Leveraging HIV Scale-up to Strengthen Health Systems in Africa
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An unprecedented infusion of financial and technical resources in recent years has brought HIV prevention, care and treatment services to millions of people in sub-Saharan Africa. While the humanitarian benefits of HIV scale-up are evident, questions have been raised about its impact on other health services, and on broader health systems in resource-limited settings. This lively debate has enormous global importance – not only for the sustainability and long-term success of the HIV response, but also with respect to global efforts to achieve progress on a broad range of health and development indicators reflected in the Millennium Development Goals. To date, the debate regarding the relationship between HIV scale-up and health systems strengthening has generated numerous opinions but relatively little evidence.

To support a stronger, more reliable evidence base for policy-making and programmatic development, the International Center for AIDS Care and Treatment (ICAP) at Columbia University’s Mailman School of Public Health assembled a high-level meeting of leaders from international agencies, donors, implementing partners and recipient governments. Convened at the Rockefeller Foundation Center in Bellagio, Italy over three days in September 2008, meeting participants identified gaps in knowledge regarding the impact of HIV scale-up on health systems, recommended priority research questions, and suggested potential research methodology. The meeting offered participants an opportunity to share perspectives and lessons learned on strengthening health systems in the context of HIV scale-up, and to undertake preliminary planning to leverage HIV-specific programs to buttress fragile health systems.

Framing the Discussion

Three presentations framed the participants’ deliberations. Ambassador Mark R. Dybul noted that HIV scale-up represents the first time that chronic disease management has been undertaken on a broad scale in low-income countries. In addition to preserving and strengthening the health care workforce, efforts to leverage HIV scale-up to strengthen health systems must address macroeconomic policies, the health behaviors of individuals and communities, the policies and practices of leading research institutions, and the ways in which HIV-specific services are structured and implemented.

Kevin M. De Cock, director of the Department of HIV/AIDS at the World Health Organization, emphasized the long-term challenge of achieving universal access for HIV services, noting the millions of HIV-infected people worldwide who are not yet eligible for antiretroviral treatment but who will need these therapies in the coming years. In the face of such a daunting challenge, both vertical (disease-specific) programs and cross-cutting horizontal measures are needed. Echoing Ambassador Dybul’s emphasis on the sustainability of the HIV response, Dr. De Cock noted that global commitment to tackle previous “priority” diseases has often withered over time. While he noted that there is little direct evidence that HIV scale-up has denied resources to other health priorities, Dr. De Cock said it is nevertheless critical to understand why other health programs, such as maternal and reproductive health, have failed to garner the resources they merit. Promoting sound policy development to strengthen health systems will require more rigorous measurements of outcomes, although health-related policy discussions will inevitably involve value judgments.

Ruth Levine, Vice President for Programs and Operations at the Center for Global Development, stressed the need for relevant research to inform the development of policies and programs to strengthen health
systems over the next 5-10 years. Dr. Levine also noted the role of research in promoting greater accountability for HIV and other health-related expenditures. Participants were advised to ensure the vetting of proposed research methodologies by unbiased experts, and to focus on research strategies to identify policies that would be most effective in achieving both vertical and horizontal benefits. As funding for most health-related research is supplied by high-income countries, Dr. Levine cautioned against the imposition on low-income countries of donor countries’ social choices regarding the delivery, organization and financing of health care.

**Working Groups**

Meeting deliberations occurred in topic-specific breakout sessions, followed by plenary sessions in which breakout groups reported on the results of their respective discussions. In each breakout group, participants proposed priority research questions and methodologies to address various aspects of health systems strengthening in the context of HIV scale-up.

- **Human Resources.** Participants agreed that studies are needed to identify trends in the supply of key cadres of health care workers that may reasonably be linked to HIV scale-up, and to assess the degree to which HIV scale-up is having an impact on health care access, quality and/or outcomes in diverse areas (e.g., HIV, malaria, tuberculosis, maternal and child health). Research was suggested to determine whether HIV scale-up has affected staff retention and to identify policies and practices associated with improved retention and productivity of health workers. Participants recommended research to map the skills and competencies required to deliver the comprehensive package of HIV prevention, care, and treatment services and to assess whether such skills and competencies overlap with those relevant for management of conditions relevant to other health-related Millennium Development Goals. Studies were proposed to measure the benefits and costs associated with incremental addition of non-HIV health services (e.g., reproductive health) to HIV service delivery.

- **Financing and Payments.** To assess the impact of donor policies on national program management, implementation and health outcomes, participants recommended research to identify national characteristics that predict the ability to use donor support most effectively, as well as a mapping exercise to identify the types of services that are currently allowable under donor policies. Economic research was suggested to gauge the costs associated with the delivery of comprehensive HIV services, expenses associated with the incremental addition of non-HIV services in HIV service settings, and economies of scale realized as HIV services are expanded. Participants also recommended studies to assess the impact of various payment policies (such as performance-based compensation to providers or requirements that patients pay certain out-of-pocket costs) on medical outcomes. Analytic research was recommended to identify optimal strategies for predictable, long-term financing for HIV and other chronic care management.

- **Infrastructure.** Quantitative and qualitative research was recommended to assess clinic-level and district-level trends as HIV services are brought to scale, such as morbidity and mortality (e.g., maternal mortality, under-5 mortality, life expectancy); clinic waiting times; utilization of services for malaria, tuberculosis, sexually transmitted infections, and maternal and child health. Participants proposed periodic, standardized national surveys to determine trends in service utilization and quality over time for both HIV and non-HIV care, as well as evaluation, formative and intervention research to assess the impact of HIV funding on the delivery of primary health care.
Participants suggested an evaluation study of a standardized package of biomedical and behavioral chronic disease management interventions for children and adults.

- **Monitoring and evaluation and health information systems.** Participants proposed a descriptive analysis of data management strategies at the facility and district levels, including documentation of best practices and an assessment of the degree to which HIV funding is introducing data collection or management systems that are being used for other diseases. It was recommended that studies document whether civil society has become more engaged in monitoring and evaluation activities, and whether civil society involvement is influencing health priorities and programs.

- **Patient and Provider Behaviors.** Studies were suggested to document whether models of HIV-related peer or community support organizations (such as The AIDS Service Organization in Uganda, or Treatment Action Campaign in South Africa) have influenced experience with other diseases. Participants also proposed a prospective study to monitor behavioral and biomedical outcomes associated with the adaptation of a peer support and multi-disciplinary HIV disease management strategy diabetes and/or childhood asthma.
Abstract

In September 2008, the International Center for AIDS Care and Treatment Programs (ICAP) at Columbia University's Mailman School of Public Health convened an expert consultation to develop a prioritized research agenda to promote evidence-based health systems strengthening in the context of HIV scale-up. In order to support this process, a literature review was conducted and synthesized as a conference white paper. Based on available evidence, the following observations were made:

- While the HIV/AIDS epidemic has severely strained vulnerable health systems in developing countries, HIV scale-up has attracted unprecedented attention and resources to efforts to strengthen health systems.

- HIV scale-up is driving a dramatic expansion of financing for health programs in low- and middle income countries and has the potential to promote the harmonization and alignment of development aid with nationally owned and determined HIV strategies.

- The degree to which HIV scale-up may be drawing resources from other health priorities is unclear.

- Preliminary evidence suggests that HIV service expansion may increase utilization of non-HIV related services and advance broader health goals. The impact of scale-up is heterogeneous and contextual, but in some settings, HIV scale-up is contributing to expansion of control efforts for related conditions, enhancing utilization of sexual and reproductive health services, promoting access to safer water and nutrition, improving infection control in health care facilities, promoting task-shifting and health worker training, enhancing infrastructure, record-keeping, and laboratory services, and facilitating a shift from an episodic model of care to a continuity model of care.

- Scale-up of HIV programs has had a complex impact on human resources for health. Reports of “internal brain drain” point to the movement of clinicians from the public sector to higher-paying jobs offered by non-governmental organizations providing HIV services. Other anecdotal reports suggest reduced “external brain drain” as clinicians remain in or return to their own countries, drawn by higher salaries and the ability to make significant impact on local and national epidemics. Increased access to care and treatment for health care workers may also preserve their health and productivity, reducing absenteeism and attrition.

- HIV scale-up is contributing to greater flexibility in the interpretation of intellectual property provisions, enhancing drug manufacturing capacity in some developing countries, and strengthening country-level systems for procurement and supply management.

- The programs and services associated with HIV scale-up are supporting important attitudinal shifts in low- and middle-income countries, including greater awareness of issues associated with sexual and reproductive health, programs to empower women and prevent sexual violence, health services for stigmatized populations, and the engagement of patients and affected communities in health care delivery.

- Although it is clear that HIV scale-up is having profound effects on health systems, available evidence does not permit an assessment of the impact of such effects on health care access or medical outcomes for non-targeted conditions. Although methodologically challenging, obtaining a clearer understanding of the actual impact of HIV scale-up on health systems remains a pressing research priority.

- Research to identify optimal delivery models for HIV prevention, care, and treatment services – implementation approaches that enhance rather than weaken health systems – is an equally high priority endeavor.
Leveraging HIV Scale-up to Strengthen Health Systems in Africa

Introduction

This decade has witnessed a remarkable response to the global HIV epidemic – a six-fold increase in spending on HIV programs in low- and middle-income countries (LMIC), a 10-fold rise in the number of people receiving antiretroviral drugs, and declines in global HIV incidence and mortality.1 While the urgent need to respond to the HIV epidemic has attracted widespread support, this unprecedented scaling-up of disease-specific health services has also triggered a lively debate regarding the impact of such initiatives on fragile health systems. Critics argue that massive investments in HIV programs are skewing health priorities in LMIC,2 3 4 while others suggest that HIV scale-up may yield substantial benefits for broader health systems.5 6 7 8

Recognizing the importance of a reliable evidence base for policy and programmatic development, and the need for rigorous data on the impact of HIV scale-up on weak health systems, the International Center for AIDS Care and Treatment (ICAP) at Columbia University’s Mailman School of Public Health assembled a high-level meeting of leaders from international agencies, donors, implementing partners and governments. Convened at the Rockefeller Foundation Center in Bellagio, Italy in September 2008, participants identified gaps in knowledge, recommended priority research questions, and suggested research methods to evaluate the broader impact of HIV-specific programs on health systems. This report briefly reviews available evidence on the effects of HIV scale-up on health systems and describes the priority research projects identified by the participants in the Bellagio consultation.

The relationship between HIV scale-up and health systems has generated opinions and hypotheses but minimal rigorous data.9 This is consistent with the more general debate on the relative merits of “vertical” versus “horizontal” health programs,10 11 which has given rise to sharp differences of opinion but rather limited evidence.12 As the discussion below illustrates, where data do exist, it tends to be limited to individual projects or donors, underscoring the need for additional well-designed research to ensure that important debates on global health policy are based as much as possible on sound evidence.13

As HIV programs have expanded in recent years, health systems have undergone other important changes as a result of broader macroeconomic and political factors, major global and regional health initiatives (such as the Global Alliance on Vaccines and Immunization and the U.S. President’s Malaria Initiative), and growing global attention to the broad array of health-related Millennium Development Goals (MDGs). In such a rapidly changing environment, isolating the unique effects of HIV scale-up on health systems in LMIC is challenging.

A clear, albeit unquantifiable, effect of HIV scale-up has been to elevate health systems issues on the global agenda. Proponents of HIV programs are well aware that the impact of these initiatives will be limited by health systems weaknesses and bottlenecks. At the outset of efforts to bring HIV services to scale earlier this decade, proponents of HIV programs underscored the need for substantial strengthening of health systems.14 As the International Treatment Preparedness Coalition recently observed, “HIV/AIDS advocates are, by definition, health systems advocates.” Detractors of disease-specific programming likewise advocate for broader attention to health systems and to basic preventive and

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12 A number of research initiatives are underway to gather evidence relevant to the debate on the relative merits of vertical and horizontal programming (see WHO, 2008a). For a discussion of existing evidence on the merits and limitations of disease-specific programs with respect to health systems strengthening, see Mills, 2006. 13 El-Sadr 2007. 14 WHO/UNAIDS 2003.
personal care services. One effect of such widespread advocacy has been to push the historical pendulum back towards “horizontal” health systems. The U.K. Department of International Development, U.N. agencies, the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM), the President’s Emergency Fund for AIDS Relief (PEPFAR), the G8, and others have recently prioritized health systems strengthening, in some cases committing substantial funding.

This review adopts an expansive view of “HIV scale-up.” Consistent with the Political Declaration on HIV/AIDS, adopted at the 2006 High Level Meeting on HIV/AIDS at the United Nations General Assembly, it aims to examine the impact of expanding the broad array of services for HIV prevention, care, treatment, and support, exploring not only the impact of specific health sector interventions – such as antiretroviral therapy (ART) and prevention of mother-to-child HIV transmission – but also the effects of scale-up of harm reduction programs for injection drug users, school-based HIV prevention and sexuality education, and nutrition and social support programs for children orphaned or made vulnerable by HIV/AIDS.

Our review summarizes evidence of the impact of HIV scale-up in six different areas pertaining to health systems. The first five utilize the standard taxonomy of the World Health Organization’s Framework for Action on health systems, while the sixth is adapted from Roberts et al.15

- Human resources
- Health financing and payments
- Infrastructure and clinical services
- Monitoring and evaluation, strategic planning, and evidence-based decision-making
- Medical products and technologies
- Health behaviors

An extensive literature review was undertaken to assess available evidence on the effect of HIV scale-up in each of the six areas above. Using standard Internet search engines, the review analyzed results for searches on “HIV and health systems” and “HIV scale-up and health systems.” Individualized internet searches were undertaken with respect to each of the six components of the health system taxonomy used for this review. The process also included detailed reviews of key websites, including those of the World Health Organization (www.who.int), UNAIDS (www.unaids.org), PEPFAR (www.pepfar.gov), GFATM (www.theglobalfund.org), Center for Global Development (www.cgdev.org), and Henry J. Kaiser Family Foundation Daily HIV/AIDS Report (www.kaisernetwork.org).

In addition to the literature review, interviews were conducted with 10 key informants with expertise in important aspects of HIV scale-up. Informants included HIV researchers in developing countries, representatives of international donors, academic experts in the field of global health, experts in health workforce issues in resource-limited settings, and representatives of leading multilateral health organizations.

Although this review aimed to be as exhaustive as possible, it nevertheless has certain inherent limitations, due in part to the scarcity of available information. Most of the data reviewed pertains to individual

projects and programs, not all of which is necessarily generalizable. Some of the data derive from
abstracts rather than fully reported studies, and no meta-analyses have been published to date that iden-
tify key patterns or weigh available evidence. And publication bias would suggest that experiences where
HIV scale-up has a negative impact on health systems may not be reported with the same frequency as
more “positive” experiences.

During the Bellagio consultation, participants in the expert consultation built on this work to identify
outstanding questions and knowledge gaps regarding health systems strengthening in the context of HIV
scale-up. Participants agreed on recommendations for future research directions to expand the evidence
base for decision-making to strengthen health systems while accelerating the scaling-up of HIV preven-
tion, treatment, care and support services.

**Human Resources**

HIV has most heavily affected sub-Saharan Africa, swiftly erasing decades of development gains in the world’s
poorest region. Although sub-Saharan Africa accounts for more than two out of three people
living with HIV/AIDS (PLWHA) worldwide, the region is home to only 3% of the world’s health
care providers and is responsible for only 1% of global health spending. At the same time that health
workers are needed most to aid their communities and countries, HIV itself is depleting health systems of
critical workers due to illness and death, creating a vicious cycle that magnifies the region’s human
resource crisis. In a recent survey of two public hospitals in South Africa, one in seven nurses tested HIV-
positive, with one in five HIV-infected health workers having CD4 counts under 200. Modeling
suggests that health systems in Africa may lose 20% of their health workers to HIV/AIDS in the coming
years.

The need to provide HIV services to millions is also placing unprecedented strains on African health
systems, already the world’s most overburdened. Indeed, the Africa Working Group of the Joint
Learning Initiative on Human Resources for Health and Development terms HIV/AIDS “the straw that
broke the camel’s back” in Africa.

This section examines the ways that HIV scale-up appears to be affecting the quantity, quality and distrib-
tution of human resources for health in sub-Saharan Africa.

**Advocacy for Human Resources**

HIV scale-up has heightened attention to the human resource challenge in sub-Saharan Africa.
Confronted with insufficient resources to sustain a broad-based expansion of HIV services, African health
ministers and other leaders have gathered numerous times in the last several years to declare their
commitment to an expansion of human resources for health in the region. Attendees at the First Global
Forum on Human Resources for Health in Kampala in March 2008 cited the “devastating impact that
HIV/AIDS has had on health systems and the health workforce” in adopting the Kampala Declaration
and Agenda for Global Action, which called on governments and development partners to take an
number of high-priority steps to build human capacity for health in developing countries.

Although designed to address broad issues of health workforce capacity, the Global Health Workforce
Alliance (GWHA) specifically cites the urgent burdens associated with HIV/AIDS as a primary motivation
for its work. ESTHER (Ensemble pour une Solidarité Thérapeutique Hospitalière en Réseau), which

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twins health facilities in developing countries with European hospital facilities to expand expertise and equipment in low-income settings, is similarly motivated by the desire to expedite HIV scale-up. Some of the countries most heavily affected by HIV/AIDS have taken steps to address their human resource challenge;24 Zambia, for example, has developed a comprehensive, five-year framework to guide and facilitate efforts to build human resource capacity for health, and Malawi has likewise developed a 10-year strategic plan to build human resources for health. Botswana has commissioned a health workforce planning process that expressly integrates strategies for HIV/AIDS and the broader health system through 2016.25

Training

Substantial numbers of additional health workers are needed to ensure achievement of the health-related MDGs.26 The GWHA estimates that annual outlays of $2.6 billion are needed over 10 years to train an additional 1.5 million health workers in Africa.27 While training programs alone will not fully address the multi-dimensional nature of the human resource crisis in low-income countries, more effective training and retention strategies are clearly an urgent necessity.

