is not always approached in a concerted effort, in part hampered due to lack of well-trained and appropriately targeted human resources for service delivery, lack of needed drugs and other health care commodities, and the lack of responsive supply chains to deliver these essential commodities to the sites where they are needed. This chapter focuses on the third of these constraints—the lack of responsive supply chains. It clarifies the main characteristics and operations of public health supply chains, especially related to HIV services, reviews some of the approaches used in the past, and suggests an overall strategic framework for planning comprehensive supply chain improvement that not only benefits HIV programs, but across the health sector.

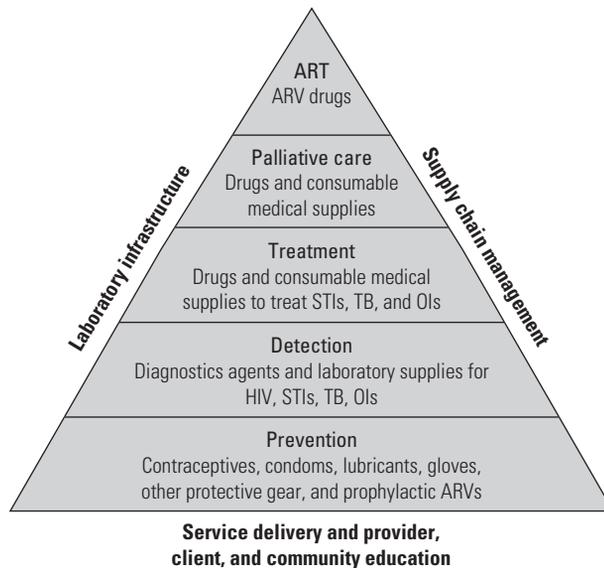
Characteristics of HIV and Public Health Supply Chains

The continuum of care model, a holistic approach for addressing supply chains

It is clear that in order for the HIV continuum of care model to be successful, a comprehensive health care services package that meets the needs of the entire population, including people who are HIV negative, HIV positive, and terminally ill, from infancy to adulthood needs to be in place. It also requires that all tiers of the system from primary to tertiary level are functional and providing the services required. This model has in essence created an opportunity for strengthening the entire health care system that not only benefits HIV programs, but offers a full range of health services, from the prevention of infectious diseases to management of chronic care.

Keeping the population healthy requires a range of drugs, medical supplies, and lab supplies (figure 14.2). Prominent among them are the products required for established traditional public health programs, such as Expanded Programme on Immunization (EPI), reproductive health (RH), and control of malaria and tuberculosis (TB). The need for contraceptives,

Figure 14.2: Commodities, Services, and Systems for a Comprehensive HIV/AIDS Program



oral rehydration salts (ORS), vaccines, anti-TB drugs, and bednets is greater than ever before. But, in addition, newer commodities that specifically address HIV needs are also needed. These include HIV test kits, nevirapine for reducing the risk of mother-to-child transmission (PMTCT), medications for opportunistic infections (OIs) and sexually transmitted infections (STIs), and antiretroviral therapy, which need to be provided without interruption.

This means that more than a thousand products need to be planned for, procured, and delivered. The magnitude and urgency of the HIV/AIDS pandemic calls attention to the almost universal weakness of public health supply chains in low- and middle-income countries. Some vertical programs, usually with external assistance, have been able to ensure the availability of their products: family planning and vaccination programs, for example, have often seen good results. In general, however, few countries are able to ensure the availability of all of the products called for by primary health care in general or HIV/AIDS programs in particular.

Addressing the problem of scarcity

The affordability of new drugs and the need for continuous, long-term financing are major factors in the friction between the idealism of universal access and the reality of the marketplace. The economic concept of scarcity has been largely ignored by policy makers in developing comprehensive health and supply chain systems. This issue can no longer be ignored in strengthening the health sector supply chains, as it leads to havoc in replenishment policies, hoarding practices, and the suboptimal use of supply chains.

Tough decisions are required that go beyond the rhetoric of providing health services for all. While universal access is a laudable goal, it is impossible to achieve in many contexts, given the constraints of scarce financing for health products. Because demand for antiretroviral medications is surpassing the amount that governments can finance, ministries of health have had to make hard policy decisions regarding who will receive treatment.

This triage approach must essentially be copied for all health care commodities in order for supply chains to succeed, especially for programs such as the essential drugs system. Once supply chains are designed based on the construct of economic scarcity, these systems can become self-policing mechanisms that are able to evolve within market conditions as driven by current end users' needs.

Addressing the problem of corruption

Even with the most robust supply chains in place, unmet demand cannot be met in most poor countries. Shortages of products bring an additional major risk: the emergence of corruption. This risk is exacerbated by weak governance, which leads to increases in pilferage, misuse, and collusive behaviors (Lewis 2006).

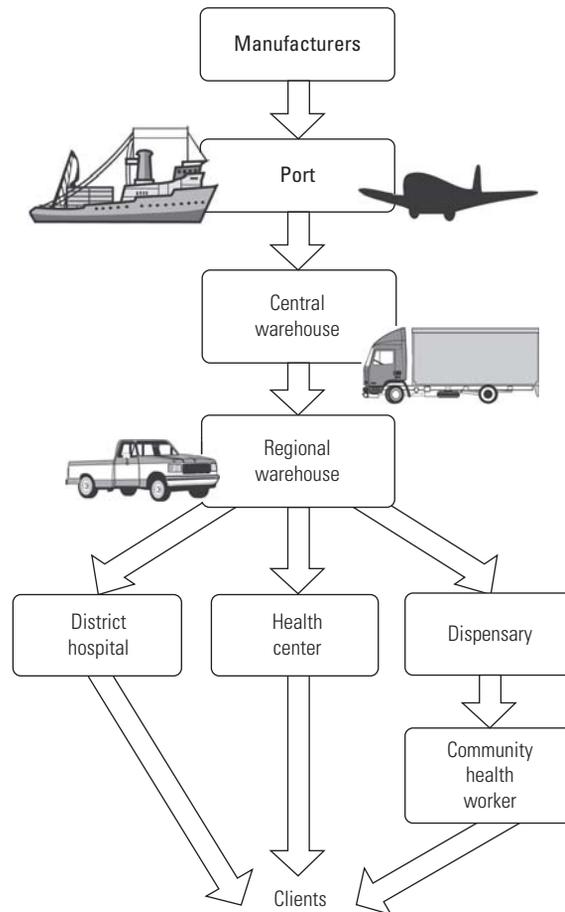
This problem is particularly prevalent in HIV programs, because the costs of drugs are very expensive. Studies in South Africa reveal that annual HIV/AIDS-related expenditures can amount up to 25 percent of an individual's income in urban households and up to 50 percent in rural households (Salinas and Haacker 2006), increasing the vulnerability of poor households. High demand and high costs for these drugs incubate an environment rife for corrupt practices. Strong public sector supply chains that are driven by accurate and transparent information are highly effective countermeasures to corrupt practices in procurement, distribution, pricing, and regulatory enforcement, yet the evidence around the world confirms that little investment is made in information technology in most public health supply chains.

Strengthening other key health systems

While it is beyond the scope of this paper, it is clearly recognized that strengthening other health systems needs to occur in tandem with the strengthening of the supply chain. This includes laboratory services and supplies, an area that in the past was usually ignored, and broader capacity constraints in terms of numbers and training of service delivery providers. All these issues highlight the fact that a piecemeal approach to health systems strengthening will not achieve the sustained program impact needed to curb the disease.

Problems with Healthcare Supply Chain Systems

Typical public sector supply chains are extensive systems that include a diversity of organizations and activities, including partners from manufacturing, transportation, warehousing, and service delivery points (SDPs) (figure 14.3). Ideally, decision makers coordinate the inputs of the various organizations to bring about a flow of products from manufactures to consumers as well as the

Figure 14.3: The Supply Chain: Facilities and Resources

Source: USAID | DELIVER PROJECT (<http://deliver.jsi.com/dhome/topics/supplychain/logistics>).

flow of the information required to manage the system. Not least among decision makers' responsibilities is securing the financing required to cover product acquisition and system operating costs.

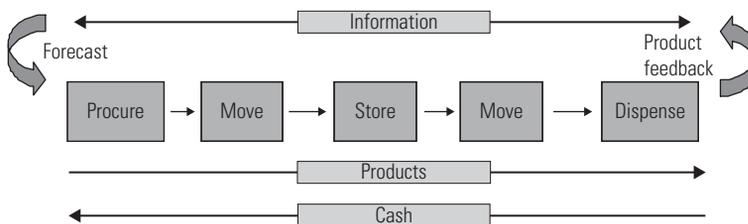
All supply chains, public and private, have essentially the same overarching objective: serving clients by providing them with the products they need. To do so, each level or entity within the supply chain must have access to the information needed to move products smoothly toward the end user. In supply chain management, this access to information is called *visibility*. It is a requisite for sound logistics management. All supply chains work through

the same sequence of activities to achieve the customer service objective—that is, they select the products required, forecast the quantities required and procure them, and distribute them (figure 14.4).

