

## Executive Summary

This book offers an original perspective on HIV and AIDS as a development issue in South Asia, a region with a heterogeneous epidemic and estimated national HIV prevalence rates of up to 0.5 percent. The analysis challenges the common perception of HIV and AIDS, which has been shaped to a large extent by analysis of HIV and AIDS in regions with much higher prevalence rates. Three risks to development are associated with HIV and AIDS in the region:

**First, the risk of escalation of concentrated epidemics.** HIV prevalence rates so far remain low in the South Asia region, although there are areas with concentrated epidemics and high and rapidly increasing HIV prevalence rates among vulnerable groups at high risk. The main risk factors that drive the epidemic are sex work and injecting drug use (IDU), especially where these factors intersect. Therefore, prevention measures targeted at injecting drug use and sex work are crucial, and the financing of effective prevention programs, such as comprehensive harm reduction including clean needle exchange, condom use, and treatment of sexually transmitted infection (STI), are sound economic investments in low-prevalence countries with concentrated epidemics.

**Second, the economic welfare costs.** The impacts of HIV and AIDS on economic growth in the region appear to be very small. But, the epidemic

has a disproportionate impact on key population groups. HIV and AIDS frequently results in and exacerbates poverty, as shown by estimates of the economic impact on households and the ability to cope with stigma and other structural amplifiers. Uneven access to health services within countries is also a matter of concern. Available indicators for access to prevention and treatment are correlated with socioeconomic parameters like gender, educational attainment, and wealth. At the same time, the ability to cope with catastrophic illnesses such as AIDS on the household level is limited for households below or in the vicinity of poverty thresholds. Reflecting infection patterns and the low socioeconomic status of widows, women are particularly vulnerable to the social and economic consequences of HIV and AIDS. In addition to the epidemiological benefits, investments in comprehensive prevention efforts, therefore, contribute to containing poverty.

**Third, the fiscal costs of scaling up treatment.** Access to treatment in the region is low at present, even when compared to countries with much higher HIV prevalence. The weak capacities of health systems in the region contribute to low access and utilization of treatment services. Looking ahead, the fiscal and other challenges of a comprehensive scaling up of antiretroviral treatment (ART) are substantial, underscoring the crucial role of effective prevention now. There are several implications of the findings regarding access to and the financing of ART, including the medical costs of HIV and AIDS alone that put a substantial proportion of the population at risk of poverty, and the economic constraints that may lead to adherence problems in privately financed ART. The limited ability of many households to pay “catastrophic” health expenses associated with ART, and the negative externalities associated with poor adherence, suggest a large and central role for the public sector in the provision of ART.

## **HIV—An Economic Development Risk in South Asia**

### ***Chapter Overview***

The chapters, most of which were commissioned specifically for this volume, can be grouped in three broad themes—the epidemiology of HIV and prevention strategies (chapters 1 and 2), economic and development impacts of HIV and AIDS (chapters 3 and 4), and the implications of HIV and AIDS for the health sector (chapters 5 and 6). Within each theme, one chapter provides a more general discussion of the respective issues in the region (chapters 1, 3, and 5), and one chapter highlights aspects of

the respective issue in one particular country (with chapter 2 dealing with HIV in Afghanistan, and chapters 4 and 6 discussing aspects of the impact of or the response to HIV and AIDS in India).

Regarding the broad development themes identified by this book, chapters 1 and 2 highlight the epidemiological risks. Chapter 3 surveys the intersection of HIV and AIDS and key development objectives, and is complemented by chapters 4 and 5. The forward-looking discussion of the challenges of scaling up (chapter 5) is complemented by an analysis of the costs of ART in India (chapter 6) and a cross-country analysis of access to treatment (in chapter 3).

## **I. The Epidemiology of HIV and Prevention Strategies**

David Wilson and Mariam Claeson (Chapter 1—*Dynamics of the HIV Epidemic in South Asia*) review the experience with the global HIV epidemic, and lessons learned regarding key factors in HIV transmission. Against this background, they describe the situation in each country in South Asia and derive policy priorities for HIV prevention.

Wilson and Claeson identify three factors that play a major role in understanding HIV transmission: the rate and pattern of sexual partner change, the presence or absence of male circumcision, and injecting drug use. The limited data available suggest that concurrent sexual partnerships are less common in Asia to date than in many of the worst affected countries, suggesting that the potential for widespread sexual epidemics is also lower. Male circumcision could be a factor in explaining the pattern of HIV prevalence in Asia—no country with high circumcision rates reports an HIV prevalence rate exceeding 0.1 percent. However, Wilson and Claeson argue that injecting drug use—frequently coupled with sex work—may ignite epidemics in contexts where they would otherwise be unlikely; and this applies in particular to parts of South Asia, a region that includes some major centers of global drug production and trafficking.