Prompted by the HIV crisis, donors and countries have taken steps to strengthen clinical training capacity. PEPFAR, for example, provided nearly $350 million in capacity-building assistance by 2007, including training and support for human resource networks.28 Examples include a partnership between PEPFAR and the Hanoi School of Public Health to increase the number of professionals who receive advanced degrees in public health.29 In Rwanda, PEPFAR funds have been used to enhance the national nursing curriculum. In response to the HIV/AIDS crisis, Malawi developed its Emergency Human Resources Plan to expand training capacity by more than 50%. To contribute to HIV scale-up, the Fogarty International Center for Advanced Study in the Health Sciences at the U.S. National Institutes of Health supported creation of a masters program in public health in Haiti and research training programs in eight developing countries. And PEPFAR has recently committed to training an additional 140,000 health workers.

Training initiatives supported by HIV scale-up are addressing issues that extend beyond the provision of HIV services. According to health care providers in Argentina, HIV scale-up has resulted in capacity-building trainings for health workers on such topics as sexual diversity, gender and substance dependence.30 Clinical training supported by HIV scale-up is increasing capacity in clinical settings to perform basic functions, such as physical examinations, patient histories, monitoring of pediatric growth and development, patient education, and the like. Whether these training initiatives have improved clinical outcomes for non-targeted conditions is not yet known.

Task-shifting

WHO and PEPFAR are actively promoting efforts to maximize the effectiveness of existing human resources in the health sector by shifting clinical tasks from more to less specialized workers.31 32 This approach has been successful for non-HIV-related care in both high- and low-income settings.33 For example, studies have found that use of lay workers has improved rates of tuberculosis treatment completion, immunization and exclusive breastfeeding.34 35

Twenty-eight of 73 LMIC reporting to WHO in 2007 said they had a national policy on task-shifting.36 Several – including Ethiopia, Kenya, Malawi, Uganda, Mozambique, and Zambia – have taken steps to

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promote task-shifting as a strategy to expedite the scale-up of HIV services in the face of severe human resource limitations. In a rural district of Malawi, shifting responsibilities for HIV counseling and testing from nurses to PLWHA quadrupled local testing capacity, according to a study by Médics Sans Frontiéres; the same study found that by shifting antiretroviral consultations from physicians to medical assistants, nurses and PLWHA, local clinics were able to meet ART scale-up targets five years earlier than would have been possible with a physician-only approach. In Ethiopia, coverage of HIV counseling and testing services rose nearly six-fold between 2005 and 2007 after responsibilities for administering such services were shifted to community health workers. In Rwanda, implementation of task-shifting to nurses in the administration of antiretrovirals reduced the demand on physicians’ time by 76% between 2005 and 2007.

Although this review did not identify the extent to which task-shifting innovations as a result of HIV scale-up may be affecting practice with respect to other health conditions, the extension of human capacity for HIV scale-up may relieve perceived pressures on health care personnel to gravitate from non-HIV-related services to HIV/AIDS care. Similarly, lessons learned from HIV scale-up may promote the use of task-shifting and multidisciplinary care for non-HIV health services.

**Workforce Policies**

The out-migration of health workers trained in African countries has been extensively documented. It has been suggested that the HIV epidemic has accelerated this “brain drain” by increasing workloads, demoralizing workers, and exposing workers to the risk of infection. Some contend that the push toward scaling up HIV treatment is encouraging some health care personnel to enter HIV-related administrative positions, reducing their availability to contribute to the delivery of clinical services. By contrast, others have asserted that HIV scale-up is helping reverse the loss of health care workers by improving worker health, morale, remuneration and work environment.

The human resource crisis in African health sectors has underscored the need for sound public policies to build and preserve health worker capacity. In collaboration with the Zambian Ministry of Health, PEPFAR is supporting a physician retention program for physicians in rural areas, providing incentives such as housing, salary enhancements, transportation, and educational assistance for the physicians’ children. A similar approach has been adopted by the Ministry of Health in Namibia, which, among other incentives, provides an extra month’s pay on the health worker’s birthday. Several countries have encouraged retired clinicians, particularly nurses and midwives, to rejoin the workforce. While financial incentives play a key role in preserving human resources for health, professional medical organizations emphasize the additional importance of non-financial incentives, such as increased worker autonomy, flexible work schedules, and formal recognition of work.

In addition to preserving the broader national supply of health workers, workforce policies often aim to influence the distribution of workers within a country. The above-noted initiatives by Zambia and Namibia, for example, seek to ensure sufficient health worker capacity in underserved rural areas.

**Worker Health and Safety**

The scale up of HIV services has the potential to significantly lessen worker attrition and absenteeism by preserving the health and productivity of HIV-infected workers. In 2005, the World Health Assembly endorsed the “provision of care and treatment for health personnel affected by HIV/AIDS” as a strategy...
to buttress health system capacity. In Malawi, the GFATM supports antiretroviral treatment for more than 1000 health personnel, four times the number of clinicians whose salaries are funded to provide HIV care and treatment.

As studies in Zambia indicate that death is the cause for 38% of worker departures from the health system, improvements in the health, longevity and quality of life of health workers could potentially mitigate the epidemic’s vicious cycle in health systems. Among tea workers in Kenya, for example, introduction of ART was associated with a sharp increase in productivity. Anecdotal experience suggests that scale-up of HIV services often improves the morale of health care workers, potentially contributing to improved worker retention.

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**Recommended Research to Inform Policy-Making on Human Resources in the Context of HIV Scale-Up**

Participants in the Bellagio consultation identified the following priority research questions to build and preserve human resources for health in the context of HIV scale-up.

1. What trends in the supply of key cadres of health care workers may reasonably be tied to HIV scale-up? Is task-shifting having an impact on health care access, quality and/or outcomes (a) For HIV? (b) For malaria? (c) For TB? (d) For maternal and child health?

2. Has increased funding for HIV services had an impact on staff retention? What policies or practices (including but not limited to remuneration) are associated with improved retention of health workers?

3. What are the skills and competencies needed to deliver the comprehensive package of HIV prevention, care and treatment services? How do such skills and competencies overlap with those required for management of conditions relevant to other health-related Millennium Development Goals?

4. What are the benefits and costs associated with incremental addition of non-HIV health services on HIV service delivery (i.e., reproductive health, others)?

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Health Financing and Payments

HIV scale-up has significantly expanded public sector health financing in LMIC, and overall development assistance for health grew from $6 billion in 2000 to $14 billion in 2005.50 A precise assessment of the impact of HIV-related financing on health systems is not yet available,51 and experts caution that HIV funding may be “crowding out” other health programs.52 Moreover, the durability of recent increases in health financing is uncertain, at best, in light of the recent global financial crisis and economic downturn.

Financing for health involves not only the level and nature of expenditures flowing into health systems, but also the means by which individual providers are compensated for the services they deliver. As this section describes, HIV scale-up has been accompanied by innovations in health care payments, although the degree to which practice in the HIV field is driving experimentation in general health care financing is not yet clear.

**Domestic Health Spending**

African leaders, declaring AIDS to be a “state of emergency,” committed in the 2001 Abuja Declaration to devote 15% of their annual budgets to improving the health sector. Although only five of the 53 African countries that endorsed the Abuja Declaration had by 2005 achieved the 15% target, the proportion of national budgets in Africa allocated to health rose from 7.6% in 2000 to 8.8% in 2005.53

While some economists note that as public sector health expenditures rise, private sector health expenditures tend to drop, even in LIMC,54 there is evidence that HIV scale-up has contributed to increasing domestic public-sector outlays for health in Africa and other regions.55 Among LIMC, per capita domestic spending on HIV/AIDS from all sources more than doubled between 2005 and 2007.56 Some countries that led the way in HIV scale-up have implemented striking increases in overall public sector health spending; the percentage of the national budget devoted to health rose from 8.3% in 2000 to 18.2% in 2005 in Botswana, from 7.3% to 16.6% in Malawi, and from 8.2% to 16.9% in Rwanda.57 There are fewer data on private-sector health expenditures in these countries, and the impact of increased public-sector financing for health on total health expenditure is not well-documented in the context of HIV scale-up.

**International Health Financing**

As health-related development assistance has increased in recent years, HIV/AIDS has accounted for a growing share of such assistance, rising from 16% in 2000 to 43% in 2005. However, even as the proportion of overall health assistance devoted to HIV programmes has risen, non-HIV-related health assistance has also sharply increased. Between 2000 and 2006, non-HIV-related health assistance from bilateral donors rose by more than half.58 These patterns suggest that the global response to the HIV epidemic may be fueling an overall increase in international health financing.

HIV scale-up has helped generate major new resources for efforts to control malaria and tuberculosis. The Global Fund, the creation of which is often linked to former UN Secretary-General Kofi Annan’s 2001 call for a “global AIDS war chest”59 had generated $4.2 billion in funding for initiatives to address TB and malaria by April 2008.60 Various HIV-specific organizations, such as the Global Business Coalition on HIV/AIDS, have expanded their mission to include TB and malaria.

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HIV scale-up is specifically motivating donors to increase support for health systems strengthening. For example, the imperative to bring HIV services to scale motivated the U.K. government to launch IHP+, a seven-year, $11.8 billion initiative to strengthen health systems in developing countries. The Global Fund, which recently invited countries to submit proposals for health systems strengthening as a component of addressing the Fund’s three target diseases, is supporting Malawi’s six-year Emergency Human Resources Program, along with the UK Department for International Development. The Global Fund estimates that 35% of disbursed funds to date have gone to activities relating to health systems strengthening.

**Harmonization and Alignment**

More than 120 countries, as well as leading multilateral and international civil society organizations, have endorsed the Paris Declaration on Aid Effectiveness. The Paris Declaration commits signatories to work toward the harmonization and alignment of development aid with nationally determined strategies and mechanisms and to improve the management of development assistance for results.

The HIV response has promoted the aims of the Paris Declaration through broad-based endorsement of the Three Ones principles, which provide for a single national strategic framework, a single national AIDS governing body, and a single AIDS monitoring and evaluation framework for all partners. According to country reports to UNAIDS in early 2008, significant progress has been made in adherence to the Three Ones principles by diverse stakeholders operating in countries.61

A comparative analysis of the three leading AIDS funders by the Center for Global Development found that while PEPFAR is more efficient in bringing programs to scale, the Global Fund and the World Bank work more closely with national governments in support of national strategies.62 However, a separate evaluation by the Institute of Medicine gave PEPFAR relatively high marks for its coordination with national strategies and mechanisms.63 An analysis of the effects of donor policies in Mozambique, Uganda and Zambia found that parallel reporting systems and information requirements from donors often place considerable burdens on low-income countries.64 Concerns have also been expressed about the possibility that the Global Fund’s mandated Country Coordinating Mechanisms might undermine national AIDS coordinating bodies.

Although it is impossible to quantify the effect of HIV scale-up on broader efforts to promote harmonization and alignment of development efforts, the fact that HIV assistance now constitutes such a substantial percentage of overall development aid would suggest that the momentum toward adherence to the Three Ones may have a favorable effect on the development field as a whole. In Africa, a growing number of countries report harmonization and alignment of development aid generally.65

**Risk Pooling**

As a general rule, private health coverage schemes are poorly developed in the countries that have been most heavily affected by HIV/AIDS.66 Social health insurance accounts presently cover only about 1% of health spending in low-income countries.67 Given the often-high levels of private spending on health services in LMIC – out-of-pocket payments account for an estimated 70% of health spending in low-income countries68 — it has been suggested that a more rational means of ordering health financing in resource-limited countries would be to pool out-of-pocket spending by the poor into pre-paid insurance schemes that could be regulated and subsidized by government. Although such schemes remain rare, covering only a fraction of low-income people in need of health services worldwide, they do exist in several countries, including India, Nigeria, South Africa, and Uganda.69

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A recent study by Family Health International found that mutuelles are helping to expand access to HIV care in Rwanda. The same is presumably true in Argentina, Mexico and other countries that have promoted risk pooling in recent years. However, the degree to which such mutual health organizations are financing HIV care is unclear; it is also uncertain whether HIV scale-up is increasing investments in risk pooling or merely benefiting from their existence.

**Performance-based Financing**

Payment strategies are a common technique to influence the range and quality of health services. Performance-based financing can occur at a system level (e.g., performance indicators for Global Fund grants) or with respect to individual providers (e.g., by linking pay to performance). At a system level, the Global Fund is recognized as an innovator in performance-based financing, with funding renewals tied to success in achieving country-owned targets. According to results from 130 countries that received Global Fund grants, 75% of countries met their targets, and 21% of countries failed to meet agreed targets but demonstrated the potential to achieve these targets in the future.

International experience suggests that linking provider pay to performance may help improve worker performance and improve health outcomes. Strong regulatory oversight, record-keeping systems, and clinical monitoring protocols are typically needed to implement performance-based reimbursement in clinical settings. The degree to which HIV scale-up is encouraging the use of performance-based reimbursement schemes is not yet apparent. In Rwanda, a national outpatient incentive payment scheme aims to increase the frequency with which providers deliver specific HIV-related services. Recent surveys of health workers in three districts in Zambia found that 21%-55% of providers had received financial incentives for the provision of HIV interventions, compared to 7% who had received incentives to deliver non-HIV-related services.

**User Fees**

The World Bank and the International Monetary Fund have supported user fees as a way to strengthen health systems and enhance the ownership of consumers in their own health care. Critics, however, charge that user fees deter utilization of essential services, and available evidence suggests that user fees, however small, reduce adherence to antiretroviral treatment. As a result, HIV programs generally emphasize services that are free of charge. More than 90% of countries have policies providing for free antiretroviral therapy, although civil society researchers say patients are often required to cover co-payments for medications to cover opportunistic infections, as well as some laboratory tests, radiology exams, and other diagnostic interventions. The degree to which the emphasis on free access to HIV treatment is influencing payment policy and practice with respect to other health services is not clear.

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Recommended Research to Inform Policy-Making on Health Care Financing and Payments in the Context of HIV Scale-Up

Participants at the Bellagio consultation identified the following priority research questions on health care financing and payments in the context of HIV scale-up.

(1) What is the impact of donor policies on national program management, implementation and health outcomes?

(2) What are the costs associated with delivery of comprehensive HIV services?

(3) Can different ways of paying for health care services impact health outcomes?

(4) What are optimal mechanisms for financing health services that require predictable, long-term support?

(5) What is the impact of HIV scale-up on financing for non-HIV services?

Infrastructure and Clinical Services

This section explores what is known, and still not known, about the broader systemic effects of HIV scale-up on overall health service utilization, the provision of clinical services for conditions other than HIV, the provision of health services to specific populations, laboratory and pharmacy services, and the development of systems for continuity of care.

Overall Health Service Utilization

In a widely noted article in *Foreign Affairs*, journalist Laurie Garrett asserted, “[E]fforts to combat HIV/AIDS have so far managed to bring more money to the field but have not always had much beneficial impact on public health outside their own niche.”78 Until recently, the limited evidence that was available suggested that HIV scale-up had no impact on utilization of non-HIV-related services.79

However, recent preliminary data suggests that HIV scale-up can result in overall increases in utilization of non-HIV-related health services, promoting improved health outcomes beyond those specifically addressed by HIV programs. Family Health International found that utilization increased significantly for 17 of 22 non-HIV related health services after integrated HIV care was introduced in 30 primary care centers in Rwanda. Notable increases were found for antenatal care utilization, delivery of newborns in health care settings, vaccinations, and screening for sexually transmitted infections.80

Hospitalization

HIV/AIDS has strained hospitals in the most heavily affected countries. In a number of countries, half or more of hospital patients are HIV-positive.81 Such statistics are frequently cited by those who are concerned that HIV/AIDS (as opposed to HIV scale-up) is hampering the ability of health systems in high-HIV-prevalence countries to adequately address other health concerns, including those that relate to the non-HIV-related health MDGs.

Scale-up of HIV treatment is likely to significantly mitigate the effects of HIV/AIDS on hospital utilization. In the U.S., introduction of highly active antiretroviral therapy (ART) in the mid-1990s was associated with marked declines in rates of HIV-related mortality and hospitalization. This same phenomenon is now being observed in developing countries. According to recent interviews with government officials, health care providers, and PLWHA in six countries in Africa, the Caribbean and Latin America, ART scale-up in recent years has relieved demand for hospital beds, emergency room services, and antibiotics.

**Reproductive Health Services**

In some settings, HIV scale-up has accelerated expansion of reproductive health services. For example, the above-noted FHI study in Rwanda found significant increases in antenatal care visits following introduction of HIV care in primary care settings. The percentage of women who made all four recommended antenatal care visits increased more than 50% following the introduction of HIV care. Coverage rates for new antenatal clients rose by more than 50% in the year following introduction of HIV care, and the number of newborn deliveries that occurred in primary care settings rose by more than one-third.

A study in Côte d’Ivoire suggests that implementation of services to prevent mother-to-child HIV transmission (PMTCT) has contributed to improvements in the quality of antenatal and delivery care. Assessing quality of care in five urban health facilities before (2002-2003) and after (2005) implementation of PMTCT services, the study found increases in the offer of HIV testing (from 0% to 63%) and utilization of nevirapine (83% in 2005). In addition, improvements in interpersonal communication, confidentiality, and the quality of obstetrical care at admission, delivery and post-partum care were observed in all health facilities studied. Episiotomy rates among primiparous women fell from 64% to 25%.

HIV scale-up is supporting increased availability of condoms. The total number of condoms provided to PEPFAR focus countries by the U.S. government increased from 115 million in 2001 to 198 million in 2005. According to U.S. officials, condoms provided to developing countries are pooled for use for both disease control and pregnancy prevention, suggesting that the rapid scale-up of condom provision is expanding contraceptive access.

**Tuberculosis**

The rapid rise in TB cases associated with HIV infection over the last two decades in Africa has greatly burdened health systems; in Kenya, for example, TB-related hospital admissions nearly doubled between 1996 and 2002, with 48% of such cases linked to HIV infection. HIV scale-up, however, offers the prospect of advancing TB control objectives and reducing the long-term burden on TB control systems. Appropriate ART treatment reduces TB incidence in HIV-infected patients by 80%, according to evidence from Brazil. A study in Thailand indicates that HIV/TB-co-infected patients who receive ART have one-sixth the risk of death of those not receiving ART.

**TB diagnosis.** To date, more information is available on the contribution of TB services to HIV scale-up than on the role of HIV clinics in diagnosing latent or active TB and linking individuals to appropriate TB care. The percentage of TB patients who are tested for HIV increased from 0.5% in 2002 to 12% in 2006.