Logistics information plays a central role in maintaining the flow of products. The information required includes names and specifications of the most appropriate products; the quantities consumed in the past; unit prices; quantities in stock at the central, regional, district, and facility levels; and quantities lost through expiration, damage, or theft. Supply chains that cannot provide this information can and do meet some client needs, but experience in many countries indicates that they cannot ensure the continuous availability of drugs and other life-saving supplies to the health facilities. They can certainly never achieve the financial efficiency that is required for sustainable development, more important than ever in the age of HIV/AIDS.

The weakness of public health supply chains have been extensively documented in recent years. Apart from the absence of functioning logistics information systems, public health supply chains are hampered by a lack of trained staff at central levels for such technical activities as product selection, forecasting, and procurement; lack of trained staff at lower levels for managing warehouses and vehicles; insufficient and low-quality storage facilities; insufficient transport resources (vehicles, fuel, or money to hire services); and inflexible, donor-driven, commodity donation and financing programs. All of these problems are hampered by the poor design of supply chain networks that are based on administrative boundaries and a staged approach for delivery (that is, delivering drugs through a series of intermediate warehouses to the end-user facility and use of ad hoc transport systems, especially at the lowest tier of the supply chain).

Figure 14.4: The Logistics Cycle: Functions and Activities



Source: Adapted from Burns (2006).

Rising health care costs, especially the costs of pharmaceuticals as a percentage of the total health care costs (Burns 2003), bring into question the old paradigm of supply chain design and management. Underlying, hovering over, and surrounding these systems is the simple insufficiency of financing for robust systems. New network designs, automation, and large capital investment in supply chains are required in order for health care supply chains to become more agile, robust, and scalable in the context of the growing HIV epidemic. While these suggestions are not new, past attempts in improving the supply chain have been whisked into debates of overall health care system reforms.

Review of the Approaches of Addressing Supply Chains

Vertical versus integrated approaches

Since at least the 1970s, ministries of health and international parties have attempted to improve supply chain performance. Early work focused on setting up special “program-dedicated” or “vertical” supply chains to support such programs as family planning or vaccination. In the 1980s, as the primary health care concept emerged and spread, the numbers of such vertical systems increased as the sponsors of new initiatives, such as maternal and child health (MCH), oral rehydration therapy (ORT), and acute respiratory infections (ARIs), sought to ensure the availability of specific drugs and other supplies. External support provided commodities, staff training, vehicles, and storage facilities. With access to these resources, many vertical supply chains have proved effective, if not necessarily efficient, at procurement, storage, transport, and information management.

The supply chains for donor-supported programs have often flourished while supply chains for government-supported general drug supplies have languished. As a result, health care facilities have had surpluses of “program” supplies and chronic shortages of supplies for more general health problems not fortunate enough to have donor-funded champions.

By the 1990s, vertical supply chains came to be seen as problems rather than sustainable solutions. The increase in numbers obliged ministry of health staff to learn the routines of different systems as well as the special requirements of their external sponsors. This problem extended all the way

down to the facility level, where overburdened health workers were (and still are) expected to receive, store, and issue different supplies from different programs separately, using different sets of forms and procedures. Another serious shortcoming has been the tendency of the vertical chains to either deteriorate or collapse when donor support is decreased or withdrawn (Brumburgh and Raja 2001).

In the second half of the 1990s, health sector reform emerged. Most reforms have been structured around a set of interrelated reforms that include organizational and financial restructuring, integration of services, decentralization of decision making, and cost recovery. All of these reforms have implications for the design and operation of supply chains.

Health sector reform has focused concern on the costs incurred by operating separate supply chains with their own procurement, storage, and transport arrangements. It was widely believed that overall supply costs could be reduced and financial sustainability enhanced by merging the diversity of separate supply into more comprehensive integrated systems with common operating procedures and physical assets. At the logical extreme, this would imply that all vertical supply chains would be merged into a single system, but this has seldom occurred (Bates and others 2000). Vaccine supply chains, with their specialized cold storage requirements, have usually been exempted from this reform. In some cases, donors have been reluctant to allow the commodities they finance to be managed outside their vertical supply chains. In other cases, country managers have been reluctant to give up direct control over program supply chains.

As with the vertical management approach, integration of supply chains has had its successes and failures. Early attempts were frequently characterized by decreases in the availability of some products when their vertical supply chains were dismantled before the new systems were able to manage them effectively. This was very typical in “big bang” situations, in which reform planners, lacking expertise in logistics management, dogmatically insisted on rapid integration while failing to anticipate the time and expense required to do so. Over time there has been some improvement, and it is now widely appreciated that useful integration requires a phased approach to bringing in separate supply chains, as well as major investments in training, equipment, and storage and transport infrastructure.

The problems associated with major health care strategies should not obscure the fact that since the 1970s, many improvements in public health

supply chain management have been developed, tested, and widely implemented. The most important are the establishment of competency-based training programs for staff at all levels; national essential drug lists and standard treatment guidelines; computer-based forecasting, procurement planning, and inventory management tools; effective approaches to storage and transport management, including selective use of the private sector; and indicator-based monitoring tools for assessing supply chain performance.

Over the past four decades, the major strategic departures of vertical and integrated management have seen both successes and failures, and many useful tools and technologies have been developed. Despite this learning, the call to support a comprehensive health care supply chain continues to be mistakenly understood to be a call for a single integrated supply chain for all health care commodities. Many policy experts and advocates continue to focus on the debate of integration versus vertical approaches, ignoring two glaring crises that hamper supply chain management: financial investment and knowledge of the subject.

Failure to make adequate capital investments in supply chain management

Despite the raging debate over how best to design supply chains, investment in doing so remains minuscule. The required capital flows into investment in supply chains have been lacking, with most of the concentration of funds used for procuring drugs rather than successfully delivering them to end-users. In industrial countries, health care supply chains are estimated to represent 38–45 percent of the cost of goods sold (Burns 2003); few data are available for low-income countries. A study of the logistics costs of the Ghana public sector health care system finds the costs to be 13 percent of Ministry of Health expenditures, of which 73 percent went to warehousing, 20 percent to transport, and 7 percent to procurement (Huff-Rousselle and Raja 2002); logistics costs in Uzbekistan reportedly represent up to 45 percent of the cost of goods sold (Laing and Bates 2000). These figures indicate inefficiencies in healthcare supply chains compared with the retail or grocery sectors, where supply chain costs are as low as 1–3 percent of the cost of goods sold (Burns 2003).

The President's Emergency Plan for AIDS Relief (PEPFAR), launched in 2005, was one of the first HIV programs to heavily invest in supply

chains through its supply chain management system contract with the Partnership for Supply Chain Management (PfSCM). The Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund), the other major donor, estimates that 47 percent of its funds are used for the procurement of drugs and supplies (<http://www.theglobalfund.org>), but it is unclear as to how much it invests in supply chains. Financing of supply chains in the World Bank–financed Multi-Country AIDS Program has also been found to be minimal.

Failure to recognize the benefits of logistics knowledge

While governments and major development partners are starting to recognize logistics as a key systems strengthening component, policy makers rarely understand the benefits of logistics knowledge and its impact on return on investment (Stock 1990). Too often, logistics problems are taken for granted only to surface later, when they prove to be critical operational bottlenecks. This lack of knowledge and leadership is evident by the fact that two of the major institutions funding HIV programs, the Global Fund and the World Bank, do not have a critical cadre of supply chain professionals in their organizations.

The lack of technical knowledge is evident in the common use of the term *procurement and supply management* instead of *supply chain management*, a concept in which procurement is clearly understood to be one of the components of a coherent cycle of supply chain management functions. Procurement is thought of as a separate and independent service, when in truth it is a subordinate function within the logistics of supply chains; without the parent, the need for procurement is simply an opportunity to purchase drugs without a clear plan of its delivery to the end user. Worse, the separation of procurement from supply chain management results in procurement strategies that focus on decreasing the unit cost rather than the total landed cost of goods. Bulk procurement is encouraged, leading to increased costs for warehousing, as clearly seen in Kenya (Raja and Hicks 2009).

In light of the HIV/AIDS pandemic and the immense need for logistics, support associated with the delivery of the HIV continuum of care model has not been even close to sufficient. There is an urgent need for a much more effective overall approach to supply chain improvement—one that takes advantages of the positive results of earlier efforts and avoids the negative ones.

Framework for Planning a Comprehensive Improvement in Supply Chains

Updating antiquated systems

It is important to resist the temptation to make blanket condemnations of earlier supply chain improvement strategies. Approaches such as program-dedicated vertical supply chains and the merging of separate supply chains into integrated ones represented logical attempts to solve specific pressing problems; in many cases they have been associated with improvements in product availability.

It is critical to consider the future in terms of overall public health supply systems and not the individual supply chains that make them up. It is time to accept that even without HIV/AIDS, the increasing demands of public health have pushed national systems beyond their limits. This comprehensive problem needs a comprehensive framework for solution.