The overall size of the Asian epidemic thus depends on the prevalence and transmission of HIV within and between these vulnerable groups at high risk and the wider community. In many Asian countries, drug-injecting prisoners constitute a priority group in their own right. Mobility can amplify the problem, putting truckers and their helpers, migrants, and refugees at higher risk, as is the case in, for example, Afghanistan. Cross-border mobility of sex workers also contributes to different exposure risks, as in Nepal.

Based on a discussion of the experience in the different South Asian countries, and with prevention interventions in general, Wilson and Claeson conclude that the future size of South Asia's epidemics will depend on the scope and effectiveness of programs for sex workers and their clients, injecting drug users and their sexual partners, and men having sex with men and their other sexual partners. Experience has shown that prevention programs targeting these vulnerable groups at high risk work, they are relatively inexpensive, and they provide a high return on investment. Early, effective programs actively involving sex workers, injecting drug users, men having sex with men, and the sexual partners of these communities can therefore prevent HIV from becoming more widely established in the general population.

Jed Friedman and Edit V. Velenyi (Chapter 2—*Responding to HIV in Afghanistan*) discuss the state of the HIV epidemic in Afghanistan, featuring a low-prevalence country in the region with an early-stage epidemic and where HIV prevention efforts have only recently taken off. Based on a discussion of the effectiveness of HIV prevention, they present a framework for assessing the cost-effectiveness of an HIV prevention program being implemented in the country.

Friedman and Velenyi find that the number of recorded cases of HIV infection is low at present. UNAIDS estimated that fewer than 1,000 people were infected at the end of 2006. However, there are factors that point at a risk of an escalation in HIV prevalence. Notably, almost all reported HIV cases at present are due to injecting drug use, and HIV prevalence in this group—judging from the experience of other countries—can increase dramatically within short time periods. A factor exacerbating the situation in Afghanistan is the long history of conflict, resulting in widespread poverty, low levels of education, and low capacities of health systems. Notably, there is some evidence that the large number of refugees is contributing to the spread of HIV and AIDS. A 2005 study suggested that a large share of injecting drug users in Afghanistan had been refugees in the Islamic Republic of Iran and started using drugs there, before returning to Afghanistan.

Building on an analysis of the effectiveness of prevention measures, Friedman and Velenyi apply a simple framework for assessing the economic benefits and cost-effectiveness of an HIV prevention program being implemented in Afghanistan that is geared toward scaling up of prevention programs targeting high-risk behaviors, notably injecting drug use and unsafe sex, and involving vulnerable groups at high risk, like IDUs, sex workers and their clients, truckers, and prisoners. One notable

aspect of their approach is the application of a randomized framework to describe the effectiveness of the program, reflecting the large uncertainties involved in estimating the effectiveness of interventions based on very weak data. Based on an estimate of lost earnings (a fairly restrictive estimate of the economic costs of HIV, see chapters 3 and 4), the median estimates return a cost-benefit ratio of 3.3, which increases to 4.2 when fiscal savings arising from reduced demand for public health services are taken into account.

## II. The Economic and Development Impacts of HIV and AIDS

Markus Haacker (Chapter 3—*Development Impact of HIV and AIDS in South Asia*) discusses the impacts of HIV and AIDS from an economic development perspective. In addition to estimates of the aggregate (average impact), it discusses distributional aspects that arise as the impacts of HIV and AIDS differ across population groups, with implications for key development objectives. Importantly, the course of the epidemic and its impacts are affected by policy choices, and the chapter provides a discussion of the development implications of enhanced prevention efforts and of increased access to treatment.

Haacker finds the impacts of HIV and AIDS in South Asia on the aggregate level of economic activity to be small. For India, the effect on GDP (−0.16 percent) corresponds to a one-off loss of about 1.5 weeks of GDP growth, and the slowdown in population growth implies a slowdown in economic growth equivalent to less than one working day per year in the longer run. While some factors such as adverse impacts on human capital accumulation may exacerbate the negative impacts on growth in the longer run, the growth effects appear to be small overall. However, using a simple model that evaluates the direct welfare costs of increasing mortality, Haacker finds that these welfare costs are more substantial, accounting for 3 percent to 4 percent of GDP in India and Nepal.

Many of the adverse development impacts of HIV and AIDS arise from differential impacts across population groups. Notably, the ability to cope with the financial effects of HIV and AIDS differs strongly across wealth quintiles. For the lowest wealth quintile, Pradhan and others (2006) report savings rates of −23 percent for households affected by HIV and AIDS, as opposed to zero percent for the non-HIV group. In a household study on India, 36.5 percent of people living with HIV and AIDS who were able to retain their employment nevertheless reported an income loss, which averaged about 9 percent. Among those who lost

their employment (about 9 percent of the sample of people living with HIV and AIDS), the income loss was severe, at about 66 percent.