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globally. Reliable information is not yet available on the global percentage of patients in HIV clinics who are screened for TB and linked to appropriate TB care, although WHO, UNAIDS and other stakeholders recently agreed to incorporate such indicators in standard monitoring protocols for HIV scale-up. Situational analyses indicate that providers are taking steps to improve TB diagnosis in HIV clinical settings; in ICAP’s Rwanda program, for example, PLWHA are routinely screened for TB. In Abidjan, Côte d’Ivoire, a programming partnership of organizations representing people living with HIV and TB resulted in the diagnosis of more than 3,300 new TB cases, nearly half of whom were HIV-positive. Integration of HIV and TB care in 89 health facilities in Uganda between 2006 and 2008 was associated with a doubling (from 40% to 80%) in the TB assessment rate for ART patients.

**TB treatment.** Only 32% of HIV-positive patients with active TB disease received both ART and anti-TB medications in 2007. Because major gaps remain in efforts to ensure prompt diagnosis and treatment of TB in HIV-infected patients, the potential promise of ART in strengthening in TB control efforts has yet to be fully realized. However, important strides have been made in some countries in expanding access to simultaneous HIV and TB treatment in co-infected patients. PEPFAR, for example, has supported integrated HIV and TB care for 367,000 individuals in the 15 focus countries (as of September 2007). In Ethiopia, Kenya and Rwanda, PEPFAR funding has resulted in a sharp increase in HIV/TB treatment coverage for co-infected patients.

**TB prevention.** Scattered reports suggest that HIV clinics are taking steps to increase uptake of TB prevention in HIV clinical settings. Brazilian informants report that HIV scale-up is improving the provision of TB services, although this perceived effect has not been quantified. In July 2008, the government of Zimbabwe announced plans to introduce isoniazid in HIV clinics to prevent patients from developing active TB disease; Ethiopia has also piloted similar interventions.

**Malaria**

In some settings, HIV scale-up is helping accelerate the expansion of malaria prevention and treatment services, although the broader systemic effects remain unclear. For example, in Uganda, village health teams mobilized to participate in HIV service delivery are also distributing insecticide-treated bednets and anti-malarial medications, while in Zimbabwe, HIV scale-up is being linked with malaria and tuberculosis programs, resulting in joint clinical operations.

HIV scale-up also supports malaria prevention. Mathematical modeling indicates that the interaction of HIV and malaria is responsible for nearly 1 million excess malaria episodes in Africa since 1980. As separate modeling suggests that bringing HIV prevention services to scale would prevent more than half of all new HIV infections projected to occur through 2015, HIV scale-up will likely help minimize the role of HIV infection in accelerating the spread of malaria. From a prevention service standpoint, some PEPFAR programs also integrate bednet distribution into their HIV-focused programs. There is also evidence that cotrimoxazole prophylaxis may reduce malaria incidence among people living with HIV. Thirty-eight of 41 countries reporting data to WHO in 2008 had developed a national policy for the provision of cotrimoxazole prophylaxis to PLWHA.

**Pediatric Services**

Informants suggest that the enhanced monitoring of children born to HIV-infected mothers, and the supplemental pediatric-specific training directed at providers of HIV services, may result in improved

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growth and development monitoring for all newborns. In Cambodia, additional staff and resources for scale-up of pediatric HIV care have improved the quality of general pediatric care in 22 hospitals studied, according to the WHO country office. In the FHI study of Rwandan health centers where HIV care was introduced, vaccination coverage increased from 79% at baseline to 87% following HIV care integration, and there was a 36% increase in the number of children who received growth monitoring.

**Adolescent Services**

Integration of HIV/STI services in existing adolescent health services has been an important priority in many regions, and evidence exists that HIV scale-up is contributing to expansion of youth-oriented health programs. Development of youth-friendly clinics throughout Mozambique will be complete by 2009 as a result of the Geração BIZ (“Busy Generation”) initiative, while the African Youth Alliance is developing more than 200 youth-friendly health facilities in an effort to promote safer sexual behaviors. In South Africa, the national loveLife HIV prevention program has prioritized capacity-building for adolescent-friendly health services in the public sector; an external assessment determined that 80-90% of clinics complied with national standards for youth-friendly services.

**Women’s Health Services**

Limited evidence suggests that HIV scale-up may be expanding access to comprehensive health services for women. In Zambia, for example, HIV scale-up has trained clinicians in the diagnosis and treatment of cervical cancer. Women account for 63% of patients benefiting from PEPFAR-supported treatment services, representing hundreds of thousands of women who have been drawn to health care settings in 15 focus countries as a result of HIV scale-up.

**Services for Vulnerable Populations**

HIV scale-up appears to be helping address the historical lack of appropriate, culturally relevant services for key marginalized populations:

- **Sex workers.** HIV scale-up is bringing critical health services to sex workers in various settings. In surveys in 39 countries, 60% of sex workers said they had access to condoms and HIV testing. As one example of service expansion for sex workers, the Avahan India AIDS Initiative, financed by the Bill & Melinda Gates Foundation, has dramatically expanded health services for sex workers in six high-prevalence Indian states. Establishing outreach programs and STI clinics where none previously existed, Avahan contacted more than 128,000 sex workers, or 70% of all estimated workers in targeted districts, between December 2004 and November 2005. Nearly 75,000 sex workers attended an STI clinic at least once during this period, resulting in more than 51,000 STI-related syndromic diagnoses.

- **Drug users.** There has been considerable progress in increasing access to ART among injection drug users in many countries, although drug users outside of high-income countries typically do not yet enjoy equitable access. HIV scale-up is contributing to an expansion of services to treat drug

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dependence in LMIC. As of December 2007, 58 countries had introduced opioid substitution therapy using either methadone and/or buprenorphine, with particularly notable scaling-up in Eastern Europe.\(^\text{114}\) In recent years, China began implementing methadone maintenance programs as part of its HIV response, enrolling more than 88,000 patients as of October 2007.\(^\text{115}\) With assistance from the U.S. government, Vietnam has launched a pilot methadone maintenance program. Several countries in Eastern Europe have also taken tentative steps toward implementation of comprehensive harm reduction services for injection drug users.\(^\text{116}\) In Botswana, PEPFAR is training health care workers to screen for alcohol and drug abuse and to administer motivational interviews to reduce substance use.\(^\text{117}\) In Tanzania and Zanzibar, PEPFAR is supporting programs to expand HIV prevention, care, and treatment services for injecting drug users.

• **Men who have sex with men.** In general, information is scarce regarding access to health services for MSM in LMIC. This is especially true in Africa, where a severe HIV epidemic among MSM has only been documented in recent years. According to surveys of MSM in 27 countries, 40% of respondents said they had obtained a condom through HIV prevention outreach in the last year.\(^\text{118}\) In most regions, access to HIV prevention and health services is sharply limited for MSM, in large part due to stigma and institutionalized discrimination.\(^\text{119}\)

• **Prisoners.** WHO-sponsored reviews demonstrate that implementation of harm reduction programs in prisons is feasible and effective.\(^\text{120}\) A number of countries have implemented HIV prevention programs in prisons in recent years, although these tend to be small-scale. WHO also recommends implementation of HIV care and treatment programs in prisons,\(^\text{121}\) and these have been piloted in Rwanda and elsewhere.\(^\text{122}\)\(^\text{123}\)

### Prevention of Blood Borne Diseases

An estimated 5.9 million units of blood worldwide are not screened appropriately for HIV, hepatitis C and other blood borne diseases.\(^\text{124}\) HIV scale-up is contributing to improved blood safety in some countries by prioritizing use of low-risk donors, avoidance of unnecessary transfusion, and routine screening of blood donations. In several countries – including Ethiopia, Kenya, Namibia and Nigeria – PEPFAR supports national blood transfusion safety. In Tanzania, PEPFAR has supported establishment of safe blood donor clubs for youth in 12 of 21 regions. In 2005-2006, PEPFAR trained 14,600 people in blood safety practices.\(^\text{125}\) Brazilian informants report that HIV advocates influenced the National Viral Hepatitis Program, launched in 2002, helping ensure that hepatitis prevention and care efforts took account of the needs and perspectives of PLWHA.\(^\text{126}\)

### Food and Nutrition

HIV scale-up has resulted in new initiatives to integrate food and nutrition services in HIV care and treatment programs and in services for children orphaned or made vulnerable by HIV/AIDS. PEPFAR, the World Bank Multi-Country AIDS Program, and the World Food Program support food and nutrition services for PLWHA and HIV-affected households. WFP on its own was reaching 8.4 million people with HIV-related food and nutrition services in 2005. In 2008, PEPFAR supported food and nutrition services

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\(^\text{114}\) WHO et al., 2008a.  \(^\text{115}\) UNAIDS, 2008.  \(^\text{116}\) UNAIDS, 2008.  \(^\text{117}\) www.PEPFAR.gov.  \(^\text{118}\) UNAIDS, 2008.  \(^\text{119}\) amFAR, 2008.  \\
\(^\text{120}\) WHO et al., 2008a.  \(^\text{121}\) WHO et al., 2007a.  \(^\text{122}\) Mushiga, 2008.  \(^\text{123}\) Sahabo 2007.  \(^\text{124}\) WHO, 2008d.  \(^\text{125}\) Institute of Medicine, 2007.  \\
\(^\text{126}\) International Treatment Preparedness Coalition, 2008.
to 48,000 HIV-positive pregnant or lactating women, more than 800,000 children affected by HIV, and
73,000 people receiving antiretrovirals. In Rwanda, PEPFAR partners in 2008 provided more than 7,200
metric tons of food support to HIV-affected children and people receiving HIV treatment services.127
HIV scale-up is also leading to innovative approaches to nutritional programming; as part of the PEPFAR
initiative, for example, USAID is implementing a “food by prescription” approach that tailors nutritional
interventions to an individualized client assessment of nutritional needs and deficiencies.128

**Pain Management**

Initial development of a protocol to manage pain associated with HIV/AIDS by the Federal Ministry of
Health in Ethiopia eventually led to adoption of comprehensive pain management guidelines for other
conditions. These guidelines are now being disseminated to key professional and advocacy groups and
being used to inform training for medical providers and pharmacists.129 In Tanzania, national palliative
care guidelines are being developed and disseminated by a PEPFAR-funded project based at the Ocean
Road Cancer Institute, the country’s only specialized cancer hospital.130

**Systems to Promote Continuity of Care**

As health care systems and facilities transition from episodic to chronic care paradigms, policymakers,
clinicians and managers are implementing systems and mechanisms to promote continuity of care. These
include strengthened appointment systems (with follow-up to promote retention in care), improved
medical record-keeping (including introduction of on-site patient records), integration of adherence
support into clinical care (see below), defaulter tracing for individuals who have missed appointments,
and strengthened provider training (see below). The speed with which such practices are driving a new
care paradigm and the degree to which such measures are influencing the delivery of non-HIV-related
care remain unclear, although it can be expected that such innovations may eventually have broad-based
systemic effects.131

**Enhanced Safety of Health Care**

An estimated 90% of HIV, hepatitis B and hepatitis C infections resulting from occupational exposure in
health care settings occur in developing countries, where various studies have found low levels of adher-
ence to universal precautions among health workers.132 133 134 There is evidence that HIV scale-up is
improving the safety of health care delivery in developing countries. PEPFAR, for example, has supported
worker training in infection control and medical safety in a number of countries, training more than
52,000 personnel in injection safety in FY2006.135 Between 2004 and 2008, PEPFAR supported
training of more than 150,000 health care workers in safe medical injection practices.136 Implementation
of a PEPFAR-supported medical injection safety initiative in five districts in Namibia was associated with
a 50% reduction in the number of infections reported per patient between 2004 and 2007. Donor funding
is also supporting the renovation and redesign of health care settings to reduce nosocomial transmission
of TB.137

**Physical Infrastructure**

HIV programs have supported extensive renovations and construction of health facilities in resource-
limited settings,138 and these improvements benefit HIV-negative as well as HIV-positive patients.
Health workers interviewed by researchers commissioned by the International Treatment Preparedness

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Coalition indicate that HIV-financed clinics, laboratories and equipment are being used to deliver non-HIV-related health services. Significant renovations and repairs are routinely made to antenatal clinics, general outpatient clinics and waiting areas, TB clinics, inpatient wards, pharmacies, laboratories, and other non-HIV-specific areas of health facilities. In Uganda, civil society informants report that renovated HIV clinics are also engaged in the treatment of malaria, diarrhea, tuberculosis and other diseases. According to informants, facility renovations and upgrades are helping attract patients and contributing to improved staff morale.

**Transportation Systems and Referral Networks**

Although evidence is lacking on the impact of such efforts, considerable energy is focused on the development of referral networks for the transportation of patients and laboratory specimens; these are often not limited to patients with HIV.

**Information and Communication Technologies (ICT) and eHealth**

HIV scale-up is facilitating the transition from paper-based to electronic medical records at hundreds of sites in dozens of countries. Examples include the open medical record system used by Indiana University at HIV clinics in Kenya and the Unified Reporting System used by Columbia University at hospitals and health centers in 14 countries. In Uganda, Rwanda, South Africa and other settings, mobile phones are being used to transmit patient-related data. Nurses also use mobile phones to transmit clinical images to consultants to assist with patient care. In Haiti and Kenya, HIV funding supports video conferencing to support clinicians; videoconferencing is also being used to support complex case management in Ethiopia.

While informants are confident that these innovative uses of “eHealth” technology will spill over to non-HIV-related services, the degree to which this is currently happening is not well-documented. If HIV-related eHealth systems are not interoperable – i.e., if they remain “silo” systems for HIV data only – an important opportunity to strengthen broader health systems will have been squandered.

**Laboratory Services**

Informants cited the creation of new capacity for laboratory services – via renovations and refurbishment of laboratories, provision of electricity, refrigeration, equipment and supplies, training of laboratorians, establishment of referral networks, and enhancement of quality assessment and improvement programs – as a key benefit of HIV scale-up. In Uganda, for example, PEPFAR in FY2007 supported the upgrading of 168 laboratories. ICAP alone supports more than 240 laboratories in sub-Saharan Africa. According to informants, management of non-HIV-related health conditions will inevitably benefit from a cadre of professionals who have received training in basic hematology, chemistry measurements, and lab management.

In addition, integrating laboratory services upgraded through HIV scale-up into general services will also likely improve overall health infrastructure in resource-limited settings. Cambodia, for example, is pooling staff and laboratory equipment from various vertical programs to improve general laboratory services in district hospitals. Laboratories in hospitals and health centers throughout sub-Saharan Africa have newly strengthened capacity to perform diagnostic tests for diseases and conditions other

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139 International Treatment Preparedness Coalition, 2008.  
140 International Treatment Preparedness Coalition, 2008.  
141 Bergoetz, 2008.  
142 Becker, 2008.  
143 Chang, 2008.  
144 Behrens, 2007.  
146 www.pepfar.gov.  
147 WHO et al., 2008.
than HIV, such as tuberculosis, malaria, fungal infections, bacterial infections etc, as well as to perform other basic tests – pregnancy tests, urinalysis, complete blood counts, liver function tests and others which benefit both HIV-infected and HIV-negative patients. In some settings, access to basic radiologic tests, such as chest X-rays, has been similarly enhanced.

**Pharmacy Services**

As addressed in greater detail below in the discussion of medical products and technologies, PEPFAR, GFATBM and other donors are aiding countries to develop and implement improved procurement and supply management systems. As one component of these efforts, HIV scale-up is supporting national efforts to improve capacity for storage and distribution of medications. In Guyana, for example, PEPFAR has supported establishment of a model storage facility for HIV medicines and supplies, providing a secure, temperature-controlled environment and associated management system. In Ethiopia pharmacy space has been expanded and enhanced nation-wide.

**Water Safety**

In Uganda, safe water programs for PLWHA are reported to have benefited entire communities. In Ethiopia PEPFAR is supporting safe water initiatives for PLWHA in several countries, including Ethiopia, Nigeria and Mozambique.

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**Recommended Research to Inform Policy-Making on Infrastructure and Clinical Services in the Context of HIV Scale-Up**

Participants at the Bellagio consultation identified the following priority research questions to strengthen health infrastructure and non-HIV-related clinical services in the context of HIV scale-up.

1. What is the impact of the infrastructure enhancements financed by HIV scale-up on non-HIV care?

2. What are the changes over time in utilization and quality of HIV and non-HIV health services?

3. Are there facility-level or district-level trends in major health indicators that are temporally associated with HIV scale-up?

4. What is the effect of a package of biomedical and behavioral interventions for children and adults on chronic disease management?

5. What is the impact of HIV scale-up on referral systems for non HIV-services across various tiers of the health system?

6. What are the elements that characterize HIV programs that have successfully enhanced non-HIV service delivery and outcomes?

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Monitoring and Evaluation, Strategic Planning and Evidence-based Decision-making

Enhancing the capacity of countries to use evidence to inform health policy and programs is an important global health priority. Evidence-informed policy formulation has similarly been an important emphasis in HIV scale-up. For example, the public health approach to antiretroviral scale-up recommended by WHO relies, in part, on accurate forecasting of future demand for ART and on decision-makers’ access to accurate, up-to-date information on prices and availability of fixed-dose antiretroviral combinations endorsed by national guidelines. Likewise, in the prevention arena, UNAIDS’ advice to countries to “know your epidemic” is premised on the recognition that prevention efforts must be tailored to address national conditions and respond to actual epidemiological and behavioral trends.

A recent review concluded that many countries are failing to base national HIV prevention efforts on sound epidemiological and evaluation evidence.150 The degree to which experience in HIV/AIDS has influenced approaches to decision-making on other health issues remains unclear.

HIV-related monitoring and evaluation capacity in low- and middle-income countries has improved markedly in recent years. The proportion of countries with a centralized HIV database increased from 41% in 2005 to 68% in 2007, and the percentage of countries with a national HIV/AIDS evaluation plan rose from 54% in 2005 to 78% in 2007.151 CDC, WHO and other technical agencies have aided countries in improving the breadth, reliability and timeliness of public health surveillance, although substantial additional work is needed in many countries to collect needed data on vulnerable populations. USAID-financed household surveys have significantly improved the soundness of population-based estimates of HIV prevalence in developing countries, resulting in notable revisions of prevalence estimates in many countries.152 As a result of HIV scale-up, Ethiopia implemented a national patient monitoring system that generates national and sub-national information on ART utilization and prevention of mother-to-child transmission.153 Available evidence does not demonstrate the degree to which advances in HIV-related monitoring and evaluation may be strengthening overall health monitoring systems in LMIC.