Supply chain segmentation

“Supply chain segmentation” is an approach to managing logistics complexity and assisting in an overall strategic design that is used extensively in the private sector by companies as diverse as auto parts suppliers, grocery store chains, and telecommunications providers. The key to supply chain success lies in the dynamic management of the supply chains—matching the right strategies with the right situations (Atkearney 2004). While this concept is not new, segmentation provides a framework for determining several distinct supply chains with fundamentally different strategies. It provides a tool for identifying distinct supply chains within a health care system and offers a how-to approach for developing supporting strategies and operations. The influx of HIV products has created an opportunity for shifting away from these older vertical or “one size fits all” paradigms to a more strategic and holistic approach.

Historically, segmentation of the supply chain has been practiced, but the segmentation has usually been based on requirements for program and financing accountability, not necessarily on the uniqueness of the product or the end-customers’ needs. Under this type of segmentation approach, the issue of supply chain integration versus vertical systems becomes moot.

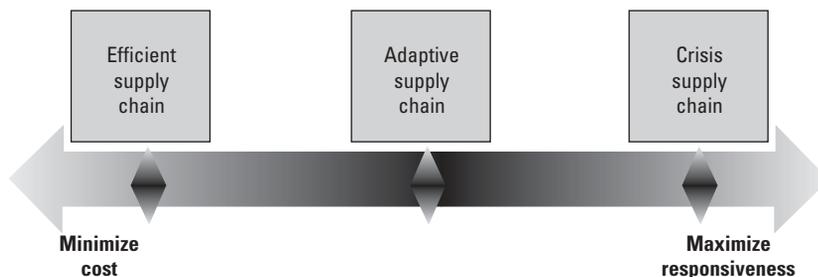
While there may be differing logistical strategies for product or customer type, they would be integrated and coordinated from a single supply chain strategic framework, potentially sharing scarce resources such as warehousing and transport.

Use of a segmentation approach enables distinct supply chains to be designed based on product and customer characteristics, not program requirements. Such an approach could result in program products such as contraceptives and drugs for treating tuberculosis and malaria to be managed within a single supply chain segment. Distinct supply chains still share common activities and physical assets, and management of products and customers may differ across countries.

Recent work on adapting segmentation framework has identified three supply chains that could be used to segment public sector health care supply chains. These include the efficient segment, which is *cost driven*; the adaptive segment, which is *condition driven*; and the crisis segment, which is *event driven* (figure 14.5). The three supply chain segments are defined along a continuum from minimizing costs to maximizing responsiveness. The segments could be further segmented based on customer requirements (USAID | DELIVER PROJECT 2008).

The segmentation approach provides a framework for rationally making decisions on how best to manage different products, based on specific criteria and variables, with the goal of introducing greater agility, flexibility, and resilience so that countries can meet the growing demands of volume and complexity and increase efficiency of the use of scarce resources.

Figure 14.5: Three Supply Chain Types



Source: USAID | DELIVER PROJECT 2008.

Moving from the backroom to the boardroom

In the private sector, the logistics department has a seat in the boardroom, because companies recognize that supply chain management affects the bottom line. In contrast, very few public sector health programs have established supply chain management units that strategically manage procurement, warehousing, and transport functions. In many countries, logistics responsibilities are assigned to program staff that either spend a majority of their time dealing with logistics or ignoring it (Brumburgh and Raja 2001).

Few health programs are able to answer basic questions such as how much their supply chains costs, how much money is tied in slow-moving inventory, or how supply chains contribute to improving health care. The ability to answer these questions requires knowledge of the performance of logistics operations. Few programs have the monitoring systems in place to measure performance. Commitment and a common performance measure framework are required across all supply chain partners to achieve positive performance results. A well-aligned and executed performance program can reduce operating costs, dramatically improve customer service, and increase program impact.

Conclusion

The HIV/AIDS epidemic has put strategic supply chain management into the spotlight. In the past it was difficult to get policy makers to even mention the role of logistics; today the importance of logistics for improving health care program implementation is widely recognized. Despite recognition that supply chain management plays a key role in saving lives and improving program impact, investments and knowledge building in supply chains continue to be inadequate, compromising the strategic impact the supply chain could have in addressing the HIV epidemic.

Development partners need to commit to getting the basic fundamentals of supply chain management right. Doing so includes understanding that the role of supply chain management is to serve the customer by investing in logistics functions, especially logistics information management systems; committing to knowledge-based, strategic supply chain planning and management; and agreeing on and using a performance program that measures the value and impact of supply chain management to health service delivery and outcomes.

Notes

This chapter reflects the learning and experience of the United States Agency for International Development (USAID) and its implementing contractors, John Snow Inc. Management for Sciences for Health and Partnership for Supply Chain Management, gained over years of assisting low- and middle-income countries in addressing their supply chain management. The authors would like to extend their thanks to Linda Allain, Carolyn Hart, and Pramesh Jobanputra for their valuable technical input and review of earlier drafts of this chapter, and to Elizabeth Laura Lule, manager of the AIDS Campaign Team for Africa (ACTAfrica), for her support in addressing health care supply chain management. Funding for this study was provided by the World Bank and John Snow, Inc.

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PART V

FUTURE

The Potential Impact of HIV/AIDS Interventions on the HIV/AIDS Epidemic in Africa: A Simulation Exercise for the World Bank

Lori Bollinger and John Stover

Although some progress has been made in containing the HIV/AIDS epidemic in Sub-Saharan Africa, HIV prevalence remains high. This trend reflects both the large number of new infections occurring each year and the wider availability of antiretroviral therapy (ART), which results in longer lives for people living with HIV.

The World Bank developed its initial Multi-Country AIDS Program (MAP) in 1999. The program aimed to reduce the impact and path of the HIV epidemic in Sub-Saharan Africa. Since then the landscape surrounding the epidemic has changed dramatically: some countries have successfully reduced HIV incidence, resulting in valuable lessons learned about effective interventions, and more funding has become available through a wider variety of sources, allowing for higher coverage of these interventions.

Given this new information, the World Bank decided to update its approach with a new strategy plan, the Agenda for Action 2007–11. This chapter examines some of the important issues and data pertaining to this new strategy. In particular, it seeks answers to the following questions:

- What is the appropriate level and type of funding for different epidemic profiles in Sub-Saharan Africa?

- Which interventions are likely to have the greatest impact on the epidemic?
- What is the impact of increased availability of ART?
- What is the impact of different prevention interventions, such as the distribution of condoms, treatment of sexually transmitted infections (STIs), and programs to prevent mother-to-child transmission?
- What are realistic and compelling goals for 2007–11?

Much of the analysis in this chapter is based on results obtained for UNAIDS and published in *Science* and by UNAIDS (UNAIDS 2008; Stover and others 2006). In addition, the cost-effectiveness analysis of specific interventions is based on applications of the *Goals* model to 10 countries. This model supports strategic planning at the national level by providing a tool that links program goals and funding (Futures Institute n.d.).

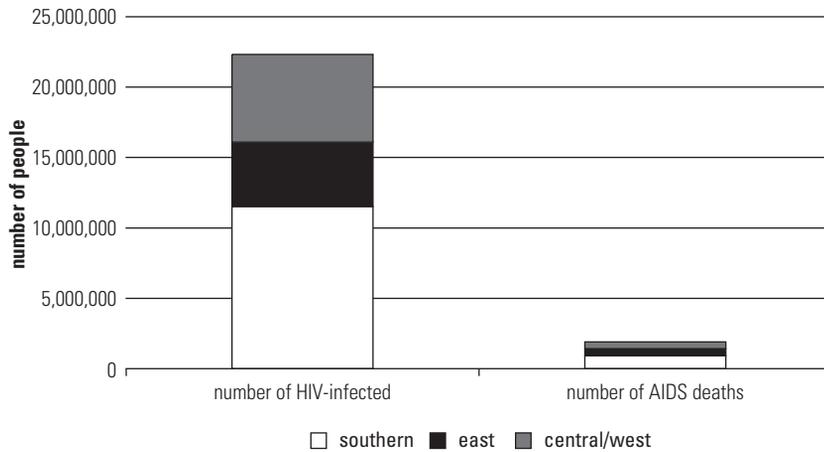
Current Status of the HIV/AIDS Epidemic

More than 22 million people in Sub-Saharan Africa were living with HIV/AIDS at the end of 2007 (figure 15.1).¹ This figure includes more than 11.5 million people in southern Africa, more than 5.4 million people in Central/West Africa, and about 4.9 million people in East Africa. The regional distribution of AIDS-related deaths is similar. Of the more than 1.5 million who died from AIDS in 2007, more than 750,000 lived in southern Africa, about 378,000 in Central/West Africa, and about 372,000 in East Africa.

Coverage of ART has increased in Sub-Saharan Africa over the past several years. Of the more than 6.7 million people in 2007 who needed ART, some 3.6 million people lived in southern Africa (about 54 percent), 1.4 million in Central/West Africa (about 21 percent), and 1.7 million in East Africa (about 25 percent) (figure 15.2). The number of people receiving ART was about 1.1 million in southern Africa (about 30 percent of those in need); 578,000 in East Africa (34 percent of those in need); and 355,000 in Central/West Africa (about 25 percent of those in need).²

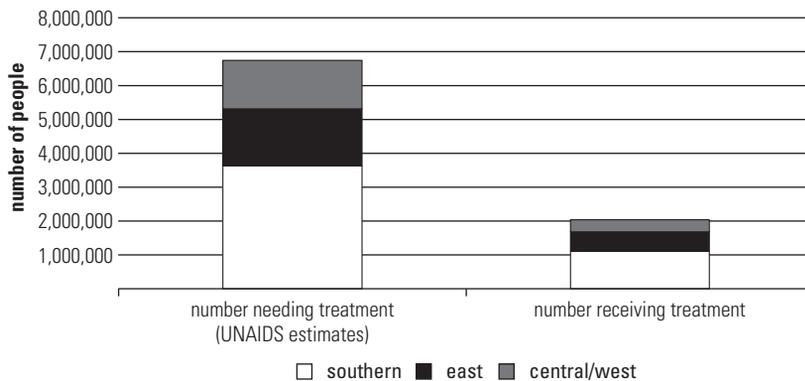
Coverage of other key interventions ranges widely, from a low of 9 percent for adults receiving an HIV test to a high of 90 percent of blood screened for HIV (table 15.1). Note that, because not all countries report providing all interventions, some of the figures—such as the 56 percent coverage for outreach programs to men having sex with men—are likely to be overstated.

Figure 15.1: Number of People with HIV and Number of AIDS Deaths in Sub-Saharan Africa, by Region, 2007



Source: Authors' calculations.

Figure 15.2: Number of Sub-Saharan Africans Needing Antiretroviral Treatment and Number of People Receiving It, by Region, 2007



Source: Authors' calculations.

Description of Scenarios

Three different scenarios are examined in this chapter: the base case, the treatment case, and the prevention case. The base scenario assumes that the coverage levels of prevention and treatment interventions increase at historical rates. Based on this assumption, HIV prevalence is then projected for 44 Sub-Saharan African countries using country-specific models developed by

Table 15.1: Coverage of Key HIV/AIDS Interventions in Sub-Saharan Africa, 2005

INTERVENTION	COVERAGE (WEIGHTED AVERAGE)	NUMBER OF COUNTRIES REPORTING
Blood screening	90	17
PMTCT	26	18
HIV test	9	12
MARPs	50	5
Life Skills	42	13
HR sex condom	43	11
Clean needle	74	9
MSM condom	56	6

Source: UNGASS 2007 country reports, available in UNAIDS (2008).

Note: PMTCT = Prevention of Mother to Child Transmission, MARPs = Most At Risk Populations, HR = High Risk, MSM = Men who have Sex with Men.

UNAIDS and the World Health Organization.³ The number of new infections and other variables, such as AIDS-related deaths, were then calculated using the Spectrum software package (available at www.futuresinstitute.org).

Under the treatment scenario, coverage is increased to reach universal access by 2010.⁴ Annual costs of care and treatment—including data on costs of and progression to first- and second-line therapies, the incidence and treatment of opportunistic infections, and the configuration of palliative care—are based on data from the UNAIDS Global Resource Needs Estimates (UNAIDS 2007). Costs of ART are based on the assumption that, on average, survival for both first and second line therapy is 85 percent in the first year, and 95 percent each year thereafter.

Various assumptions are added to the treatment scenario to create the prevention scenario (table 15.2). This scenario assumes that prevention interventions are scaled up in a linear fashion from 2007 levels to coverage levels of 80–100 percent by 2010 and that they remain at their 2010 levels through 2015. The prevention interventions that are included, along with their maximum scaled-up coverage levels that are reached beginning in 2010, are shown in table 15.2.

The impact of this increase in coverage of prevention interventions on HIV infections averted is calculated by estimating the change in behavior attributable to this increased coverage; the impact of this behavior change on HIV incidence; and the consequences of the changes in incidence on variables such as the number of people living with HIV and dying from AIDS-related complications. Changes in behavior are projected based on an impact matrix that estimates the effect of the various prevention interventions on condom

Table 15.2: Projected HIV/AIDS Intervention Coverage Reached in 2010, by Type of Epidemic (percent of the target population reached)

INTERVENTION	TYPE OF EPIDEMIC	
	CONCENTRATED	GENERALIZED
Vulnerable populations		
AIDS education for primary/secondary students	45	100
Programs focused on out-of-school youth (ages 6–15)	20	50
Programs focused on sex workers and clients	80	80
Programs focused on MSMs	80	80
Programs focused on IDUs	80	80
Prevention for people living with HIV	80	80
Workplace prevention	3	50
General populations		
Percent of adults reached through community mobilization		
	0	70
Number of mass media campaigns per year	4	5
% of adult population accessing VCT each year	1	5
% of casual sex acts covered with condoms	80	80
% of married people with casual partners using condoms in marital sex	30	30
Medical services		
% of need for postexposure prophylaxis that is met	100	100
Safe blood (% of units screened for HIV)	100	100
Safe medical injections	92	99
Universal precautions	92	99
STI treatment	75	100
PMTCT (coverage among women attending ANC)	80	80

Source: Authors' calculations.

Note: IDU = Injecting Drug User, MSM = Men who have Sex with Men; VCT = Voluntary Counseling and Testing; STI = Sexually Transmitted Infections; PMTCT = Prevention of Mother to Child Transmission.

use, number of partners, STI treatment-seeking behavior, and age at first sex (Bollinger 2008). These behavior changes are then fed through an HIV/STI transmission equation to estimate the number of new HIV infections, using the *Goals* model described above. The Spectrum model is then used to relate the changes in HIV incidence to other variables of interest.

The number of HIV infections averted is combined with the costs of the prevention interventions to calculate incremental cost-effectiveness ratios or cost per HIV infection averted. The costs of the expanded prevention program are derived from the global resource requirements estimated by

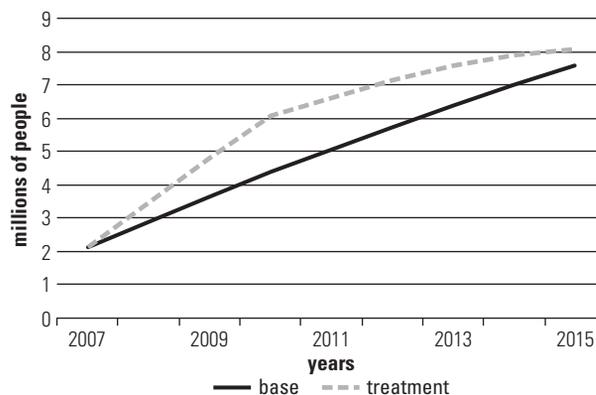
UNAIDS (2007). These resource requirements were calculated at the country level for 132 low- and middle-income countries, based on different assumptions depending on the type of epidemic. The 44 countries in Sub-Saharan Africa are included here. Economies of scale are assumed in the scaling up of the prevention interventions (Marseilles and others 2007). Expenditures do not include program costs for items such as administration, management, research, monitoring and evaluation, or advocacy, because these are costs that are common to the program as whole rather than to specific prevention interventions only. Mitigation costs for orphans and vulnerable children are addressed in a separate section below.

Results for the treatment scenario

The treatment scenario begins with the existing coverage levels of ART for adults and children and cotrimoxazole prophylaxis for children in 2007. It increases these initial coverage rates to achieve universal access by 2010 (defined as reaching 80 percent of those in need). This scaling up results in a large increase in the number of people on ART, to more than 8 million people by 2015 (figure 15.3). Under this scenario, 54 percent of people being treated will live in southern Africa, 25 percent in Central/West Africa, and 21 percent in East Africa (figure 15.4).

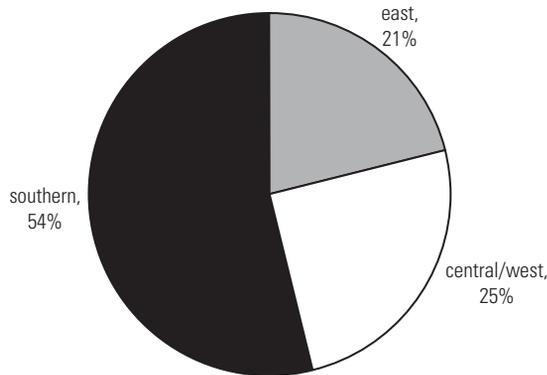
An important benefit of increasing access to treatment is the increase in the number of AIDS-related deaths averted (figure 15.5). Expanding ART coverage averts about 300,000 AIDS-related deaths in 2009 alone. The initial increase in AIDS-related deaths averted during the first several years

Figure 15.3: Projected Number of People on Antiretroviral Therapy Given Universal Access, 2004–11



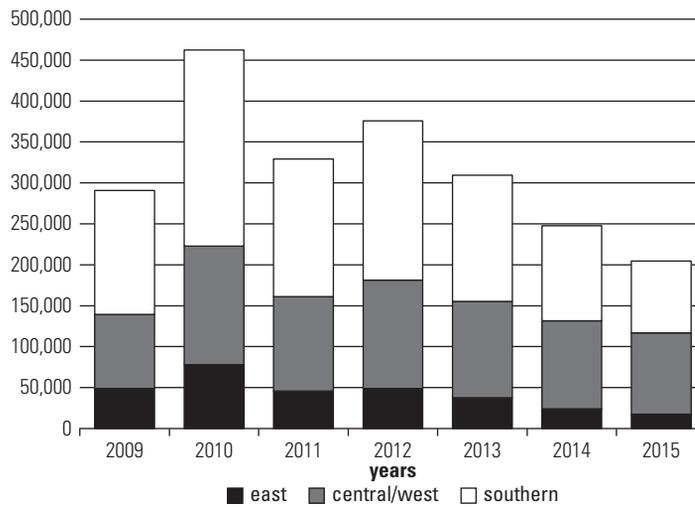
Source: Authors' calculations.