Strategic Planning

UNAIDS country programs have for the last decade or more assisted national governments in the development of strategic AIDS plans. In recent years, UNAIDS has placed increased emphasis on the importance of ensuring that national strategies relate to available evidence on epidemiological trends and epidemic drivers.154 The AIDS Strategy and Action Plan Service, housed at the World Bank, had provided focused assistance to 45 countries to develop, monitor and revise national AIDS strategies as of June 2008.155 As of March 2008, 105 countries had developed time-bound national targets for universal access to HIV prevention, treatment, care and support, with 76 countries having integrated universal access targets into their national AIDS strategies.156

In recent years, several countries have relied on emerging epidemiological data to revise their national strategies on HIV/AIDS. After improved HIV surveillance led to a downward revision in estimated HIV prevalence, India launched a five-year, $2.5 billion strategy that allocated almost 70% of funding toward HIV prevention.157 Similarly, evidence of the rapid spread of HIV infection among men who have sex with men prompted the Mexican government to increase budget outlays for focused HIV prevention programs.158 There is little or no evidence as to whether HIV-focused approaches to strategic planning are influencing national efforts for other health conditions or for health services generally.

**Transparent Target-setting and Accountability**

In 2001, 189 countries endorsed the Declaration of Commitment on HIV/AIDS at the first-ever Special Session of the UN General Assembly on HIV/AIDS. The Declaration of Commitment resulted in global consensus on 25 core indicators to measure national progress on HIV/AIDS. In early 2008, 147 countries submitted reports to the 25 core indicators and on a 200-question questionnaire on national policy and practices, the National Composite Policy Index. Civil society has become actively engaged in the accountability process for the Declaration of Commitment, participating in the development of national progress reports.

At country level, the push toward universal access to HIV prevention, treatment, care and support has emphasized national target-setting. More than 100 countries have established time-bound targets for universal access, and the universal access target has become a rallying cry for civil society advocacy. Informants suggest that this experience may catalyze similar movements for health issues other than HIV/AIDS, although data are lacking.

**Regulatory Systems**

With some notable exceptions, systems for licensing new drugs and approving clinical trials in developing countries are typically weak. Prequalification of medicines by WHO speeds access in developing countries, but the process is often slowed by capacity limitations, the lack of financial incentives to private companies to register their products in all countries, and the costs to generic manufacturers associated with registration in each country. The Clinton Foundation HIV/AIDS Initiative (CHAI), PEPFAR and others have been proactive in aiding companies in navigating regulatory complexities to expedite registration, but it is unclear whether HIV scale-up is helping build sustainable capacity in national regulatory authorities. To date, scale-up of antiretroviral treatment has not been accompanied by a commensurate increase in national capacity for pharmacovigilance.

**Enhancing Research Capacity**

To ensure the relevance of HIV-related research findings in settings where the HIV/AIDS burden is heaviest, researchers have significantly increased investments in HIV research in developing countries in recent years. As of May 2007, the U.S. National Institutes of Health was supporting HIV-related clinical research in 14 developing countries, and the Fogarty International Center at NIH supports health research training initiatives in more than 100 countries. To facilitate needed research on HIV/AIDS, tuberculosis and malaria, the European Commission in 2001 established the European-Developing Countries Clinical Trials Program; one of the aims of the EDCTP is to build research capacity in developing countries. The International AIDS Vaccine Initiative was supporting clinical trials in six developing countries in mid-2008.

Informants suggested that the increase in HIV-related research in developing countries was helping build general research capacity in resource-limited settings and attracting new country-level scientists into the research field. IAVI-commissioned interviews with more than 100 individuals involved in AIDS vaccine trials in developing countries found broad agreement that such research had made major contributions to building country-level research skills and experience.

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Recommended Research to Inform Health Monitoring and Evaluation, Strategic Planning, and Policy Development in the Context of HIV Scale-Up

Participants at the Bellagio consultation identified the following priority research questions to strengthen health monitoring and evaluation, strategic planning, and evidence-based decision-making in the context of HIV scale-up.

1. Are data systems developed for HIV-related purposes being utilized for non-HIV conditions?
2. Has civil society become more engaged in monitoring and evaluation and in influencing health priorities and programs?

Medical Products and Technologies

The effect on policies and practices relating to the purchase, distribution and use of pharmaceuticals is a well-documented positive outcome of HIV scale-up on health systems in developing countries. The potential for generic antiretroviral drugs to expand treatment access in LMIC played an important role in the international community’s adoption in 2001 of the Doha Declaration on the TRIPS Agreement and Public Health, which granted flexibility in the interpretation of intellectual property rules to permit countries to respond to public health emergencies. The rapid scale-up of HIV treatment in resource-limited settings in intervening years has significantly altered the landscape for the treatment of non-HIV-related conditions in LMIC.

Procurement and Supply Management

At the outset of the international “3 by 5” initiative, weaknesses in procurement and supply chain management in many countries were cited as a critical impediment to scale-up of HIV care and treatment. Donors and multilateral agencies have worked with national governments in recent years to strengthen procurement and supply chain management. An example is PEPFAR’s Partnership for Supply Chain Management. WHO and UNAIDS have established a technical working group, involving partners such as the Clinton Foundation and the Mexican National Institute of Public Health, to help countries forecast future demand for antiretroviral drugs. In Rwanda, national implementation of new drug warehousing procedures in response to the introduction of antiretrovirals reduced by two-thirds the time between warehouse receipt of new drugs and distribution of the products to clinical sites. In both Mozambique and Zambia, PEPFAR support enabled the countries to implement a drug forecasting system that has proven highly accurate and supportive of a rapid scaling-up of HIV treatment. Although, as a rule, HIV scale-up has established separate procurement and supply management systems for antiretrovirals, a 2008 study by the Center for Global Development found that these HIV-specific systems closely interact with systems for other essential medications.

Drug Manufacturing

HIV scale-up is contributing to increased domestic drug manufacturing capacity in developing countries. Several countries in transition – such as Brazil, India and Thailand – have played a leading role in supplying developing countries with affordable antiretrovirals. Yet there is also evidence that HIV scale-up is contributing to increased manufacturing capacity in low-income countries. Uganda, for example, is erecting a 15-acre pharmaceutical plant to manufacture the combination antiretroviral Triomune, as well as the anti-malarial compound Lumartem.171 In 2008, UNITAID proposed that a blue-ribbon panel of experts study the feasibility of a “patent pool,” which would hold licenses on patented drugs that would permit manufacture of the medications at lower costs.172

Introduction of New Technologies

Public-private research partnerships for the development of new HIV prevention technologies, such as the International AIDS Vaccine Initiative (IAVI) and the International Partnership for Microbicides (IPM), have joined with advocates of other health technologies to support global and country-level policies and practices that facilitate expedited research and accelerated introduction of new prevention tools. IAVI and IPM were both active participants in successful efforts to persuade leading donor countries to support an advanced market commitment for the introduction of new pneumococcal vaccines. IAVI is also partnering with PATH to support rapid introduction of HPV vaccines in low- and middle-income countries, with the aim of using lessons learned to inform future strategies for the introduction of new HIV vaccines. The scale-up of HIV services has also motivated investments in rapid testing and other innovative diagnostic technologies, which benefit HIV-negative as well as HIV-infected patients.

Health Behaviors

As noted in the discussion on service delivery above, evidence suggests that HIV scale-up may be increasing utilization of other health services, such as tuberculosis treatment, malaria prevention, antenatal care, and other sexual and reproductive health services. In addition to the upward utilization pressure resulting from integration of HIV/AIDS in non-HIV-related service systems, it has been suggested that HIV scale-up may increase the value placed on health-seeking behaviors and/or help communities become accustomed to chronic disease management for the first time.

At present, data on the impact of HIV scale-up on overall health service utilization are limited to individual projects. As noted above, utilization of non-HIV-related services in Rwanda primary care clinics rose following HIV treatment integration. Similarly, integration of HIV and TB care in Haiti and the associated refurbishment and strengthening of health centers led to significant increases in TB case-finding, antenatal care visits and immunizations.173 Civil society researchers report that informants in six countries say that HIV scale-up is raising community awareness about health, sexuality and human rights issues.174

Consumer Engagement and Empowerment

Empowerment of recipients of health services is widely cited as an important objective of health systems reform.175 In industrialized countries, PLWHA activism has helped alter longstanding notions regarding relations between health providers and their patients. In the U.S., for example, the Ryan White CARE Act supports programs to educate PLWHA about treatment options, and a number of magazines and web-based resources exist to empower PLWHA to function as informed patients. This legacy of patient empowerment and peer education appears to be having an impact in LMIC, although these effects have

not been quantified. PLWHA are often employed as “expert patients” and/or “peer educators” in resource-limited settings to counsel peers, promote access and assist with treatment adherence.176

**Patients’ Rights**

In high- and upper-middle-income countries, laws and regulations protecting the confidentiality and security of HIV-related information are now the norm. To guide practice in resource-limited settings, UNAIDS and PEPFAR have developed Interim Guidelines on Protecting the Confidentiality and Security of HIV Information, addressing such matters as physical and electronic protection of patient data and rules governing the use and release of such information. Of 50 countries that reported information to UNAIDS as of January 2008, 26% said they had national procedures in place that are consistent with the UNAIDS/PEPFAR guidelines. Of the 37 countries lacking comprehensive protocols on medical privacy and confidentiality, 60% planned to develop such guidelines. Most reporting countries, including a majority of those lacking comprehensive guidelines, reported the existence of general privacy laws.177 At publication, PEPFAR and UNAIDS were planning to convene a meeting of more than 50 officials from diverse countries in late February 2009 to share experiences and assess system needs for implementing sound privacy protections in health care settings.

HIV scale-up may also be helping sensitize health providers in LMIC regarding the importance of providing private spaces for patient counseling, including protection for auditory and visual privacy.

**Engagement of Consumers and Civil Society**

In industrialized countries, PLWHA and communities affected by the epidemic have greatly affected health policy. In the U.S., for example, PLWHA sit on advisory bodies for key federal public health agencies. Under U.S. law, public health departments that receive HIV prevention and care funding must convene inclusive planning bodies to establish spending priorities.

In some LMIC, HIV scale-up has contributed to the engagement of PLWHA in health advocacy and raised awareness of human rights issues.178 Civil society engagement has been a notable feature of HIV scale-up in Brazil.179 The Global Fund has been an especially important force for involving non-governmental players in national decision-making on health policy.180 In recipient countries, multi-stakeholder Country Coordinating Mechanisms identify national priorities and oversee the development of national funding proposals.

Civil society organizations are also actively participating in helping health providers reach individuals in need of services in many settings. In Vietnam, for example, CARE International has partnered with 11 civil society organizations that have collectively reached nearly 11,000 people, including 6,600 HIV-positive individuals, through peer outreach and linkage services.181

HIV scale-up has also spurred greater engagement of the private sector in efforts to strengthen health systems in developing countries.182 Under the umbrella of the Global Business Coalition on HIV/AIDS, hundreds of companies worldwide are contributing to HIV scale-up. Contributions by private companies include support for workplace HIV prevention and treatment programs, mobilization of communities where business facilities are based, and leveraging core competencies to support innovative partnerships.183 In Botswana’s Merck’s partnership with the national government and the Bill & Melinda Gates Foundation helped jump-start the country’s remarkable scaling-up of ART. ILO reports working in 2006-2007 with more than 700 private companies in implementing HIV programming in LMIC. Broad Reach, a public-private partnership in South Africa, reimburses health care providers to treat low-income people with HIV, applying the model of the U.S. Medicaid program. No reliable estimate exists of the total contri-

bution of private industry to HIV scale-up, nor is it clear whether or not such efforts have benefited health systems generally.

**Adherence and retention**

Although evidence to date is largely project-specific, there are indications that HIV scale-up can increase health workers’ awareness of the need to integrate proactive adherence support strategies into the delivery of HIV primary care.\(^{184}\) This represents an important shift from the sole reliance on patients to make appointments or take their regimens as prescribed to a more systemic assumption of responsibility for improving patient adherence.

In the course of HIV scale-up, providers have experimented with various strategies to promote treatment adherence and continuity of care. Some of these strategies – such as directly observed therapy\(^{185}\) and community workers who act as patient supporters\(^{186}\) – have been borrowed from prior experience in TB control. Some health facilities are altering their appointments and medical record systems, co-locating key services, and taking other steps to improve patient adherence. With support from the ESTHER project, clinical sites in developing countries have employed comprehensive case management models to promote continuity of care for PLWHA.\(^{187}\) The Swedish International Development Cooperation Agency is supporting a five-year initiative (2006-2011) to improve best practices for the integration of adherence support interventions in clinical settings and to promote adherence-friendly national policies.\(^{188}\)

Data are not available on the degree to which providers’ increased sensitivity to patient adherence resulting from HIV scale-up might be benefiting care for non-HIV-related conditions. However, informants anticipated that lessons learned through HIV scale-up would influence efforts to improve the management of other chronic conditions.

**Impact on Gender Norms**

The HIV response has highlighted the role of gender inequities in increasing the vulnerability of women and girls to HIV, and strengthened momentum toward actions to reduce gender inequality and empower women and girls.\(^{189}\)\(^{190}\) In its guidance to countries in the development and implementation of national HIV prevention plans, UNAIDS urges that such plans be informed by assessments of the role of gender inequities in driving HIV transmission.\(^{191}\) More than one-half of countries have budget allocations that specifically address the epidemic’s gender dimensions.\(^{192}\) A meta-analysis commissioned by WHO of research on gender programming in developing countries found that nearly one-third of studies documented favorable changes in relevant attitudes and behaviors.\(^{193}\) The authorizing legislation for the U.S. PEPFAR initiative mandates programming to alter gender norms, reduce sexual violence, and increase women’s economic opportunities; an independent evaluation of PEPFAR by the Institute of Medicine in 2007 determined that PEPFAR had responded to these mandates, in part via the establishment of a Technical Working Group on Gender to identify “evidence-based, gendered approaches.”\(^{194}\) A more recent analysis of funding policies and priorities of the Global Fund, the World Bank and PEPFAR found that each had taken steps to increase its support for gender programming in developing countries.\(^{195}\)

Several countries have undertaken legal reform in recent years to protect and empower women, although the degree to which such efforts are being driven by HIV scale-up is unclear. In 2007, for example, Zimbabwe enacted laws to increase penalties for domestic violence and to prohibit forced marriages or servitude.\(^{196}\) Lesotho’s National HIV/AIDS Strategic Plan includes support for legislation to protect the

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rights of married women, and to expand efforts against rape and sexual violence. Efforts to increase women’s economic independence through legal reforms and income-generating strategies are being pursued in several countries, although observers say such initiatives are typically ad hoc, fragmented and poorly integrated with broader efforts to reduce women’s HIV risk and vulnerability. A women’s microfinance project in South Africa that emphasized gender and HIV training resulted in a 55% reduction in intimate partner violence.

### Recommended Research Regarding Health Behaviors in the Context of HIV Scale-Up

Participants at the Bellagio consultation identified the following priority research questions regarding health behaviors in the context of HIV scale-up.

1. To what degree have HIV-related peer or community support organizations (e.g., TASO, TAC) influenced experience with other diseases (e.g., pregnancy, malnutrition, diabetes, malaria)?

2. Can peer support package and multi-disciplinary team approaches developed for HIV programs be adapted for the management of diabetes, hypertension, epilepsy, depression, and other chronic conditions?

### Conclusion

Although preliminary, this review underscores the limited body of evidence that is currently available to inform policy and practice on HIV and other health issues. Research on key questions regarding the impact of HIV scale-up on health systems remains an urgent priority. While this review has identified dozens of issues that merit additional research focus, several areas appear to be especially important. In particular, research efforts should:

- Systematically monitor the utilization of health services for key non-HIV-related conditions and for key populations as HIV services are brought to scale.

- Assess the degree to which infrastructure improvements resulting from HIV scale-up (e.g., laboratory capacity, clinic renovation, enhanced procurement and supply management) are improving care for non-HIV-related conditions.

- Monitor health workforce burdens on an ongoing basis and evaluate the impact of key actions associated with HIV scale-up (e.g., task-shifting, training programs, expansion of professional education) on the broader health workforce.

- Evaluate the impact of HIV financing on total health expenditures in low- and middle-income countries, taking into account both public and private sector financing.

At the same time that efforts focus on building the basic evidence base for evaluating the broader impact of HIV scale-up, operational research should examine strategies for ensuring that the resources, innovations and energy associated with HIV scale-up help to strengthen health systems.

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Recognizing the importance of a reliable evidence base for policy and programmatic development, and the need for rigorous data on the impact of HIV scale-up on weak health systems, the International Center for AIDS Care and Treatment (ICAP) at Columbia University’s Mailman School of Public Health assembled a high-level meeting of leaders from international agencies, donors, implementing partners and governments. Convened at the Rockefeller Foundation Center in Bellagio, Italy in September 2008, participants identified gaps in knowledge, recommended priority research questions, and suggested research methods to evaluate the broader impact of HIV-specific programs on health systems.

Studies were proposed in six thematic areas and are listed below.

### Human Resources:

1. What trends in supply of key cadres of health care workers may reasonably be tied to HIV scale-up? Is task-shifting having an impact on health care access, quality and/or outcomes (a) For HIV? (b) For malaria? (c) For TB? (d) For maternal and child health?

   - Mapping study to obtain baseline data on current supply of key cadres of health care workers (for both HIV and non-HIV programs).

   - Mapping study on task-shifting at facility level.

2. Has increased funding for HIV services had an impact on staff retention? What policies or practices (including but not limited to remuneration) are associated with improved retention of health workers?

   - Study on past experiences regarding worker retention in HIV programs and in general health systems.

   - Assessment of HIV scale-up on health worker capacity and productivity: (a) quantification of impact of HIV infection of health workers themselves on productivity, absenteeism, and attrition, (b) impact of access to HIV treatment for health workers on productivity, absenteeism and attrition.