Figure 15.4: Relative Share of People Receiving ART by Region in Sub-Saharan Africa in 2011



Source: Authors' calculations.

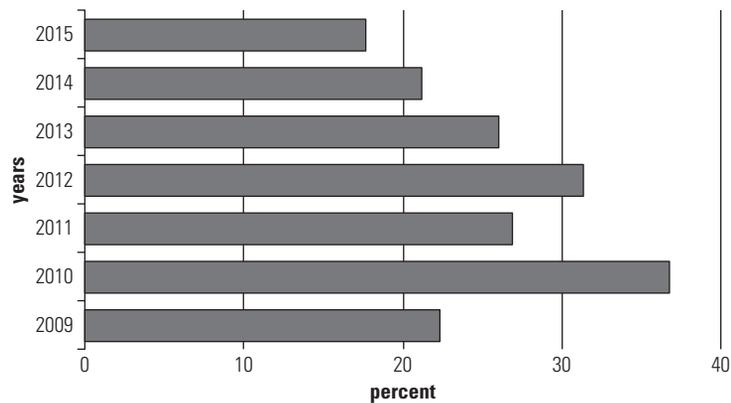
Figure 15.5: Impact of Universal Access to Treatment: Number of AIDS Deaths Averted in Sub-Saharan Africa, 2007 through 2015



Source: Authors' calculations.

reflects the achievement of universal access. Between 2009 and 2015, more than 2.2 million AIDS-related deaths would be averted.

An even more persuasive statistic is the number of AIDS-related deaths averted in Sub-Saharan Africa as a percentage of total deaths from AIDS, if universal access to ART is achieved (figure 15.6). In 2009, about 22 percent of total deaths from AIDS would be averted as a result of the ramp-up in ART coverage. This percentage increases throughout the time period,

Figure 15.6: AIDS Deaths Averted as a Percent of Total AIDS Deaths, 2009 through 2015

Source: Authors' calculations.

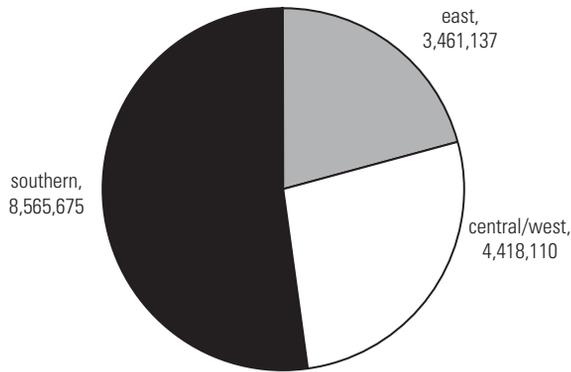
reaching a maximum of 37 percent in 2010. Thus not only does the absolute number of AIDS-related deaths averted increase over time, as shown in figure 15.5, the relative number of AIDS-related deaths averted rises as well.

Another way of examining the impact of increasing ART coverage is to calculate the number of life-years gained relative to the base scenario.⁵ Between 2009 and 2015, over 16 million life-years are gained if coverage of ART is scaled up to reach universal access by 2010 (figure 15.7). Over half of these life-years are gained in southern Africa, while 27 percent of the total life years gained occurs in Central/West Africa, and about 21 percent of the gain is in East Africa.

What is the total cost for scaling-up access to ART to achieve universal access in Sub-Saharan Africa by 2010? The resources required to meet this target start at about \$2.7 billion in 2008, as coverage begins to increase; rise to \$4.6 billion by 2010; and reach \$6.8 billion in 2015 (figure 15.8).⁶ Note that these estimates assume current rates of use of second-line therapy and do not include consideration of the impact of drug resistance. Changes in either of these assumptions could result in significant increases in total resources required for care and treatment. Other general impacts not considered here include benefits from increasing the number of orphan life-years averted and changes in the transmission rate as a result of decreases in viral loads and possible disinhibition effects.

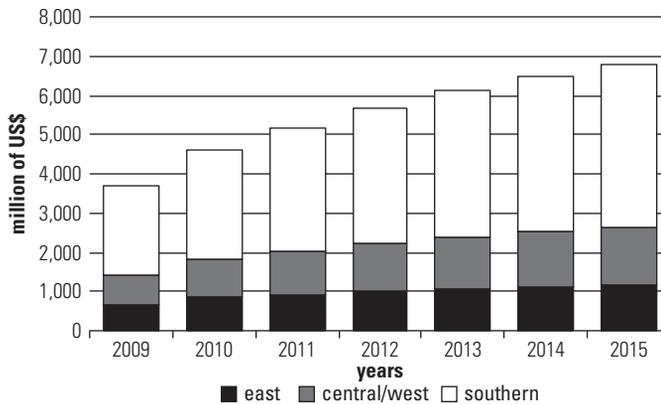
An initial cost-effectiveness analysis can be performed by dividing the additional expenditures for care and treatment between 2009 and 2015 by

Figure 15.7: Impact of Universal Access to Treatment: Cumulative Number of Life-Years Gained in Sub-Saharan Africa, 2009 through 2015



Source: Authors' calculations.

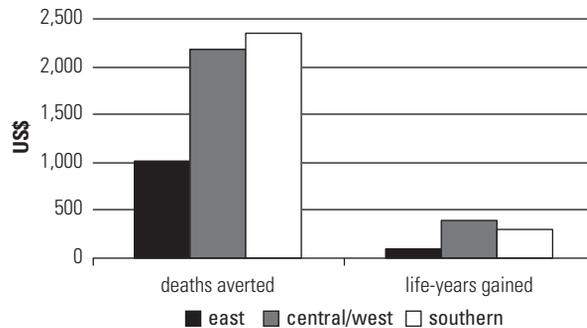
Figure 15.8: Total Resources Required for Care and Treatment in Sub-Saharan Africa, 2009 through 2015



Source: Authors' calculations.

both the cumulative number of AIDS-related deaths averted between 2009 and 2015, and the cumulative number of life-years gained between 2009 and 2015 (figure 15.9).⁷ The cost of averting one AIDS-related death is \$1,000–\$2,300 and varies by region; the cost per life-year gained is about \$400 in East Africa, about \$300 in southern Africa, and about \$90 in Central/West Africa.

Figure 15.9: Cost-Effectiveness of Achieving Universal Access to Care and Treatment by 2010 and Cumulative Cost per Deaths Averted or Life-Years Gained, 2009 through 2015



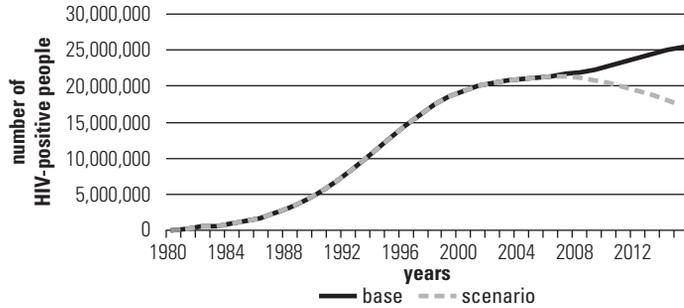
Results for the prevention scenario

If prevention interventions are scaled up to reach universal access to prevention, the number of people with HIV could drop by 47 percent, from 25 million to about 17 million in 2015 (figure 15.10).⁸ This impact is even more impressive when new infections alone are examined: if prevention interventions are scaled up to achieve universal access, the number of annual new infections would begin to decline immediately; by 2015 the number is reduced by about three-quarters, from more than 2 million to about 0.56 million (figure 15.11).

Between 2009 and 2015, a ramped-up prevention program would result in a substantial reduction in the percentage of new infections (relative to total new infections) (figure 15.12). The number of infections averted as a percentage of total new infections would decrease from about 43 percent in 2009 to about 73 percent by 2015. The largest absolute number of infections averted would be in southern Africa, where the burden of disease is greatest (figure 15.13).

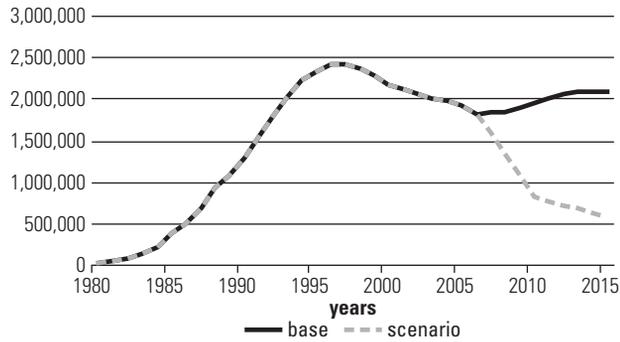
The impact of increased prevention on HIV incidence in all regions in Sub-Saharan Africa can be seen even more clearly over time (figure 15.14). In East and Central/West Africa, in the absence of any increase in prevention efforts, HIV incidence would reach levels of between 500,000 and 600,000 new infections by 2015. The impact of the increase in prevention would result in a drop by more than two-thirds in East and Central/West Africa, and by three-quarters in southern Africa.