   - Assessment of impact of HIV scale-up on the workload of clinical, laboratory, pharmacy, and medical records personnel (e.g., reductions in hospitalization, increases in outpatient workloads).

   - Randomized intervention study of different incentive packages for retaining health workers (a) at country level, (b) in rural areas. Outcomes to be studied might include: % workers retained, job satisfaction, patient outcomes.

3. What are the skills and competencies needed to deliver the comprehensive package of HIV prevention, care and treatment services? How do such skills and competencies overlap with those required for management of conditions relevant to other health-related Millennium Development Goals?
Mapping of skills and competencies needed to deliver a comprehensive package of HIV prevention (e.g., primary prevention, circumcision, condom access, prevention for vulnerable groups), care (e.g., testing, counseling, secondary prevention, prophylaxis, OI treatment), and treatment (e.g., staging, TB diagnosis and treatment, ART, patient retention, adherence, hospitalization), followed by assessment of whether or not core skills and competencies identified for HIV are applicable to management of other diseases (with emphasis on health-related MDGs).

(4) What are the benefits and costs associated with incremental addition of non-HIV health services on HIV service delivery (i.e., reproductive health, others)?

- Study of costs and benefits associated with incremental addition of non-HIV health services on HIV service delivery. Outcomes to be studied: (a) impact of addition of non-HIV health services on health workers’ knowledge, attitudes and practices, (b) incremental training time required, (c) incremental growth in number of workers required to deliver non-HIV services, (d) costs to system, (e) accessibility and quality of HIV and non-HIV health care services.

**Health financing and payments**

(1) What is the impact of donor policies on national program management, implementation and health outcomes?

- Case studies of countries believed to effectively use donor support for “vertical” programs to strengthen health systems.

- Mapping study of donor policies and implementer practice regarding use of HIV-specific funding to support non-HIV services.

(2) What are the costs associated with delivery of comprehensive HIV services?

- Assessment of the cost associated with the delivery of comprehensive HIV services (taking into account the costs of not providing HIV services).

- Determination if “economies of scale” are realized as HIV services are expanded. Does cost per unit of service decline with scale-up?

(3) Can different ways of paying for health care services impact health outcomes?

- Randomized study (cluster randomization, perhaps by district) to assess whether different forms of provider payment (e.g., performance-based) improve service quality, service utilization and/or health outcomes.

- Randomized study to determine whether various forms of out-of-pocket costs affect treatment adherence, medical outcomes.

- Randomized study to evaluate various incentives or enablers to improve quality, uptake, and cost of HIV services as well as health outcomes.
(4) What are optimal mechanisms for financing health services that require predictable, long-term support?

- Mapping and evaluation of mechanisms for financing chronic illnesses in resource-limited settings.

(5) What is the impact of HIV scale-up on financing for non-HIV services?

- Country-level analysis of impact of HIV scale-up on donor funding for conditions other than HIV.
- Country-level analysis of impact of HIV scale-up on total health expenditures.

**Infrastructure**

(1) What is the impact of the infrastructure enhancements financed by HIV scale-up on non-HIV care?

- Examine (via quantitative and qualitative methods) whether equipment and infrastructure upgrades financed by HIV scale-up (e.g., facility renovation, laboratory and pharmacy upgrades, enhanced equipment and supplies) have (a) benefited utilization of services for malaria, TB, STIs, maternal and child health, and (b) affected waiting times, patient follow-up or other issues related to the quality of non-HIV services.
- Descriptive case study of effect of an increase in resources as a result of HIV scale-up, controlling for other changes in the health care environment.

(2) What are the changes over time in utilization and quality of HIV and non-HIV health services?

- Periodic, standardized national surveys of random, representative sample of health facilities to determine whether utilization and quality of health services are changing over time. Both HIV-related and non-HIV-related indicators would be monitored. As an example of the kinds of items that would be tracked, frequency and duration of stockouts for various medications would be documented to assess trends in national capacity for procurement and supply chain management.

**Clinical Services**

(1) Are there facility-level or district-level trends in major health indicators that are temporally associated with HIV scale-up?

- Descriptive studies to (a) document trends in major health indicators (e.g., maternal mortality, under-5 mortality, life expectancy, education) and (b) correlate trends with HIV financing and broader health expenditures.

(2) What is the effect of a package of biomedical and behavioral interventions for children and adults on chronic disease management?

- Design and evaluation of a basic, expandable package of evidence-based, cost-effective biomedical and behavioral interventions for children and adults. The package should focus on services for chronic care management (although services would not exclusively focus on chronic care). Identification of service elements of the package would be informed by experience in HIV care (by, for example, including counseling, peer education, and outreach).
(3) What is the impact of HIV scale-up on referral systems for non-HIV services across various tiers of the health system?

(4) What are the elements that characterize HIV programs that have successfully enhanced non-HIV service delivery and outcomes?

(a) After carefully defining “success,” issue a call for examples of outstanding programs that have used HIV scale-up to increase non-HIV service delivery, and conduct quantitative and qualitative research to document case studies and to identify the elements of successful programs. Both the selection of case studies and the related research should be informed by a consensus process that defines the elements of successful programs that maximize HIV scale-up to improve non-HIV service delivery and medical outcomes. This consensus process should be optimally inclusive, incorporating stakeholders who may be skeptical of the impacts of HIV scale-up on health systems.

(b) Consider a large, cross-sectional study, employing both quantitative and qualitative components, to measure the impact of HIV funding on the delivery of an essential package of primary health care services and on health outcomes.

i. Formative research:

- Describe HIV funding sources, funding levels, funding uses/purposes (e.g., PMTCT, PMTCT + ART, VCT, etc.), and other non-HIV funding (e.g., malaria, TB)

- Describe a comprehensive, evidence-based package of HIV services at the facility level

- Describe an essential package of primary health care services at facility level (e.g., primary health care, women's health services, maternal and child health, infectious diseases, chronic disease management, HIV)

- Collect data on essential health service provision

- Measure association between different levels/types of HIV funding and essential health service outcomes (e.g., clinic visits, family planning visits, antenatal visits, attended deliveries, infant growth monitoring, immunization, TB case finding, malaria diagnosis and treatment, hypertension treatment).

ii. Intervention study: Apply optimal HIV and primary health package and measure health outcomes and costs associated with best practices.
**Monitoring & Evaluation and Health Information Systems/Medical Records:**

(1) Are data systems developed for HIV-related purposes being utilized for non-HIV conditions?

- Descriptive analysis of how data are being managed at the facility or district/management level (e.g., data collection, confidentiality, etc.), including documentation of how data are being used to improve decision-making. The study would include a determination of the degree to which HIV has introduced data collection and management systems that are now being used for other diseases (e.g., diabetes, hypertension).

- Review of databases and other eHealth tools developed and used by HIV programs, describing to what extent these newly-introduced systems are interoperable and/or open-source. Are the electronic health records and databases used in HIV scale-up silo systems, or is there the potential to use them more widely to strengthen health records for non-HIV patients and populations?

(2) Has civil society become more engaged in monitoring and evaluation and in influencing health priorities and programs?

**Patient and Provider Behaviors (Participation and Practice)**

(1) To what degree have HIV-related peer or community support organizations (e.g., TASO, TAC) influenced experience with other diseases (e.g., pregnancy, malnutrition, diabetes, malaria)?

(2) Can peer support package and multi-disciplinary team approaches developed for HIV programs be adapted for the management of diabetes, hypertension, epilepsy, depression, and other chronic conditions?
HIV scale-up & health systems: annotated bibliography
General Information on Health Systems Strengthening


The chapter reviews the challenges facing health systems in LIMC, as well as what is known about strategies to strengthen such systems. An overview is provided of health funding and payment issues, regulatory systems, workforce shortages, and quality of care. The authors emphasize the importance of patient empowerment as a strategy to strengthen health systems.


Thirty years after the historic Alma Ata Declaration, the history of efforts to strengthen health systems in LIMC is examined. The rise of disease-specific health programs in recent years is noted, with a discussion of concerns that such approaches weaken health systems by draining resources. The authors call for a balanced approach between disease-specific strategies and more systemic approaches that strengthen the foundations of health systems.


Health care systems can be analyzed via a number of rubrics, including (but not limited to) ethics, economics, political science and medical outcomes. The authors identify five key “control knobs” for developing and reforming health systems: financing, payment, organization, regulation and behavior.


Examining the challenge of strengthening health systems in low- and middle-income countries, this analysis identifies six key “building blocks” for health systems: (1) Service delivery, organization and management; (2) Information, evidence and strategic planning; (3) Medical products and technologies; (4) Health workforce; (5) Health financing; and (6) Leadership and governance. The document sets forth a framework for WHO actions to strengthen health systems, with the aim of accelerating progress towards achievement of the health-related Millennium Development Goals in 2015.

HIV/AIDS and Health Systems Strengthening: Overviews

Avila C et al. (2008), HIV and AIDS programs: How they support health system strengthening, July.

This study examines health funding trends (e.g., per capita health spending, public sector health spending, percentage of health spending among government expenditures, share of health spending from external sources) between 1996 and 2005 in the initial eight compact countries of the International Health Partnership (IHP+) – Ethiopia, Kenya, Mozambique, Zambia, Burundi, Cambodia, Mali, and Nepal. The study also maps synergies and complementarities between AIDS and health systems strengthening in the eight countries. The eight countries do not present a single clear pattern. Although most reveal an increase in per capital health spending during the decade studied, the size of the increase varies considerably from country to country. In addition,
no uniform trend is discernible in the degree of public sector support for health in the eight coun-
tries. The authors conclude that a transition is taking place from vertical and horizontal programs
into complementary, diagonal programs.

El-Sadr WM, Abrams EJ (2007). Scale-up of HIV care and treatment: can it transform healthcare services

This commentary regarding the potential for HIV treatment scale-up to buttress health systems
argues that strategies for HIV scale-up should incorporate measures to strengthen health systems
in the process. The article examines various ways that HIV scale-up is improving health infra-
structure, ranging from refurbishment of clinical settings and pharmacies to helping providers in
developing countries learn techniques for managing chronic illnesses. Workforce limitations are
examined as a particular challenge for both HIV scale-up and health systems generally.


This commentary discusses achievements of the PEPFAR initiative, focusing particular attention
on criticisms that the vertical program may be weakening health systems or distorting national
health priorities. The authors conclude that PEPFAR has revitalized national responses and has
been reasonably well integrated into national health strategies. Although the impact of PEPFAR
on the broader health system is difficult to quantify, the introduction of a well-financed regime for
the management of chronic disease is altering medical practice in resource-limited settings. The
authors argue that a vertical program like PEPFAR can evolve to address broader systemic chal-
lenges and that there is evidence that this is already occurring in the case of HIV financing.

Scale up and Health Systems Capacity*. Open Society Institute: Lusaka (Zambia).

Quantitative and qualitative research methods were used to analyze the impact of HIV scale-up
and its effect on health systems in three districts in Zambia. This reported presented preliminary
findings from the study’s first phase. In the midst of successful scaling-up of ART, considerable
additional pressures have been placed on health personnel in the three districts. Stockouts are
more common for malaria and other diseases than for antiretrovirals. Service coordination
remains poor at the district level. Researchers conclude that HIV scale-up is having both positive
and negative effects. A second study phase was planned.

Sciences: Washington D.C.

At the request of the U.S. Congress, the Institute of Medicine undertook an assessment of experi-
ence in the first five years of the PEPFAR initiative. The review panel determined that PEPFAR
has made a promising start but must transition from an emergency response to one that is more
sustainable. In particular, better coordination with partner governments, other donors, and the
World Health Organization is required, the evaluation panel concluded. In addition, the evalua-
tion recommended that PEPFAR increase its focus on expanding health workforce capacity in
developing countries.

Building on success to achieve health care for all*. July.

Informed by civil society research in Argentina, Brazil, Dominican Republic, Uganda, Zambia and
Zimbabwe, the report identifies various ways in which HIV treatment scale-up is improving health
infrastructure. HIV scale-up is promoting integration of HIV and other health services (e.g., TB),
reducing demand for hospital services, improving the morale and capacity of health workers, increasing service access among marginalized populations, enhancing physical clinical infrastructure, raising community awareness on health and related issues, and improving commodity purchase and supply management systems. The report also examines various fragilities in health systems that HIV scale-up has highlighted, including workforce limitations, frequent medication stockouts, problems with corruption and lack of transparency, and hidden out-of-pocket costs that inhibit optimal service utilization.


While recognizing the clear achievements and benefits of HIV treatment access, this commentary examines various problems that have arisen in the expansion of HIV services, focusing primarily on experience with the U.S. PEPFAR program in sub-Saharan Africa. The author argues that the magnitude of HIV funding risks distorting local health priorities and exacerbating health worker shortages. He further suggests that while the non-governmental recipients of PEPFAR grants are clearly contributing to program goals, they may be draining workers away from the public sector by offering superior salaries. The commentary urges an improvement in HIV prevention success in order to make the goal of universal access feasible.


This official report to the U.S. Congress summarizes program results for the first five years of PEPFAR. In Fiscal Year 2007, PEPFAR supported more than 2,200 local organizations and made US$ 640 million in investments in local infrastructure and human resources. PEPFAR supported nearly 2.6 million training and re-training encounters with staff in the 15 focus countries. PEPFAR supplied nearly 1.9 billion condoms between 2004 and 2007 and assisted in the scale-up of safe blood programs in all 15 focus countries. The program provided care and support services to more than 2.7 million children affected by HIV/AIDS.


This analysis describes shortcomings in donor approaches with respect to the use of HIV funding to strengthen health systems. The author contends that few AIDS donors take health systems strengthening into account when their initiatives are developed and implemented. Country-level coordination is poor, and donors often impose duplicative AIDS-specific systems that sap resources and undermine management of non-HIV-related conditions.


Under the PEPFAR initiative, U.S. government support for global AIDS programs increased from US$ 2.3 billion in 2004 to US$ 6.0 billion in 2008. Since 2004, the U.S. government has supplied 2.2 billion condoms and supported prevention of mother-to-child transmission in nearly 16 million pregnancies. Through September 2008, PEPFAR had supported antiretroviral treatment to 2.1 million people. More than 4 million orphans and vulnerable children have received U.S. government support through 2008. PEPFAR has partnered with more than 2,600 organizations – 86% of them local.
This paper examines the human resource crisis in the context of HIV scale-up. Issues examined include out-migration, poor compensation, and maldistribution of workers. The authors emphasize the importance of national ownership of HIV scale-up and recommend the investigation of community health workers to expand treatment access. It is argued that specific strategies to strengthen health systems are needed as HIV treatments are expanded.


Approximately 150 experts gathered at a WHO-sponsored consultation to strategize regarding ways to capitalize on global health initiatives to strengthen health systems. Participants recommended that primary health care serve as a unifying framework for action. Harmonization and alignment in the context of the International Health Partnership was urged. Various country experiences from different regions were studied. Recommendations were made to strengthen the ability of global health initiatives to contribute to health systems strengthening. Participants specifically recommended greater attention to the creation of a consolidated evidence base to guide policy development.


WHO’s flagship report was devoted to the health workforce crisis. Specifically noting the impact of HIV/AIDS on the health workforce, the report emphasized the importance of national ownership and initiative in preserving and building human capacity in health systems, recommending the development and implementation of national health workforce strategies. Strategize to maximize existing health workers were analyzed, as were approaches to expand education and training.


WHO’s annual update of coverage for priority HIV health sector interventions reports that considerable progress was made in scaling up ART in 2007, with utilization reaching 3 million people. Additional progress is needed to expand services to people with HIV/TB co-infection, as well as prevention programs focused on key vulnerable populations. For all HIV-related services, significant access gaps remain.


Authors examine available evidence on the impact of HIV scale-up on health systems in developing countries, concluding that the “evidence is mixed – mostly positive but some negative.” The AIDS response has increased resources for health, enhanced government support for health programs, improved infrastructure and laboratories in many countries, and lessened the epidemic’s burden on the health workforce through the provision of antiretrovirals and through such reforms as task-shifting. However, while HIV funding has increased, funding for reproductive health services has remained stagnant. Although assertions have been made that HIV is siphoning workers from other high-priority health interventions, there is limited evidence that this phenomenon is occurring. The authors recommend that health planners and implementers should focus on strategies to simultaneously expand HIV service access and broadly strengthen primary health care systems.
Human Resources


The roots, nature and dimensions of Africa’s health workforce crisis are examined in this report. Key challenges – such as fiscal and macroeconomic issues, as well as the related phenomenon of worker migration – are analyzed. HIV/AIDS is “the straw that broke the camel’s back,” the working group concludes, swamping health systems with very sick patients and relegating other health issues to lower-priority status. The report examines various strategies to alleviate the health worker crisis, including maximizing under-utilized community resources for health and restructuring health workplaces and systems. Recommendations focus on such areas as worker incentives and compensation, education and training, governance, and the role of development agencies in addressing the human resource crisis.


A meta-analysis was undertaken to map policy options to address human resources for health, with particular focus on LIMC. Of 789 reviews examined by researchers, 28 met their criteria for inclusion in their analysis, although only a few included studies pertaining to LIMC. Policy responses identified in the studies primarily focused on task-shifting, continuing education and other performance-enhancing strategies, teamwork exercises, and workflow changes. Use of lay workers was the policy option most frequently considered in the studies analyzed. Researchers recommended more systematic reviews of policy options to improve human resources for health in resource-limited settings.


An anonymous questionnaire and serosurvey was administered to 2,032 professional and support staff working in two hospitals in Gauteng, South Africa. HIV prevalence was 11.5%, with highest prevalence among occupational groups reported among student nurses (13.8%) and nurses (13.7%). Among age groups, highest prevalence was in the 25-34-year-old group (15.9%). Nearly one in five (19%) of HIV-positive workers had CD4 counts below 200 cells/microl.


The strategic approach of the Global Health Workforce Alliance is based on national ownership, global solidarity and advocacy, and strong evidence that it is possible to strengthen human resources for health in resource-limited settings. The Alliance focuses on mobilizing knowledge and learning; disseminating information, communications and advocacy; and harmonizing actors.


This report of the Alliance’s Task Force for Scaling Up Education and Training for Health Workers encourages countries to develop 10-year strategic plans to scale-up community and mid-level workers through intensified education and training.