Figure 15.10: Effect of Prevention Interventions on Number of HIV-Positive People in Sub-Saharan Africa through 2015



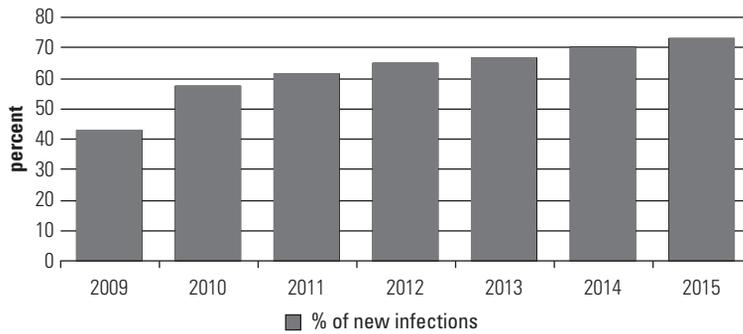
Source: Authors' calculations.

Figure 15.11: Effect of Prevention Interventions on New HIV Infections in Sub-Saharan Africa through 2011

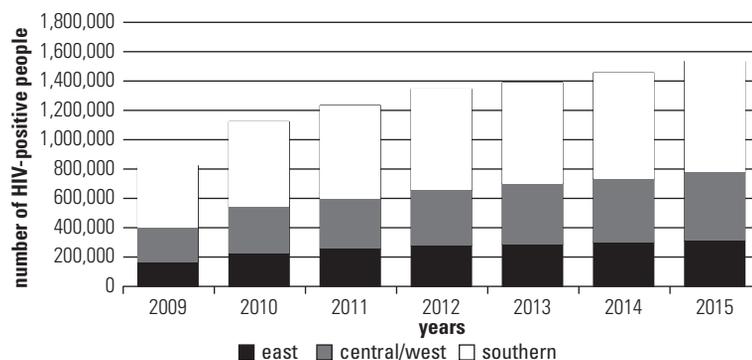


Source: Authors' calculations.

Figure 15.12: Infections Averted as a Percent of Total New Infections, 2009–15



Source: Authors' calculations.

Figure 15.13: Infections Averted due to Prevention Interventions in Sub-Saharan Africa, 2007–11

Source: Authors' calculations.

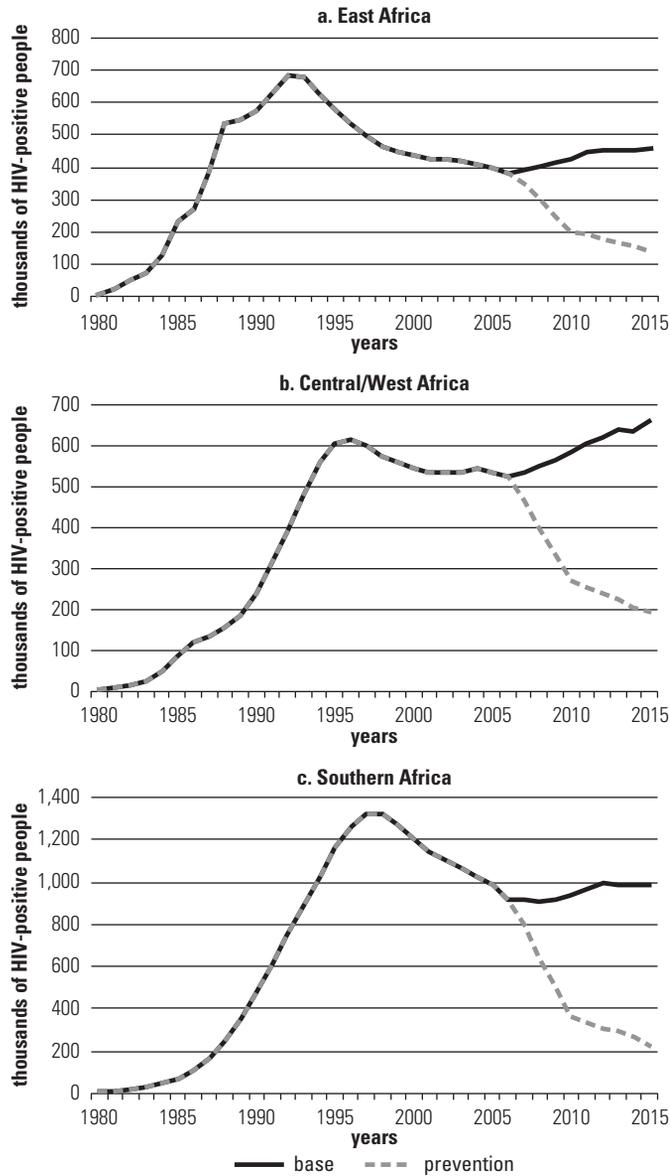
Providing the prevention interventions modeled here would cost about \$2 billion in 2007, increasing to almost \$4.5 billion by 2015 (figure 15.15). These figures do not include the costs for orphans and vulnerable children; the results for mitigation costs are discussed below.

Utilizing the information above, the incremental cost per infection averted increases from \$400 in southern Africa and about \$1,800 in the other two regions in 2009, to between \$800–\$4,000 in 2011, before returning to lower values in 2015 (figure 15.16). Note that the cost per infection averted is significantly lower in southern Africa than in the other two regions; because the disease burden is higher in southern Africa, more new infections can potentially be averted there.

To calculate the savings per infection averted, the net present value of lifetime treatment costs is calculated, and compared with the incremental cost per infection averted. The net present value of lifetime treatment costs is calculated by estimating the savings per infection averted and comparing that figure with the incremental cost of averting an infection. It is assumed that treatment starts 8 years after infection, the median time in treatment is 11 years for both first-line and second-line therapies, and the discount rate is 5 percent.⁹ Given these assumptions, the net present value of lifetime treatment costs equals \$5,659. As the incremental cost per infection averted is \$2,010 across all regions and years, this translates to a cost savings of \$3,649 per HIV infection averted.

Although scaling up prevention interventions appears to be very effective, given that countries will have limited resources, which specific interventions

Figure 15.14: Effect of Prevention Interventions on Adult HIV Incidence in Africa (by Region) through 2015



Source: Authors' calculations.

Figure 15.15: Total Resources Required for Prevention Interventions in Sub-Saharan Africa, 2008–15

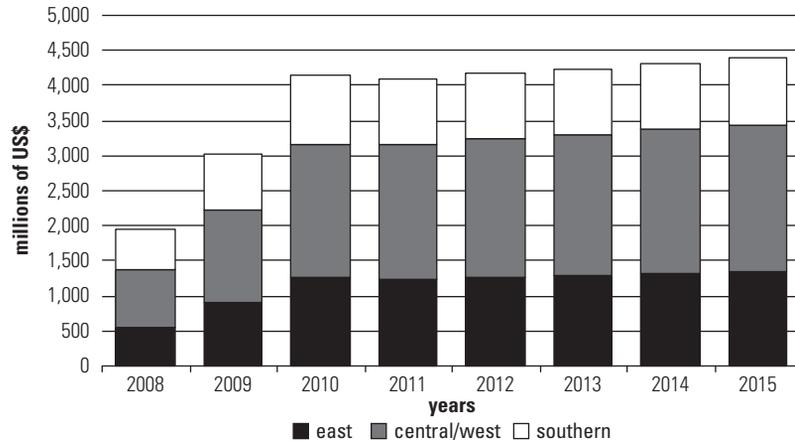
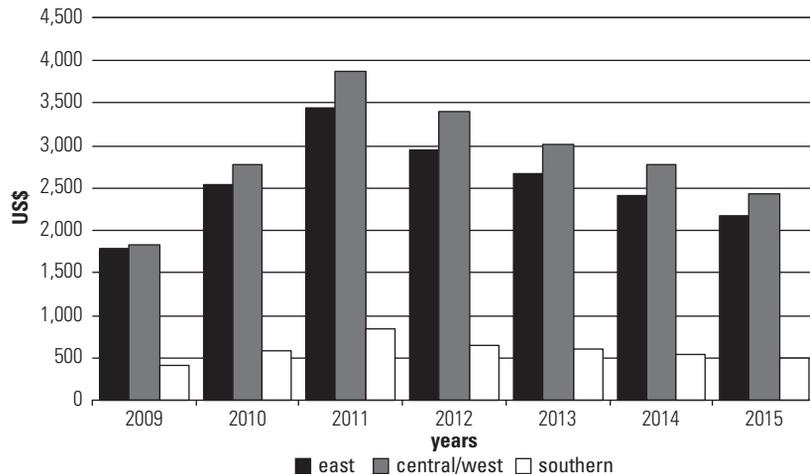


Figure 15.16: Incremental Cost per Infection Averted in Sub-Saharan Africa, 2009–15

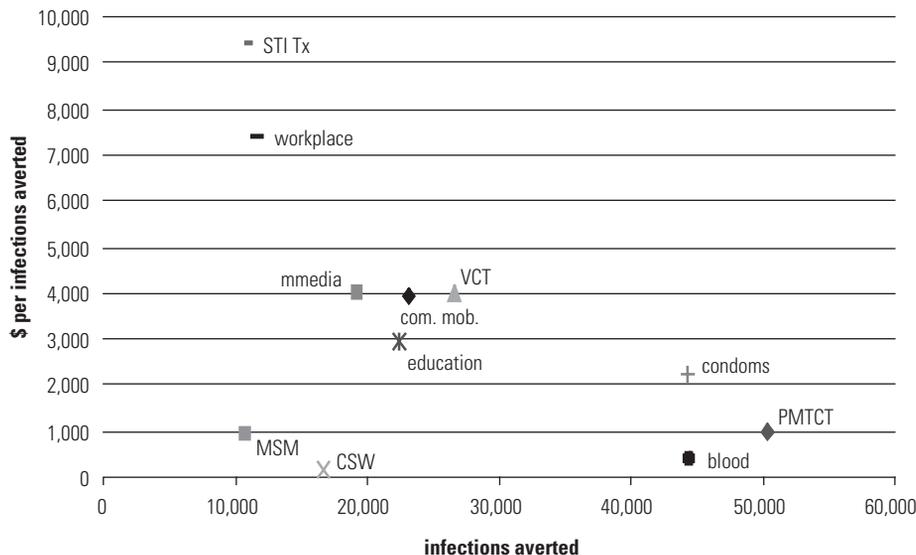


should be scaled-up first? Which interventions are the most cost-effective? Results from 11 different country-specific applications of the *Goals* model were used to calculate (unweighted) average impacts for 11 different interventions: community mobilization, mass media, voluntary counseling and testing (VCT), interventions for commercial sex workers, interventions for men having sex with men, in-school youth programs (education), blood safety, condom distribution, treatment of STIs, workplace programs, and programs to prevent mother-to-child transmission (PMTCT). These interventions were selected because they yield the most robust impact coefficients. The

simulation scaled up the full program of prevention interventions for each country to reach universal access targets by 2010; the resulting number of total HIV infections averted was then calculated. Following this step, funding was taken away from each of the 10 interventions listed one at a time (and subsequently replaced), so that the marginal impact of the intervention could be measured. These results were then combined to calculate the cost per HIV infection averted (figure 15.17).

Interventions with a cost-effectiveness ratio of less than \$1,000 per infection averted include blood safety and prevention of mother-to-child-transmission programs and interventions targeting men having sex with men.¹⁰ Interventions with a cost-effectiveness ratio of \$1,000–\$4,000 per infection averted include youth education programs, general condom distribution, use of mass media, community mobilization, and voluntary counseling and testing. The reasons behind these low cost-effectiveness ratios vary. Mass media programs, for example, are less effective than other interventions, but because they reach a large number of people and are less expensive than other interventions, they have a relatively low cost-effective ratio. Interventions for sex workers, on the other hand, have a much

Figure 15.17: Number of Infections Averted and Cost-Effectiveness Ratio by Prevention Intervention



Source: Authors' calculations.

Note: PMTCT = Prevention of Mother to Child Transmission, MSM = Men who have Sex with Men, VCT = Voluntary Counseling and Testing, STI Tx = Sexually Transmitted Infection Treatment, CSW = Commercial Sex Workers, mmedia = mass media, com mob = community mobilization.

smaller target population group, yet because the prevalence rate in this group is usually high, a large number of infections can be averted (about 18,000). Workplace programs cost about \$7,000 per infection averted and STI treatment programs about \$9,500 per infection averted.¹¹ Each intervention averts about 10,000 HIV infections.

Another way of presenting these data is by using categories shown in table 15.3A (East and Southern Africa) and table 15.3B (Central and West Africa), as the epidemic is quite different in Central/West Africa and cost-effectiveness ratios vary accordingly. These tables classify interventions by their relative cost-effectiveness ratios, as well as by their relative impact, or percentage of total infections averted. The relative impact is presented because population sizes vary among the various countries, and so a relative impact is a more accurate representation of the impact. There are three categories of cost per infection averted: low (less than \$1,000), medium (\$1,000–\$3,000), and high (more

Table 15.3A: Cross-Classification of Interventions by Cost-Effectiveness and Impact for East/Southern Africa

COST PER INFECTION AVERTED	IMPACT (% OF INFECTIONS AVERTED)		
	LOW (0–10%)	MEDIUM (10–20%)	HIGH (>20%)
Low (<\$1,000)	CSW MSM	PMTCT	Blood
Medium (\$1,000 – \$3,000)	Comm. mobilization VCT education	Condom distribution	
High (>\$3,000)	Mass media STI Treatment workplace		

Source: Authors' calculations.

Table 15.3B: Cross-Classification of Interventions by Cost-Effectiveness and Impact for Central/Western Africa

COST PER INFECTION AVERTED	IMPACT (% OF INFECTIONS AVERTED)		
	LOW (0–10%)	MEDIUM (10–20%)	HIGH(>20%)
Low (<\$1,000)	MSM	CSW	
Medium (\$1,000 – \$10,000)	Blood Condom distribution	PMTCT workplace	
High (>\$10,000)	Comm. mobilization Mass media STI Treatment education		

Source: Authors' calculations.

than \$3,000), and three categories for impact: low (0–0 percent of total infections averted), medium (10–20 percent of total infections averted), and high (more than 20 percent of total infections averted).

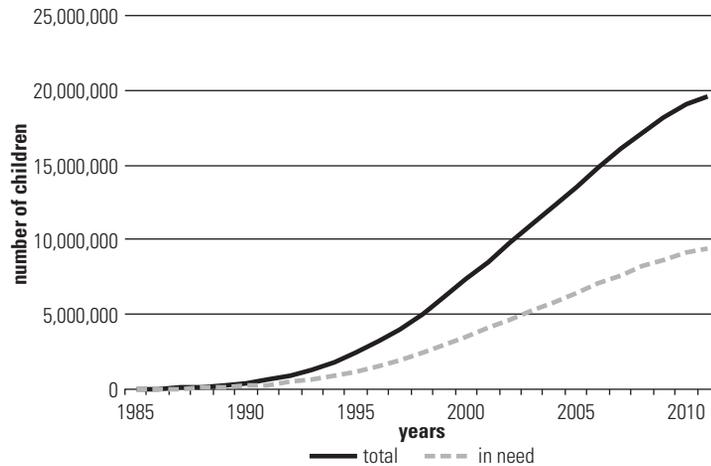
Both tables indicate that interventions targeting sex workers and men having sex with men across all of Sub-Saharan Africa are very cost-effective, with costs per infection averted of less than \$1,000. In addition, PMTCT and blood safety programs are also very cost-effective in East/southern Africa, where HIV prevalence rates are higher, and also have a substantial impact on the number of total infections averted. In Central/West Africa, these two interventions are classified in the medium cost per infection averted category, and PMTCT contributes a substantial proportion of all infections averted. In East/southern Africa, the interventions in the medium cost per infection category are community mobilization, voluntary counseling and testing, education for youth, and general condom distribution programs. The latter program, general condom distribution, has the largest relative impact, at between 10–20 percent of total infections averted. In Central/West Africa, the interventions with a medium cost per infection averted includes PMTCT and blood safety programs, as discussed above, as well as general condom distribution programs and workplace programs. Finally, those interventions with the highest cost per infection averted in East/southern Africa are mass media, STI treatment, and workplace programs, while the corresponding interventions in Central/West Africa are community mobilization, mass media, STI treatment, and education for youth.

Orphans and vulnerable children

As of 2006, there were about 43 million children under the age of 18 in Sub-Saharan Africa with one or both parents were dead.¹² Immediate family members, governments, and nongovernmental organizations, including faith-based organizations, have developed various coping mechanisms to support these children. As the number of orphans increases, however, the increased financial demands are making it increasingly difficult for these groups to meet their needs.

Figure 15.18 illustrates the impact of HIV/AIDS on the number of orphans and vulnerable children in Sub-Saharan Africa, as well as a projection of those in need of assistance. The population in need is defined as all dual orphans and vulnerable children, along with half of single orphans

Figure 15.18: Number of Orphans and Vulnerable Children due to HIV/AIDS in Sub-Saharan Africa through 2011



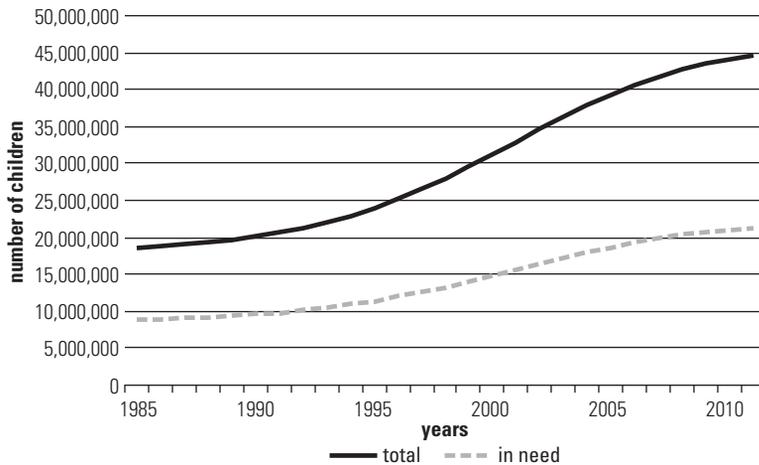
Source: Authors' calculations.

who live in households under the poverty line. As can be seen, there has been a huge increase in the number of orphans and vulnerable children because of HIV/AIDS, from zero in 1985 to just under 20 million by 2011, with about half of those children in need of assistance.