A wide range of financial and non-financial incentives to increase retention of nurses and other health workers is described. Guidelines are provided regarding the development and implementation of sound incentive systems, including involvement of relevant stakeholders and support for periodic reviews and evaluations to measure impact.


A consortium of more than 100 health leaders analyzes the human resource crisis in health systems in LIMC and proposes strategies to address the problem. The HIV epidemic is cited as a major contributing factor to the human resource crisis in health systems, along with out-migration of workers and insufficient financing for health. The Joint Learning Initiative proposes various recommendations, including mobilization of at least one million additional health workers in LIMC, improved use of community workers, and greater international collaboration to address the human resource crisis.


Available evidence regarding the benefits of community health workers is surveyed. Data indicate that community health workers can improve health care access and medical outcomes. To be successful, workers must be carefully selected and properly trained. Whether it is best for such workers to be volunteers or remunerated is unclear from available information. To be sustainable, such programs must be embedded in and owned by the communities in which they are situated. The authors conclude that the approach is not a panacea for weak health systems but has important benefits.


A meta-analysis identified 43 studies – mostly from the U.S., Canada and the UK – regarding use of lay health workers. Available evidence indicates that lay health workers are effective for the delivery of certain health care services (e.g., immunizations, breast cancer screening, malaria treatment), although the evidence base is insufficient to permit universal conclusions.


A pilot program in Rwanda shifted many physician responsibilities associated with administration of antiretroviral therapy to nurses. To evaluate the impact of the pilot project, a model was developed to simulate HIV care for a clinic population of 946 HIV-positive patients. Validation confirmed that the model accurately reflected the pilot population. Using the model, researchers determined that implementation of task-shifting saved 656 MD hours between September 2005 and December 2007, or 5.5 months of an MD working 30 hours a week in direct patient care. During the last quarter of the 16-month pilot period, the rate of savings was 56 hours per month. Researchers estimate that nationwide implementation of the approach would reduce the demand for MDs from 103 to 25 – or from 69% of all MDs providing any form of care in Rwanda to 17% of all MDs.
The authors describe the effects of health worker shortages in impeding efforts to expand access to antiretrovirals, and the World Health Organization’s “Treat, Train, Retain” approach is summarized. The article particularly focuses on the benefits of task-shifting in expanding human resources for HIV scale-up, summarizing evidence of its effectiveness from both high-income and low-income countries. In addition to shifting certain clinical tasks from physicians to nurses, it is also possible to engage community health workers in certain aspects of antiretroviral delivery.


After surveying the dimensions of the health workforce crisis in LIMC, this report summarizes available evidence on the epidemic’s impact on the health, productivity and morale of health care workers. In high-prevalence countries in southern Africa, significant numbers of workers have been lost to HIV/AIDS in recent years. HIV-positive workers who remain in their jobs experience higher rates of absenteeism than uninfected workers. HIV/AIDS has increased work burdens for health care workers generally, regardless of their HIV serostatus. The authors contend that ART access for health workers is a priority. The report examines key policy and evidence gaps and makes recommendations for addressing them.


The 2006 flagship report by WHO focuses on human resource challenge in health systems in low- and middle-income countries. WHO estimates a global shortage of 4.3 million doctors, midwives, nurses and support workers. Sub-Saharan Africa is especially affected by the human resource crisis; accounting for two out of three of the world’s HIV infections, the region is home to only 3% of health care providers. The report examines strategies for medical training in resource-limited settings, focuses on approaches to make the most of existing workers, and provides guidance on the development of national health workforce strategic plans.


This document provides guidance to countries in implementing task-shifting arrangements to expand human resources for health. WHO and partners recommend that countries include relevant stakeholders in policy development on task-shifting and that measures be implemented to ensure quality of care as task-shifting is put in place. The document recommends the consideration of incentives or other approaches to promote retention of health workers.


Participants at the first Global Forum for Human Resources for Health in March 2007 adopted a declaration urging action by governments and development partners to address the health workforce crisis. The declaration calls for the development of comprehensive national health workforce strategies, including strengthened education and training systems, adequate incentives to retain workers, and development of an international code of practice to curb out-migration of health workers in LIMC. Both governments and international donors were urged to increase funding to preserve and build human resources for health.
Health Financing and Payment


This analysis of the Global Fund’s impact on the health system in Georgia finds that grants have to date had relatively modest effects due to the small size of financing from this channel that has been provided to Georgia.


The lead economist for health, nutrition and population and human development for the World Bank examines fiscal space for health in developing countries (i.e., the availability of budgetary room to permit a government to provide resources for health purposes). On average, government expenditures in low-income countries is about 15% of their GDP, and health’s share is roughly 9% of governmental expenditures. On average, public expenditure on health represents approximately 1.35% of GDP in low-income countries. Public spending accounts for less than 25% of total health spending in low-income countries, representing roughly US$ 10 per capita. Out-of-pocket payments account for 70% of health spending in low-income countries, and social insurance covers only about 1% of health spending in such settings. Economic growth appears to be a key factor in providing sufficient fiscal space to increase public expenditures on health. Bilateral donor assistance for health has increased from US$ 6.8 billion in 2000 to US$ 9.5 billion in 2006. The percentage of donor health assistance accounted for by AIDS rose from 16% in 2000 to 43% in 2005.


This presentation summarizes experience with risk-pooling in India (four different models), Nigeria and Uganda. Numbers of patients covered by each risk-pooling scheme are indicated, along with the nature and approach of each scheme. The presentation describes how risk-pooling can strengthen health systems and improve health outcomes.


Available sources for aid to Africa are described and analyzed. Greater attention is needed to the comprehensive measurement of aid effectiveness. Limited donor support for national budgets impedes national ownership and sustainability. Countries should ensure development of exit strategies to avoid excessive dependence on external aid. Mutual accountability frameworks are recommended at country level.


The article describes the Global Fund’s experienced with performance-based funding. Under Global Fund protocols, continued funding to countries is contingent on national success in meeting or approaching agreed targets. Of 370 Global Fund grants to 130 countries, 75% reached their targets, and an additional 21% had inadequate results but demonstrated the potential to reach the targets in the future.

A comparative analysis founds that while PEPFAR is more efficient in bringing programs to scale, expanding service coverage and disbursing funds to the field, the Global Fund and the World Bank work more closely with national governments in support of AIDS strategies and have more success in building indigenous capacity.


The chapter describes health financing approaches in LIMC, with separate discussions for financing patterns in low-income and middle-income countries. Issues associated with external financing are examined, including predictability, sustainability and national absorptive capacity. The chapter highlights the need for improved harmonization and alignment among donors, stronger aid to help countries mobilize their own resources for health, greater flexibility from the International Monetary Fund to promote national health aims, and a stronger evidence base to highlight best practices in international assistance.


The major biennial publication of UNAIDS examines developments between 2006 and 2008 in the global AIDS response. A special section examines trends in HIV-related financing. Annual funding for AIDS programs from all sources increased from US$ 1.4 billion in 2000 to US$ 10 billion in 2007, with AIDS-specific funding projected to exceed US$ 15 billion by 2010. Domestic per capita spending on HIV in LIMC has increased, almost doubling in sub-Saharan Africa between 2004 and 2007. The U.S. is the largest single provider of HIV-related financial assistance to LIMC, with the Netherlands providing the highest percentage of its GDP to HIV assistance of all donor countries.


An analysis of available evidence on patterns in per capital health spending concludes that more than 90% of the international variation in per capita spending is explained by per capita income (i.e., gross domestic product). Evidence does not indicate that relatively higher levels of government spending on health results in higher overall per capita health spending, suggesting that private health spending is often reduced when public sector spending rises. Available evidence indicates that neither official development assistance nor debt relief is an effective means to increase overall spending.
Infrastructure and Clinical Services

Impact on Service Utilization and Health Quality


This study compared the quantity of non-HIV-related health services delivered prior to and at least six months after the introduction of basic HIV care in primary care centers in Rwanda. Utilization of 22 non-HIV-related health services was tracked in 30 clinics. Utilization increased for 17 of 22 services, with notable increases for antenatal care utilization, delivery of newborns in health care settings, vaccinations and screening for sexually transmitted infections. Regression analysis found that HIV scale-up played the principal role in increases in seven clinical services, while changes in health care financing schemes were associated with the other service utilization increases.


Results from the scale-up of an integrated HIV prevention and treatment program in rural Haiti are described. Based on the directly observed therapy model traditionally used for the treatment of tuberculosis, the program was implemented by Partners in Health in the rural district of LasCahobas. Over 18 months in 2002-2003 following implementation of the program, the number of patient visits at the rural clinic rose more than 10-fold, dramatic increases in TB case detection were reported, and more than five-fold increases occurred in rates of prenatal care visits and immunizations.

Impact on Other Diseases and Public Health Aims


Application of a mathematical model to a setting in Kenya (pop. 200,000) suggests that the interaction between HIV and malaria may account for 8,500 excess HIV infections and 980,000 excess malaria episodes. Higher HIV viral load in response to malaria episodes may also contribute to the spread of HIV infection.

Burua A et al. (2008), The Integration of Tuberculosis-HIV/AIDS Care in 89 Health Facilities in Uganda, 2008 HIV/AIDS Implementers Meeting, Abstract 554, June, Kampala, Uganda.

Beginning in 2005, Uganda implemented quality of care indicators to monitor HIV/TB integration in 89 health facilities. Over 22 months following implementation of these procedures, the percentage of ART patients receiving a TB assessment increased from 40% to 80%. Smaller facilities demonstrated greater improvement on average than larger facilities.


In this review articles, the authors explain that the HIV epidemic is primarily responsible for the worsening of tuberculosis in Africa. Interactions between the two diseases are discussed, along with the challenges in diagnosing and treating TB patients in the context of high HIV prevalence. The authors recommend more widespread use of highly sensitive culture techniques and scaling up to achieve WHO treatment targets.
Fiellin DA et al. (2007). **Combating the twin epidemics of HIV/AIDS and addiction: opportunities for progress and gaps in scale. A report of the CSIS Task Force on HIV/AIDS.** Center for Strategic and International Studies: Washington DC.

This report describes the role of injecting drug use in various epidemics and makes recommendations to improve the ability of the PEPFAR initiative to respond to drug-driven epidemics. In particular, the report contends that PEPFAR could play a valuable role in expanding access to drug substitution therapy in countries with a heavy burden of substance use and related HIV infections.

Havlir DV et al. (2008). **Opportunities and Challenges for HIV Care in Overlapping HIV and TB Epidemics.** *JAMA* 300:423-430.

Although antiretroviral management affords an excellent opportunity for the delivery of TB control measures, insufficient progress has been reported in this regard. The authors propose a framework of strategic actions to promote integration of HIV and TB services.


Civil society research in more than 10 countries demonstrates that HIV scale-up is having important collateral benefits for treatment of other conditions, contributing to improvement of clinical practice and clinical settings, and spurring greater community engagement on health issues generally. Efforts to expand HIV treatment access are also encountering significant systemic barriers, including poorly developed national drug regulatory systems and weak systems for procurement and supply management of essential medications.


Company payroll records were studied for 59 HIV-positive tea harvesters and a comparison group of all workers (n = 1992) for a period of two years before and one year after initiation of ART. The impact of HIV/AIDS on days worked was estimated for tea harvesters. Workers who initiated ART worked at least twice as many days in the subsequent 12 months as they would have in the absence of ART.


This editorial comments on emerging epidemiological studies indicating lower rates of malaria incidence in households receiving cotrimoxazole prophylaxis as a result of HIV infection.


Abstracting clinical information from 463 HIV-infected patients served in the public sector in 11 Brazilian states, a mathematical model was used to estimate the impact of ART scale-up on TB incidence. Among HAART-treated patients, TB incidence declined by 80% over what the models projected for HIV-infected but untreated patients.


This presentation describes USAID’s “food by nutrition” approach, which tailors HIV-related nutritional interventions to an individualized client assessment of nutritional needs and deficiencies.
Results are summarized from the Treatment Action Group’s partnerships with civil society organizations in four African countries to promote integrated HIV/AIDS services. In Côte d’Ivoire, a collaboration between organizations of people living with HIV and with TB resulted in identification of 3,335 new TB cases in Abidjan, of which 46% were HIV-positive. In Swaziland, a training manual on TB/HIV co-infection developed by a PLWHA group has been adopted as a national tool to integrated TB and HIV services. Increased awareness and advocacy for integrated HIV/TB services are reported in Nigeria and Uganda.


The study concludes that Thai patients co-infected with HIV and TB who received antiretrovirals had one-sixth the risk of death of those not receiving antiretrovirals.


WHO’s annual report on global TB trends noted the dangerous interactions between HIV and TB. The percentage of TB patients tested for HIV in all countries increased from 0.5% in 2002 to 12% in 2006. In 2006, 78% of HIV-positive TB patients received cotrimoxazole prophylaxis. Globally, only 27,000 HIV-positive people in LIMC were started on isoniazid preventive therapy in 2006, with Botswana accounting for nearly all of this number.


This document outlines strategies to link HIV/STI services with other service systems to improve service integration and promote uptake of HIV-related and non-HIV-related services.

**Supporting Services for Key Populations**


The recipient of a grant of more than US$ 56 million from the Bill & Melinda Gates Foundation, the African Youth Alliance reached more than 35 million stakeholders through media campaigns between 2000 and 2005, supported life planning skills education for more than 400,000 young people, and supported more than 2.5 million clinic visits for young people.


The record of the world’s efforts to deliver services and support to men who have sex with who are either HIV-positive or at risk of HIV infection is one of “abject failure,” this report concludes. Although MSM are at exceptionally high risk of infection, MSM-targeted programs account for less than 1% of spending in Latin America, with similar disparities observed in other parts of the world. Legal frameworks also stigmatize MSM in many countries and discourage service utilization or community mobilization to respond to the epidemic. Many countries fail to collect...
meaningful data on HIV/AIDS among MSM, impeding development and implementation of sound public health strategies. The report includes conclusions for strengthening the global response to HIV/AIDS among MSM.


Following implementation of services to prevent mother-to-child transmission in 2002-2003 in five urban clinics in Côte d’Ivoire, global scores for quality of antenatal and delivery care significantly improved in all facilities by 2005. Specific improvement was also seen in confidentiality and patient communication. However, certain indicators remained poor.


Although the three leading funders of HIV programs in LIMC have not historically prioritized gender issues, each has implemented new strategies that are summarized and assessed in this report. According to the analysis, outcomes from gender initiatives of the World Bank are not yet available, in part due to the demand-driven nature of the Bank’s work with countries; however, the Bank is prioritizing advocacy to encourage countries to implement gender-based approaches, and the Bank has also developed a new strategic AIDS plan that prioritizes gender issues. With respect to the Global Fund, country proposals have generally been weak on gender issues, although there is increasing pressure on the Fund and country coordinating mechanisms to place a greater priority on gender-based programs. A new strategic framework on gender could enable the Fund to play a greater role in promoting and financing gender-based programming in countries. PEPFAR has identified strategic directions with respect to gender, has placed increasing priority on gender programming, and was the first major donor to disaggregate utilization data by gender. However, tracking PEPFAR funds remains challenging.


This review summarizes what is known about the role of gender inequality in increasing HIV risk and vulnerability and exacerbating the epidemic’s impact. The article also examines the evidence base for effective gender-based interventions and urges greater support for scaling-up gender-sensitive approaches.


The scaling-up of an innovative HIV and reproductive health program for young people in Mozambique is described. Implementation of the program in multiple districts has been associated with increased knowledge of HIV and reproductive health issues among young people, as well as increases in service utilization and condom usage.


This brief report describes experiences with initiatives to expand young people’s access to reproductive health and HIV in multiple African countries. According to available data, these initiatives have increased knowledge levels, service utilization and condom usage among young people.

The HIV epidemic has accelerated efforts to address women’s legal, social and economic disadvantages. This report describes the reasoning and evidence behind efforts to reduce the vulnerability of women and girls through legal reforms that address property and inheritance rights.


The article describes a program for HIV-positive women that includes training of clinicians to diagnose and treat cervical cancer in this population.


Preliminary monitoring data indicate that the Avahan India AIDS Initiative established clinics for sex workers in 274 settings. Forty-one per cent of all sex workers in these areas have attended a clinic at least once in the first two years of the Avahan project, with more than 120,000 clinic visits reported.


A growing number of countries are implementing HIV programs in prison settings. In addition to HIV-specific programs – such as HIV counseling and testing, ART administration, and condom distribution – several countries have taken steps to provide opioid substitution therapy in prisons, which benefits from HIV-infected and non-HIV-infected inmates alike. In addition, the growing access to prison-based needle and syringe programs not only protects against HIV transmission but can also reduce transmission of hepatitis C and other blood borne diseases.

**Impact on Health Care Practice**


Among 50 countries reporting information to UNAIDS as of January 2008, 26% (13 countries) had national procedures in place that are consistent with UNAIDS/PEPFAR Guidelines on Protecting the Confidentiality and Security of HIV Information. Twenty-two countries (60%) reported that they planned to develop such guidelines. Most reporting countries reported the existence of general privacy laws.


This abstract provides a preliminary report on a video-based distance learning protocol that is being piloted by the University of Washington School of Medicine and Nursing in Haiti and Kenya, with the aim of improving clinical management of HIV and STIs. Students attend weekly
two-hour video seminars and complete case-based homework assignments. At the time of publication, the pilot was being evaluated.


The abstract describes implementation by the Ethiopian Ministry of Health of a protocol for the management of pain caused by HIV/AIDS. As the multi-stakeholder work group developing the protocol studied the problem, it determined that the focus was too narrow. The resulting 64-page guideline, which is being widely disseminated and used to support health worker training, addresses pain alleviation for patients with numerous types of acute and chronic pain, not just HIV-related.


A PEPFAR-funded project in partnership with the government of Namibia was implemented to improve medical injection safety in clinical settings. The project used four major strategies to improve medical injection safety: behavior change communications targeted at prescribers and the general public, enhanced compliance with infection control practices, strengthening logistics and commodity procurement systems to ensure ready access to sterile injecting equipment in medical settings, and improving waste management practices. In the two years following implementation of the process, the number of sites having standard treatment guidelines rose from 57% to 94%, and the number with post-exposure prophylaxis (PEP) guidelines increased from 35% to 100%. Sharps injuries significantly decreased, and access to PEP after injuries increased. Vaccination coverage for Hepatitis B improved.