Figure 15.19 displays the total number of orphans and vulnerable children in Sub-Saharan Africa through 2011, which forms the basis for calculating the resources required for their support, as the consensus is that all orphans and vulnerable children should be supported in Sub-Saharan Africa to mitigate against any stigma that might develop otherwise. This chart shows that the number of orphans and vulnerable children increases from more than 40 million in 2006 to almost 45 million in 2011, while the number in need increases from about 19 million in 2006 to more than 21 million in 2011. Thus the number of orphans and vulnerable children has basically doubled since 1985, imposing an enormous strain on the system.

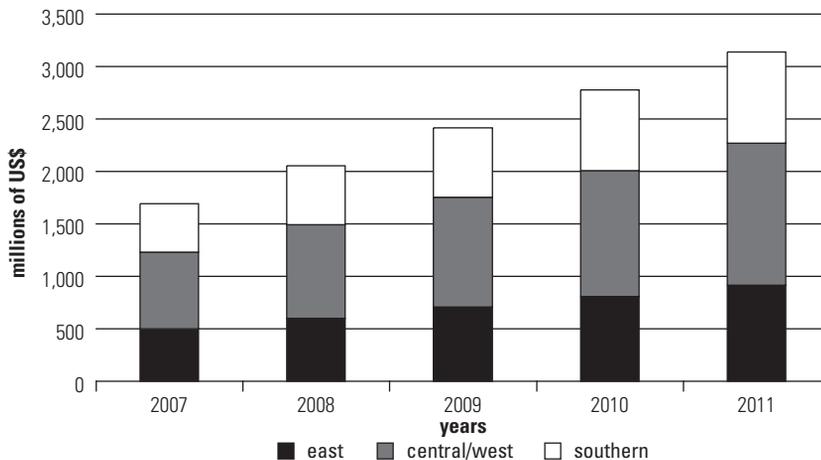
The resources that would be required to care for these children, based on scaling up the existing resources that were available in 2003, are presented in figure 15.20 by region. The final amount of resources required in 2011 includes increasing returns to scale for costs during the scaling-up period, and covers all orphans and vulnerable children who are in need of support.

Figure 15.19: Number of Orphans and Vulnerable Children in Sub-Saharan Africa through 2011



Source: Authors' calculations.

Figure 15.20: Total Resources Required for Orphans and Vulnerable Children in Sub-Saharan Africa, 2007 to 2011



Source: Authors' calculations.

By 2011, if all orphans and vulnerable children in need of support receive it, total resources required would be about \$3.1 billion, with the greatest amount required in Central/West Africa, followed by East Africa and finally southern Africa. Note that the total amount needed to support orphans and vulnerable children is about the same amount that would be required to provide universal access to treatment in 2011.

Conclusions and Recommendations

The HIV/AIDS epidemic continues to affect countries in Sub-Saharan Africa adversely, with more than 22 million people infected with HIV at the end of 2005. Since the beginning of the epidemic, lessons have been learned about the effectiveness of prevention interventions, costs of antiretroviral treatment have decreased substantially, and more funding has become available. The World Bank was interested in examining the impact of HIV/AIDS in Sub-Saharan Africa, given this new information, and applying these results to their new strategy plan, Agenda for Action 2007–11.

The results presented here suggest three possible ways in which the World Bank might have a comparative advantage in having an impact on the HIV/AIDS epidemic:

1. *Fully fund highly cost-effective interventions.* This chapter has shown that there are four highly cost-effective prevention interventions for Sub-Saharan Africa: PMTCT, blood safety programs, and outreach programs for commercial sex workers and men who have sex with men. Most of these interventions are not fully funded; for example, the most recent statistics show that only 26 percent of women are offered PMTCT services (see table 15.1 above). In addition, although national blood transfusion services report testing rates of near 100 percent, it is unclear whether donations outside these services test at the same high rates. Finally, some other funding sources, including national governments, are less interested in funding outreach programs for sex workers and men having sex with men, yet these are highly cost-effective. The World Bank could play a valuable role in filling these funding gaps.
2. *Assist in health systems strengthening to derive the benefit of increasing ART coverage.* The results here show that there is a tremendous benefit to the countries of Sub-Saharan Africa in increasing the coverage of ART. Difficulties with systemic issues in the health systems, however, have hindered a faster scaling-up of the delivery of ART. The World Bank could play an important role in strengthening health systems so that countries can deliver this treatment, particularly in view of the complementarities that might exist with other World Bank health system strengthening efforts.

3. *Increase support for orphans and vulnerable children, particularly in the education sector.* This chapter has shown that there is an enormous need for support for orphans and vulnerable children in Sub-Saharan Africa, and that this need will increase substantially in future years. Given the focus on increasing education levels that currently exists at the World Bank, complementarities between that policy and providing support for orphans and vulnerable children in the form of school fees, uniforms, and other school necessities might exist.

These three areas are where the World Bank may have a comparative advantage in providing funding, both in terms of funders' willingness to undertake the interventions and synergies with existing World Bank programs and priorities.

Notes

1. Data in this section are from UNAIDS (2006).
2. These figures have risen since 2005. South Africa announced on November 13, 2006, that 235,378 patients were receiving ART, up from 178,000 at the end of June (Maddux 2006).
3. The Estimates and Projection Package (EPP) was used in countries with generalized epidemics; the Workbook method was used in countries with concentrated epidemics. See www.unaids.org for a complete description of the models and to download the models.
4. Universal access is defined as provision of ART to 80 percent of adults and children in need of it and provision of cotrimoxazole prophylaxis to 80 percent of children in need of it.
5. Life-years gained is calculated as the sum of the difference between the total population in each year from 2009 to 2015 in the base scenario and the total population in each year from 2009 to 2015 in the prevention scenario. Recall that the prevention scenario builds on the treatment scenario, so that the effect of increasing treatment is also included in this calculation.
6. Throughout this chapter the calculation of resources required includes funding from all sources, including out-of-pocket expenditures.
7. The cost-effectiveness calculations do not take into account the cost of strengthening health care systems or the cost to the health system because of leakages.
8. These statistics do not take into account the phenomenon of concurrent partners, which may have a mitigating effect on the decrease in the number of new infections.

Behavioral disinhibition effects, which are not included here, may have a similar mitigating effect.

9. This same methodology was followed in Stover and others (2006). The latest assumptions from the UNAIDS Reference Group on Epidemiology assume 0.85 survival rate in the first year of treatment and 0.95 in subsequent years, implying a median time on treatment of 11 years for first-line therapy and 28 years for first- and second-line therapy (Stover and others 2008).
10. Although the cost-effectiveness of individual interventions is examined here, it is best to look at the impact of packages of interventions, as synergistic effects often exist between interventions.
11. Note that an STI treatment intervention here is an STI treatment outreach program, where the outcome measure is increases in STI-treatment-seeking behavior, where the effectiveness of the program is much less than an actual STI treatment program.
12. Information in this section is derived from Stover and others (2007).

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The World Bank began emergency operations in Sub-Saharan Africa for HIV/AIDS in 2000, committing more than \$1.6 billion in resources over the next eight years. By 2006 it became clear to Bank leadership that much had changed in the global response to HIV/AIDS, that countries and partners had entered a new phase, and that the Bank needed to rethink its approach and adjust to the new environment on the ground, which included technological and financial changes. A new approach was formulated and published in 2008 as *The World Bank's Commitment to HIV/AIDS in Africa: Our Agenda for Action, 2007–2011*. The Agenda for Action was based on an extensive consultative and analytical process, which produced a wide range of background analytical papers, many of which are collected in this volume.

In *The Changing HIV/AIDS Landscape: Selected Papers for the World Bank's Agenda for Action in Africa, 2007–2011*, World Bank specialists and other experts analyze aspects of the HIV challenge. Topics covered include better understanding of the epidemiological realities based on more reliable estimates and methodology; promising ways to address prevention, treatment, monitoring, and evaluation; analysis of theoretical and empirical links between HIV/AIDS and economic development; considerations of financial sustainability and economic policy; roles of the private sector and communities; and health systems aspects, including human resources for health, the links among HIV/AIDS and sexual and reproductive health, tuberculosis, and nutrition, and the importance of supply chain management. A simulation model of likely impact and effectiveness of various responses extending to 2011 completes the presentations.

The Changing HIV/AIDS Landscape is designed to contribute to the knowledge base of policy makers, program managers, researchers, stakeholders, and practitioners engaged in combating HIV/AIDS in Sub-Saharan Africa.



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