**Monitoring and Evaluation, Strategic Planning, and Evidence-Based Decision-Making**


The report addresses the role of country-level capacity constraints in facilitating the translation of evidence into sound national health policies. Key capacity constraints include weak information systems, insufficient analytic capacity, and disincentives to base policy formulation on evidence. The report recommends improved evaluation and country-level mapping for policy development, stronger architecture for health systems research funding, and increasing investments in evidence synthesis and knowledge translation and use.


The process used by India to develop and implement a US$ 2.5 billion HIV plan is described. India has earmarked nearly 70% of funding for HIV prevention. Use of evidence to target strategies by population and geographical setting is described.


This web-based resource summarizes the roster of research sites supported by NIAID.
Medical Products and Technologies


Assisted by external stakeholders, the Ministry of Health of Mozambique adopted a joint approach to procurement planning, based on quarterly pipeline monitoring, forecast revisions and ongoing stock monitoring. Following implementation of this approach, forecast accuracy from April 2007 to August 2007 for 10 high-volume antiretrovirals ranged from 84% to 122%. Twenty-four month forecasts of product demand and 12-month supply plans (with quarterly review and revision) aided program scale-up while reducing risk of stock shortages. A similar model has been adopted in Zambia for the country's public-sector ART program, which expanded from about 100,000 to 200,000 patients in 2007.


Examining regulatory pathways for future vaccines in LIMC, the article examines weaknesses in national regulatory authorities and describes various policy options to accelerate licensure and introduction of prevention technologies in resource-limited settings.


To facilitate ART scale-up, the government of Rwanda comprehensively restructured its medication warehouse management operations. Warehouse staff received training in best practices, and standard operating procedures were redrafted. New software was introduced to improve management of warehouse stocks. Implementation of the new system reduced the receipt process of drugs into the warehouse by two-thirds – from 15 days to 5 – and reduced dispensing time by half.

Health Behaviors


Experiences with the use of community health educators in Boston (USA) and Haiti are discussed. Authors examine the role of such educators in providing psychosocial support to patients and linking them to medical and social services.


This literature review examines the experience of using expert patients to accelerate scale-up of antiretrovirals. Examining the experience with empowered patient advocates and educators in high-income countries, the authors argue that people living with HIV represent an untapped resource to be mobilized as professional patient experts.
The potential role of business in strengthening health systems in LIMC is examined. Business can aid health systems through core business operations and investments, philanthropy and social investment, and public policy dialogue, advocacy and institution building. Successful examples of business initiatives to strengthen health systems are described. Recommendations are made on ways to stimulate greater business contribution to health systems strengthening.

Nieuwoudt SJ et al. (2008), A Partnership Model with Civil Society Organizations to Expand Community-Based Services for Hard to Reach PLHIV, 2008 HIV/AIDS Implementers Meeting, Abstract 1090, June, Kampala, Uganda.

CARE International partnered with civil society organizations to provide community-based care and support to otherwise unreachable PLWHA in five different settings in Vietnam. Working with 11 different organizations, the initiative has trained more than 100 civil society members and reached 10,657 people, including 6,600 PLWHA.


A randomized controlled study was undertaken of the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) in South Africa. The intervention involved loans to low-income women, accompanied by a participatory learning and action curriculum. Recipients of the intervention experienced 55% fewer episodes of intimate-partner violence, but no changes were observed in HIV incidence.
Elaine Abrams

Dr. Elaine Abrams, MD, is director of the MTCT-Plus Initiative and Professor of Pediatrics and Epidemiology at the Columbia University College of Physicians & Surgeons and the Mailman School of Public Health. Dr. Abrams received her AB degree from Princeton University and her MD from Columbia University College of Physicians & Surgeons. She is board certified in pediatrics and holds appointments in pediatrics and epidemiology.

Dr. Abrams began her career as a pediatrician at Harlem Hospital just as the first cases of pediatric HIV infection were being identified. Over the next 15 years, Dr. Abrams was responsible for the care and treatment of more than 1500 HIV-exposed infants and their families. She was Director of the Family Care Center at Harlem Hospital and developed and implemented a comprehensive HIV care and research program for children and families with HIV. In addition, she was the principal investigator for several longstanding research collaborations and clinical trials focusing on prevention of mother-to-child HIV transmission and pediatric treatment.

More recently, as the scope of the pediatric epidemic in the United States has diminished, Dr. Abrams has shifted her work to focus on maternal-child health care needs in high HIV prevalence settings. In addition to her work at ICAP, she is Chair of the NIH-funded IMPAACT Network’s Primary Therapy Scientific Committee, responsible for developing pediatric therapeutic clinical trials for a large NIH-funded international network. She is also a member of both the WHO and USPHS guidelines committees for both pediatric HIV treatment and for prevention of mother-to-child transmission.
Pedro Cahn

Dr. Pedro Cahn is President of Huésped Foundation, one of the major Argentinean AIDS organizations, which he co-founded in 1988. Huésped Foundation works in the areas of clinical research, prevention and direct services for people living with HIV/AIDS. He has chaired the Argentine AIDS Society and the AIDS Committee of the Pan-American Society of Infectious Diseases, and has served as external advisor for the WHO and Pan-American Health Organization, completing missions in Zaire, Ethiopia and Honduras, among others. Dr. Cahn is a member of the National AIDS Advisory Board at the Ministry of Health in Argentina, and has served as a member of the IAS Governing Council since 1996. He chaired the 1st IAS Conference on HIV Pathogenesis and Treatment held in Buenos Aires in 2001. Dr. Cahn has published more than 80 papers in peer-reviewed journals, and serves as member of the Editorial Board of several Journals, including: The Journal of Infectious Diseases, Actualizaciones en sida, HIV & AIDS Current Trends, Medscape HIV-AIDS, "HIV Clinical Trials", and Current HIV/AIDS Reports.

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Jerry Coovadia

Dr. Jerry Coovadia, MBBS, MD, is a paediatrician and expert in perinatal HIV transmission. Dr. Coovadia was the Head of the Department of Paediatrics at the University of Natal until 2000, and is now the Victor Daitz Professor for HIV/AIDS research at the University of Natal. He has made a substantial contribution in paediatric diseases, including the definitive work on nephrosis in South African children, malnutrition and immunity, measles, particularly the effect of Vitamin A supplementation on children with measles and other infections. He is internationally recognized for his groundbreaking research in HIV/AIDS transmission from mother to child, especially through breastfeeding and is the Protocol Chair for HIVNET 023 and HPTN 046.

He is particularly committed to developing research capacity, having supervised over 40 postgraduate students and taught in the medical, nursing and allied health professions for more than 20 years. He is also a Fellow of the University of Natal and was awarded the Star of South Africa by President Nelson Mandela for his contribution to democracy in South Africa. In 1999, he was awarded the Silver Medal by the Medical Research Council for his achievements in medical research.
Kevin De Cock

Kevin M. De Cock, MD, is the director of the WHO Department of HIV/AIDS, a post to which he was appointed after serving six years as Director of the U.S. Centers for Disease Control and Prevention (CDC) in Kenya. Dr. De Cock oversees all of WHO’s work related to HIV/AIDS, focusing on initiatives to assist developing countries in scaling up their treatment, prevention, care and support programmes.

Dr. De Cock is an infectious disease specialist, with expertise in HIV/AIDS, tuberculosis, liver disease and tropical diseases such as yellow fever and viral hemorrhagic fevers. As CDC Kenya Director, Dr. De Cock supervised programmes and activities including the CDC Global AIDS Program’s prevention work, the International Emerging Infections Program, a longstanding research collaboration with the Kenya Medical Research Institute (KEMRI), and a collaboration with the World Health Organization for polio eradication. He has also served, among other posts, as Director of the CDC Division of HIV/AIDS Prevention, Surveillance and Epidemiology in Atlanta, USA.

A native of Belgium, Dr. De Cock received Bachelor of Medicine, Bachelor of Surgery (M.B.Ch.B.) and M.D. degrees from the University of Bristol and a Diploma in Tropical Medicine and Hygiene from the Liverpool University School of Tropical Medicine. He is currently a Visiting Professor of Medicine and International Health at the London School of Hygiene and Tropical Medicine.

Dr. De Cock has served on a number of notable professional committees, including the WHO Strategic and Technical Advisory Group on HIV/AIDS, the WHO Stop TB TB/HIV Core Group and the UNAIDS Data and Safety Monitoring Board. He co-edited the book AIDS in Africa, Second Edition (Rapid Science Publishers, London, 1997). He has also served on editorial boards and panels for journals including AIDS, The Lancet and The New England Journal of Medicine and is the recipient of numerous professional awards for his contributions to tropical medicine research.
Mark Dybul

Ambassador Mark R. Dybul serves as the United States Global AIDS Coordinator, leading the implementation of President Bush’s Emergency Plan for AIDS Relief. From March to August 2006, he served as Acting U.S. Global AIDS Coordinator, and prior to that he held the positions of Deputy U.S. Global AIDS Coordinator and Assistant U.S. Global AIDS Coordinator.

Before coming to the Coordinator’s Office, Ambassador Dybul served on the Planning Task Force for the Emergency Plan, and was the lead for the Department of Health and Human Services (HHS) for President Bush’s International Prevention of Mother and Child HIV Initiative.

At HHS, he also served as the Assistant Director for Medical Affairs, National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health (NIH), as well as Co-Executive Secretary of the HHS HIV therapy guidelines for adults and adolescents. He continues to be a Staff Clinician in the Laboratory of Immunoregulation at NIAID/NIH and maintains an active role as the principal investigator for clinical and basic research for U.S. and international protocols with an emphasis on HIV therapy, particularly those that may be applicable in resource-poor settings, including intermittent therapy and HIV reservoirs and immunopathogenesis. Ambassador Dybul holds the rank of assistant surgeon general and rear admiral in the U.S. Public Health Service Commissioned Corps, the uniformed service of HHS. He is also a former member of the World Health Organization’s Writing Committee to develop global HIV therapy guidelines.

Ambassador Dybul received his A.B. (1985) and M.D. (1992) from Georgetown University before completing his residency in internal medicine at the University of Chicago Hospitals (1995) and a fellowship in infectious diseases at the National Institute of Allergy and Infectious Diseases (1998).
Wafaa El-Sadr

Wafaa El-Sadr, MD, MPH, is the director of the International Center for AIDS Care and Treatment Programs (ICAP) and director of the Center for Infectious Disease Epidemiologic Research (CIDER) at the Columbia University Mailman School of Public Health. Dr. El-Sadr is Professor of Clinical Medicine and Epidemiology at Columbia University. She is the Chief of the Division of Infectious Diseases at Harlem Hospital Center. Dr. El-Sadr earned her MD from Cairo University, MPH in epidemiology from the Mailman School of Public Health at Columbia University, and MPA from the Kennedy School for Government at Harvard University.

Since joining Mailman School of Public Health, Dr. El-Sadr established the Center for Infectious Diseases Epidemiologic Research (CIDER) to enhance the training and research opportunities in this discipline. She is principal investigator for several NIH-funded therapeutic and prevention research grants and leads several CDC-funded TB grants. She established a Domestic Prevention Working Group within the HIV Prevention Network in order to focus on domestic aspects of the HIV epidemic. Dr. El-Sadr also established and directs the International Center for AIDS Care and Treatment Programs (ICAP), a large center with more than 450 staff around the world. ICAP provides technical assistance in resource-limited countries for programs that focus on HIV prevention, care and treatment as well as related conditions. She also serves on several US and international committees. Her interests include program development, establishing systems that support high quality programs and contribution to the knowledge base in infectious diseases and other health threats that affect vulnerable communities in the US and internationally.

Dr. El-Sadr has led the Division of Infectious Diseases at Harlem Hospital for two decades, where she was instrumental in the development of an internationally recognized comprehensive HIV/AIDS and TB program focused on service, training and research. She has been the principal investigator of large number of grants funded through NIH, CDC, HRSA, New York State and New York City Departments of Health and was instrumental in furthering the understanding of the epidemiology of HIV and TB as well as to the identification of effective strategies for their prevention and treatment.
Dr. Seble L. Frehywot is Assistant Research Professor of Health Policy and Global Health at the George Washington University. She has worked in Asia, Africa and the United States in the fields of medicine, public health, international & national health policy analysis, health policy analysis capacity-building, and health services research and program management. Her research and policy analysis focus is on developing countries health workforce and health systems issues with a main focus on Sub-Saharan Africa and Asia’s Health Human Resource (HRH) and Health Systems Development and Strengthening issues. She teaches International Comparative Health Systems course at the George Washington University.

Michael Isbell

Michael Isbell received his law degree from Harvard University in 1985. After practicing law in the private sector in New York, Isbell directed the AIDS project at Lambda Legal Defense and Education Fund, the nation’s largest gay and lesbian legal rights organization. At Lambda, Isbell helped litigate some of the earliest HIV discrimination cases under the Americans with Disabilities Act, the first federal law to provide broad protection against HIV-based discrimination in employment, health care access, and public accommodations.

In 1994, Isbell became public policy director at Gay Men’s Health Crisis, the world’s oldest AIDS service organization. At GMHC, where he eventually became Associate Executive Director, Isbell eventually oversaw the agency’s communications, prevention and education programs, as well.

Isbell was a member of the Presidential Advisory Council on HIV/AIDS during the Clinton administration, serving as co-chair of its Prevention Subcommittee.

For nearly 10 years, Isbell has worked as an independent consultant, concentrating in public health policy, strategic advocacy planning, and public policy communications.
Ruth Levine, Vice President for Programs and Operations at the Center for Global Development, is a health economist with more than 15 years of experience designing and assessing the effects of social sector programs in Latin America, Eastern Africa, the Middle East, and South Asia. At the Center for Global Development, a Washington, DC think tank dedicated to poverty reduction, she is on the senior management team and leads the Center’s work on global health policy, including chairing a series of working groups on key policy and finance constraints to the effective use of donor funding for health programs in low-income countries.

Before joining the CGD, Ruth designed, supervised, and evaluated loans at the World Bank and the Inter-American Development Bank. Between 1997 and 1999, she served as the advisor on the social sectors in the Office of the Executive Vice President of the Inter-American Development Bank.

Ruth has a doctoral degree in economic demography from Johns Hopkins University, and is the co-author of the books The Health of Women in Latin America and the Caribbean (World Bank, 2001) and Millions Saved: Proven Successes in Global Health (CGD, 2004, updated as Cases in Global Health: Millions Saved (Jones and Bartlett, 2007)), as well as the major reports Making Markets for Vaccines: Ideas to Action (CGD, 2005), When Will We Ever Learn: Improving Lives through Impact Evaluation (CGD, 2006) and A Risky Business: Saving Money and Improving Global Health through Better Demand Forecasting (CGD, 2007).
Zenebe Melaku

Zenebe Melaku, MD is the country director for ICAP Ethiopia. In this role, Dr. Zenebe oversees the planning and implementation of multidisciplinary HIV/AIDS care and treatment services at 42 ICAP-supported sites in four regions of Ethiopia (Oromiya, Somali, Dire Dawa, and Harari). He provides technical and managerial oversight to care and treatment activities at the national, regional, and site levels and liaises with the Federal Ministry of Health and other project partners and collaborators. As of June 2008, more than 57,000 adults and children with HIV had enrolled in care at ICAP-supported sites in Ethiopia, and more than 31,000 had initiated antiretroviral treatment.

Before joining ICAP, Dr. Zenebe was the technical advisor for HIV/AIDS Care and Treatment at CDC/Ethiopia. There, Dr. Zenebe assisted in the development and implementation of the National pMTCT (Prevention of Mother-to-Child Transmission) Implementation Framework, National ART Implementation Guidelines, Antiretroviral Treatment (ART) Guidelines, and ART Monitoring and Evaluation tools. He also helped prepare the Country Operation Plan for President’s Emergency Plan for AIDS Relief (PEPFAR) and the country implementation plans for CDC and USAID and played a key role in the coordination of pMTCT, care and support, and treatment activities. Dr. Zenebe also planned, conducted, and evaluated a number of national training initiatives on HIV/AIDS care and treatment. Previous to his position as technical advisor at CDC/Ethiopia, Dr. Zenebe was an associate professor of internal medicine at Addis Ababa University, where he taught neurology and clinical immunology, including HIV/AIDS, and served as the clinical instructor for in-service training on comprehensive clinical management of HIV/AIDS.

Dr. Zenebe holds a medical doctorate with a specialty in internal medicine from Addis Ababa University. He earned a diploma in tropical neurology and certificate of fellowship in neurology from the University of Limoges, France, as well as certificates in rheumatology, advanced epidemiology and research methodology, and clinical field trials from the University of Bergen, Norway. Dr. Zenebe also earned a certificate in training of the trainer from the Johns Hopkins University HIV/AIDS Management Program and a certificate for completion of the International HIV Training Program, organized by San Francisco General Hospital in California.
Professor Peter Mugyenyi has since 1992 served as the Executive Director of the Joint Clinical Research Centre (JCRC). JCRC is a center of excellence that has provided leadership in AIDS care, treatment, research and prevention thus making a major contribution to the highly successful Uganda AIDS Control program. He is the Chair of Africa Dialogue on AIDS (ADAC) and AIDS Care Research in Africa (ACRiA), which is an African-led initiative to promote and carry out quality research, and to coordinate HIV/AIDS-related activities in Africa. He coordinates and manages a team of over 100 experts and scientists in Uganda, and works with many others in Africa and other continents. He is the Visiting Professor of Medicine at Mbarara University of Science and Technology in Uganda, and an adjunct Assistant Professor of Medicine Case Western Reserve University, USA. At national and international level he has also been involved in planning, review and execution of policies and projects on AIDS treatment and research, HIV vaccines trials, access to drugs, poverty alleviation and policy formulation and communication.

He has been a Principal Investigator on a number of important projects funded by WHO, NIH, Family Health International, European community, Rockefeller Foundation, Doris Duke Charitable Foundation, and MRC (UK), among others. He provided technical and management expertise to the Ministry of Health previously as AIDS Task Force Chairman to plan for national scaling up of HIV care in Uganda. He also served as the Chair of Uganda Blood Transfusion Services and a board member of Uganda Sciences and Technology Authority and the Chairs the Health Sciences committee responsible for overseeing all Medical Science Projects and Ethical approval processes in Uganda. Mugyenyi is also the Director of Clinical Operational and Health Service (COHRE) Training Program, which is a multi-institutional training project supporting training programs ranging from short courses, Masters degree, and up to PhD level involving HIV and TB research. The program is a partnership of the JCRC, Makerere University, Mbarara University of Science and technology, Case Western Reserve University USA, and Kampala City Council and is supported by the National Institute of Medicine USA.

Mugyenyi has carried out an in-depth research on the impact of HIV/AIDS in Africa, defining the scope of the problem, country responses, trends, gaps in various programs and research priorities. In April 2002, he testified to the US Senate on the impact and catastrophe of HIV in Africa, other developing countries and the need for increased funding. Mugyenyi was one of the leading international experts that took part in discussions to define feasibility and methodology of international interventions and programs for rapid scale up of antiretroviral therapy. In recognition of his international leadership in HIV/AIDS prevention and treatment and his role in treatment advocacy Mugyenyi was invited to the 2003 State of the Union address in US congress when President Bush announced $15 billion as emergency funds to alleviate the AIDS crisis in Africa and the Caribbean.

Internationally, he has served as a Board Member of the Institute of Medicine of the National Academies (USA) and a Board member of the HVTN (HIV Vaccine Trials Network; Bethesda, USA), and was Chair of the Scientific (Track B) Preparatory Committee of the International AIDS conference that took place in Bangkok, Thailand July 2004.

Mugyenyi has received a number of local and international awards including Lifetime Achievement Award, an international Award of Hero of Medicine 2003 and two Doctor of Science degrees from Mbarara University in Uganda and University of Dublin in Ireland. He was also awarded a special Uganda Parliamentary honor on 16 December 2003 in recognition of his work. November 24, 2004, he was elected Fellow of The Third World Academy of Sciences at the 15th General meeting held in Trieste, Italy. On 25 November 2004, Mugyenyi awarded, the Order of Merit, by The Uganda Medical Association in recognition of his outstanding contribution to the Medical Profession. March 30th, 2005 he was elected Fellow of the Royal College of Physician of Edinburgh, UK. March 2005, was selected for profiling in the Most Caring Physicians of the World publication, by the World Medical Association, based in Geneva, Switzerland. September 2005, honoured with Lifetime Membership Award, of the International Association of Physicians Against AIDS (IAPAC) based in Chicago USA.
Joia Mukherjee

Dr. Joia Mukherjee trained in Infectious Disease, Internal Medicine, and Pediatrics at the Massachusetts General Hospital and has an MPH from the Harvard School of Public Health. She is an Assistant Professor in the Division of Social Medicine and Health Inequalities at the Brigham and Women’s Hospital and Harvard Medical School where she teaches medical students, residents and fellows in the fields of infectious disease, global health and health disparities. Since 2000, Dr. Mukherjee has served as the Medical Director of Partners In Health, an international medical charity with clinical programs in Haiti, Rwanda, Lesotho, Malawi, Peru, Mexico, Russia, and inner-city Boston. In this capacity she is involved in programmatic and clinical work to provide health care and reduce health disparities by developing public sector, community based programs with local colleagues in those countries. Additionally, Dr. Mukherjee consults for the World Health Organization on the treatment of HIV and MDR-TB in developing countries and is a member of the Executive Board of Health Action AIDS, a campaign conducted with Physicians for Human Rights to engage the US health professional community in the international advocacy and education effort to stop the global AIDS pandemic.

Jos Perriens

Dr. Perriens is currently the Coordinator, Strengthening Systems for HIV (SSH), Department of HIV/AIDS, World Health Organization, Geneva, since July 2007.

The SSH team supports 1) service delivery for HIV/AIDS with the Integrated Management of Adult Illness (IMAI) family of planning and training tools 2) human resource development for HIV/AIDS with policy and planning advice, and training curricula and tools (partly through IMAI), 3) commodity security for HIV programmes through the AIDS Medicines and Diagnostic Services, a network of organizations supporting procurement and supply management for AIDS with strategic information, capacity building and technical assistance, 4) financing of the response to HIV with tools to develop costed operational plans for the response to AIDS.

Before 2007, Dr. Perriens held various posts in the same department: acting Coordinator HIV Prevention in the Health Sector (PHS), with focus on HIV testing, HIV interventions for more at-risk population, the prevention of mother-to-child transmission of HIV (July 2006 to November 2007), Director of the AIDS Medicines and Diagnostics Services in WHO (2004 to 2006), and Director Care (2001 to 2004), and was responsible for the formulation of WHO’s public health approach to antiretroviral therapy in resource-limited settings, one of the main strategies of the WHO/UNAIDS "3 by 5" initiative.

From 1996 to 2001, he worked for UNAIDS, on the Drug Access Initiative and the Accelerating Access Initiative, on mother-to-child transmission (chairing the UN Inter Agency Task Team on this topic and expanding it), and on microbicide development. Before that, he worked in AIDS clinical and operational research in the World Health Organization between 1992 and 1995, and in Zaire and Belgium from 1987 to 1990, including a stint as deputy director of the Provincial AIDS control program in Shabe province, in Zaire. From 1984 to 1987, he practiced and lectured on internal medicine in Suriname, in South America. He holds a MD (Belgium), is board certified in Internal Medicine (Belgium), obtain his Ph.D. at the State University of Ghent in 1995, and studied public health and tropical medicine at the Institute of Tropical Medicine in Antwerp, Belgium. Born in 1953, Jos Perriens is a Belgian national, and is fluent in English, French and Dutch.
Miriam Rabkin

Dr. Miriam Rabkin, MD, MPH, is a member of the leadership team at Columbia University’s International Center for AIDS Care and Treatment Programs (ICAP). Her work focuses on access to HIV/AIDS care and treatment in resource-limited settings, and she has supported the design and implementation of HIV programs in multiple countries in sub-Saharan Africa. She also works as a consultant with the Global Health Initiatives team at the Rockefeller Foundation, where she has focused on supporting new competencies for public health professionals in the global South, and on the impact of HIV scale-up on health systems. Dr. Rabkin is an Associate Clinical Professor of Medicine and Epidemiology at Columbia University, where she teaches at the College of Physicians and Surgeons and the Mailman School of Public Health. She is also a faculty member of the Clinical Ethics committee and the Center for Bioethics.

Badara Samb

Badara Samb, MD, PhD, is Advisor to the Assistant Director-General, Health Systems and Services. Prior to this position he was WHO’s Coordinator for Health Systems Strengthening in the Department of HIV/AIDS. Before joining WHO in 2001, he worked with the Joint United Nations Programme on HIV/AIDS (UNAIDS) as care adviser for two years.

After beginning his career as a field assistant for UNICEF and a medical doctor in Senegal, Dr Samb worked with WHO and the French Institute for Scientific Research and Development Cooperation (IRD, formerly ORSTORM) studying measles and measles vaccines. From there he moved to the French Institute for Medical Research (INSERM), working as a senior researcher and epidemiologist for much of the 1990s. During this period, he also served as an Associate Professor of Public Health at the University Pierre et Marie Curie in Paris.

Holding dual citizenships of Senegal and France, Dr Samb received his medical degree from the University of Cheikh Anta Diop, in Dakar, and a PhD in Public Health from the Pierre and Marie Curie University in Paris.

Dr Samb is fluent in French, English and Wolof. He was granted the 2003 International Health Professional of the Year award by the International Biographical Centre, Cambridge, United Kingdom. He is currently an associate professor of health and international relations at the Geneva School of Diplomacy and International Relations.
Dr. Nelson K. Sewankambo is Professor of Medicine, Dean of the Faculty of Medicine, and Chair, Board of Infectious Diseases Institute, Makerere University. He is also co-chair of the Academic Alliance for AIDS Care and Prevention in Africa, and Vice President of the Academic Alliance Foundation and Council member for Global Forum for Health Research.

He trained at Makerere University as a medical doctor and specialised in internal medicine but later graduated in Clinical Epidemiology at McMaster University in Canada. He was honored for his exemplary professional work by the Royal College of Physicians of London by being nominated a Fellow of the College, and has been recently awarded an Honorary Doctor of Laws from Canada.

In Uganda, Professor Sewankambo has made a number of major significant contributions mainly in the education of health professionals (doctors, nurses, pharmacists and dentists), in researching the deadly and most devastating epidemic of our time i.e. HIV/AIDS, participating in rural community development and persevering to serve Uganda throughout the nation’s darkest days in the 70’s and early 80’s. He was one of the few Ugandans who took extreme interest in researching the HIV/AIDS epidemic. Together with colleagues they did extensive research in Masaka and Rakai, Uganda that led to the first scientifically proven evidence of the existence of AIDS in Uganda, published in the *Lancet* in 1985.

A novel idea was conceived and led to the formation of Academic Alliance for AIDS Care and Prevention in 2001. Dr. Sewankambo has been one of the major pillars and a founding member that led to the above creation. He has provided leadership to the Academic Alliance, the Infectious Diseases Institute, and the Academic Alliance Foundation. The Institute is unique in Makerere University and is an of how a public academic institution can set up a functionally autonomous world class unit to provide high quality health care, research and training of health professionals.

Dr. Sewankambo has demonstrated enduring efforts to improve the quality of training at Makerere University and Uganda as a whole. He has steered the Medical School with a vision to constantly recognize need for and introducing change taking into context the changing internal and external environment and the changing needs of our society.

Dr. Sewankambo has not restricted the application of his knowledge and skills to Uganda, but has contributed significantly to the Global Forum for Health Research, Nuffield Council Working Party on Ethics of Health Care Related Research in Developing Countries, International Clinical Epidemiology Network and International Joint Learning Initiative (JLI) on Human Resources for Health and Development, to mention but a few. As co-chair of the education/production sub committee of the JLI, he contributed to the landmark report entitled “Human Resources for Health, Overcoming the Crisis” which had a major influence on WHO and its recent 2006 report (Together for Health) which focus on the global crisis of health workers and the need for urgent action in order to enhance health of populations. He steered the development of an East African effort that led to an internationally acclaimed institutional brokerage mechanism for linking research to policy and action “The REACH Policy Initiative” headquartered in Arusha under the East African Community.
Moses Sinkala

Moses Sinkala, MD, MPH is the Zambia Country Director for the Catholic Medical Mission Board which leverages provision of medical services to underserved people in both rural and urban areas of Zambia, collaboratively with the Church Health Association of Zambia (CHAZ). He is adjunct Associate Professor of Epidemiology & International Health, Clinical Assistant Professor of OBGYN and Associate Scientist for the Center in AIDS Research at the University of Alabama at Birmingham (UAB). Prior to joining CMMB, Dr. Sinkala was the Director of Health, Lusaka District Health Board of the Zambian Ministry of Health and most recently the MOH’s Communicable Disease Specialist.

Throughout his career, Dr. Sinkala has participated in and led efforts in support of improvements in public health. He is currently the Chairman of the Scientific Advisory Board for the Center for Infectious Disease Research in Zambia (CIDRZ), and served as the organization’s president and chairman from 2001-2005. He is also Vice Chairman of the National MTCT Working Group for Zambia, National AIDS Council. Since 2001, he has been part of the Perinatal Scientific Working Group, HIV Prevention Trials Network, NIAID, NIH.

An obstetrician-gynecologist, Dr. Sinkala has a distinguished career in medical administration, research and service delivery. Dr. Sinkala served as the in-country Zambia PI of the Call to Action (CTA) PMTCT initiative, as well as the PI for the MTCT-Plus initiative in Zambia, which provided the first treatment to HIV positive mothers and their families. He also served as co-PI for the HIV Prevention Trials Unit (HPTU) and the Zambia Electronic Perinatal Record System (ZEPRS) projects.

Dr. Sinkala also served as the Director of the Lusaka Urban Health District Management Team (2000-2006) and provided critical leadership as the Communicable Diseases Specialist, Zambian Ministry of Health Headquarters. He has published as first, second, and third author in over 50 papers in prestigious journals such as *AIDS, JAMA, Lancet*, and *JAIDS*, and has served as PI and Co-PI in implementing promising research interventions or clinical trials in the area of PMTCT, nutrition interventions and prevention of HIV transmission including the following among other notable achievements:

- Rapid Scale-up of HIV Care and Treatment in Lusaka District (M. Sinkala, PI): Zambian government, PEPFAR, and Global Fund initiatives
- Initiation and Scale-up of Pro-test initiative in Lusaka District (M. Sinkala, PI): Zambia MOH, WHO, Global Fund
- Evaluation of the Zambian government ATR implementation plan (M. Sinkala, PI): Zambian MOH, WHO, USAID
- Zambian Perinatal HIV Control Project: “Call to Action” (M. Sinkala, PI): support by the Glaser Pediatric AIDS Fund and the Gates Foundation
- HIV Prevention Trials Unit (HPTU) (S. Vermund, M. Sinkala, co-PIs): NIAID/NIH
- The MTCT-Plus Initiative (M. Sinkala, PI): supported by a consortium of foundations through the Columbia University School of Public Health (www.mtctplus.org).
- Postnatal Health Practices and Alternatives for HIV Infected Mothers and Their Infants, (Robert Goldenberg, PI, Moses Sinkala, Co-PI).

Dr. Sinkala was a major force in the development of the Center for Infectious Diseases Research in Zambia (CIDRZ) in 2000, an NGO, and now center of excellence for clinical trials, for which he is the chairman of the scientific committee. The organization now provides a platform for a variety of research and treatment projects in areas such as pediatrics, public health, obstetrics and gynecology and AIDS. Under Dr. Sinkala’s leadership CIDRZ grew from a $ 200K/year to a $20 million/year clinical research center with 350 employees.
Diana Weil

Diana E.C. Weil MSc, is Coordinator, Policy and Strategy, for the Stop TB Department of the World Health Organization. She has twenty years experience in public health policy guidance and programmatic support. With WHO, she has assisted Ministries of Health in Latin America, Africa and Asia, and contributed to the development and implementation of the DOTS package, the Stop TB Strategy and global plans to Stop TB. After serving as policy analyst and Latin America TB control focal point at WHO Headquarters, she was TB Program Officer at the Pan American Health Organization. She then was a WHO-seconded Sr. Public Health Specialist with the World Bank’s Health, Nutrition and Population team. She has conducted analyses on health system strengthening principles and disease control scale-up, the interaction of health system reforms and disease control, TB drug supply systems and markets, the role of incentives and enablers in service delivery, and the impact of development policies on health. Ms. Weil has served on inter-agency and independent panels and committees related to global health partnerships, the MDGs, health services delivery and financing, TB care and control. She has degrees from Brown University and the Harvard School of Public Health.
Dr. Debrework Zewdie has spent the last 20 years fighting HIV/AIDS as a scientist, strategist, manager, advocate and activist. Her dedication and leadership have helped transform the response to the epidemic at the international, regional, national and community levels. She has been a supportive partner with UNAIDS since its inception, working closely with the Executive Director to expand political and financial commitment to HIV prevention, care and treatment around the world.

Dr. Zewdie received her Ph.D. in Immunology from the University of London and was a Senior MacArthur Fellow at Harvard University’s School of Population and Development Studies. She has published numerous journal articles and book chapters on a variety of public health subjects.

Dr. Zewdie is currently Director of the World Bank’s Global HIV/AIDS Program, where she provides overall strategic and technical leadership to the Bank’s AIDS efforts. She serves as the Bank’s UNAIDS Global Coordinator and represents the institution as a member of the UNAIDS Program Coordinating Board, contributing to the development and implementation of global HIV policies and strategies. Under her stewardship, the Bank’s AIDS portfolio has expanded dramatically. She created and led the AIDS Campaign Team for Africa (ACTafrica), which developed the strategy for Intensifying Action against HIV/AIDS in Africa. This groundbreaking strategy resulted in the Multi-country AIDS Program for Africa, which committed US$1 billion to support AIDS programs in 35 countries, at a time when international funding to combat the epidemic was tragically low. The MAP fundamentally changed the scope of the World Bank AIDS response, becoming the first multi-sectoral program to provide civil society and the private sector with direct and long-term financing to support HIV programs of national scale.

Prior to joining the World Bank, Dr. Zewdie was Deputy Director of the Africa Region for the AIDS Control and Prevention project (AIDSCAP) of Family Health International, the largest global AIDS program at that time. There she worked at the regional level to strengthen program implementation in 17 African countries. In her home country of Ethiopia, Dr Zewdie had a rich career as a researcher, Associate Professor of Immunology, and program manager on a range of public health challenges. She served as Deputy Director and Acting Director of the National Research Institute of Health, established and headed the National Referral Laboratory for AIDS in Ethiopia, and served as Program Manager of Ethiopia’s AIDS/STD Prevention and Control Program. In 1985, she identified the first HIV-positive Ethiopian with a team of physicians. She continues to serve on several Boards, including the International AIDS Society. Dr. Zewdie is a founding vice president of the Society for Women and AIDS in Africa, where she brought to bear her perspectives as an African woman.

In addition to UNAIDS and the World Bank, Dr. Zewdie has deep working knowledge of national AIDS programs, the Global Fund for AIDS, Tuberculosis and Malaria, bilateral donors such as PEPFAR and DFID, and civil society organizations. In November 2007, on the request of the GFATM Executive Director, Dr. Zewdie was seconded to GFATM to lead its Operations Department, the institution’s largest unit with two-thirds of total global staff. Dr. Zewdie was selected on the basis of her track record establishing and implementing AIDS programs at the international, regional and country levels. In her seven-month secondment at GFATM, Dr. Zewdie restructured the Operations Department, put needed systems in place and built teams to help the Fund achieve its mandate.

Having spent the last twenty years responding to the HIV/AIDS epidemics as a scientist, academic, manager and advocate, Dr. Zewdie is keenly aware of the tremendous achievements that have been made in the global response to HIV/AIDS, and specifically by UNAIDS. Nevertheless, she sees the HIV epidemics as a long-term development challenge that will continue to require predictable financing and sustainable capacity building, coupled with advances in science and technology. Equally key is the need to mount amore robust, culturally sensitive and politically supported. Prevention program to break the back of both generalized and concentrated epidemics.