Based on household data from India, Haacker finds that the situation of HIV-positive widows is worse than for other people living with HIV and AIDS, probably reflecting the low socioeconomic status of widows in general. The infection pattern whereby many women are infected by husbands who acquire the virus earlier and are more likely to die before their wives, together with the low socioeconomic status of women, means that HIV and AIDS have a disproportionate economic impact on women. In India and Nepal, the number of orphans (here used to mean children who have lost at least one parent) will increase to about 0.4 percent of the young population. By age 17, about 0.9 percent of the young population will have experienced orphanhood owing to HIV and AIDS.

Access to antiretroviral treatment in the region (about 20 percent in India, and less than 10 percent in the other countries) is low in an international context. In many countries in the region, one key factor that appears to limit progress in scaling-up is the low capacity of national health systems.

While the data situation is weak, the available evidence points toward inequities both in the reach of prevention efforts and in access to treatment. HIV awareness is substantially lower for the lower wealth quintiles and, within quintiles, awareness is lower for women and rural households. Data on access to treatment across population groups are not available at present. Access to related forms of health services, such as reproductive health services, indicate inequities in access to health services across socioeconomic groups. To the extent that these inequities also extend to access to antiretroviral treatment, they exacerbate the disproportionate impact of HIV and AIDS on poorer population groups.

**Sanghamitra Das, Abhiroop Mukhopadhyay, and Tridip Ray (Chapter 4—*Economic Costs of HIV and AIDS in India*)** provide an alternative perspective on estimating the costs of HIV and AIDS. The approach focuses on obtaining a model in which households value consumption, children's schooling, and the state of health, and the costs of HIV and AIDS are measured as a monetary transfer that would compensate a household for the disutility associated with coping with the infection of at least one of its members. HIV and AIDS can affect the household's welfare both generally (with HIV-affected households reporting a lower level of well-being) and through the impact of HIV and AIDS on some well-defined health indicators (such as body mass index) that in turn affect well-being.

Das and others find that the total welfare loss (defined as a compensating income variation) is Rs. 67,601 for a male and Rs. 65,120 for a female. Based on an estimate of 2.5 million people living with HIV and AIDS in India, this loss would add up to about Rs. 167 billion per month, corresponding to about 7 percent of GDP. Thus, the estimates by Das and others are several times higher than any estimates of the direct economic costs (in terms of income lost, costs of treatment, and so forth), and also exceed the estimates of the welfare costs of increased mortality owing to HIV and AIDS (discussed by Haacker, this volume).

However, it is important to note that this measure of welfare or costs is fundamentally different from those used in the other studies. Das and others attempt to estimate the amount required to restore an individual's well-being after the individual is infected by a serious disease that could well (and, according to their estimates, does) exceed the individual's income several times. Other approaches estimate the income losses caused by HIV and AIDS, or the income loss that would be equivalent to the welfare loss associated with an infection.

### **III. The Burden of HIV and AIDS on the Health Sector**

Mead Over (Chapter 5—*The Fiscal Burden of AIDS Treatment on South Asian Health Care Systems*) discusses the fiscal costs and the effectiveness of a comprehensive scaling up of antiretroviral treatment. He points out that health services in most South Asian countries are dominated by private providers, and discusses the implications for scaling-up efforts.

For India, the country with the highest number of people living with HIV in the region, Over finds that the costs of treatment could rise to US\$1.8 billion by 2020, corresponding to 1.2 percent of total health expenditures. In light of the small share of public health expenditures in total health spending, the costs of a comprehensive scaling up would correspond to a much higher share (7 percent) of public health expenditures. The number of patients receiving second-line therapy is projected to rise to 0.5 million by 2020, accounting for 20 percent of people receiving ART. However, reflecting higher prices, second-line therapy would account for over one-half (55 percent) of total costs in 2020.

Controlling for the size of the economy, the projected costs of scaling up, at 2 percent of government expenditures, 5.5 percent of total health expenditures, or 20 percent of public health expenditures, are considerably higher for Nepal than for India, reflecting somewhat

higher estimates of HIV prevalence and a higher share of public health expenditures in Nepal, but primarily Nepal's lower level of GDP per capita. Another notable finding regards Pakistan, where the costs of treatment are projected to rise to 6.4 percent of public health expenditures, reflecting both a low share of public health expenditures in total health expenditures and a low overall level of health spending.

Analyzing the structure of health care financing in South Asia, Over finds that the share of public financing and of third-party financing in most South Asian countries is low in an international context; that is, most health services are financed out of pocket, without the benefit of health insurance. The dominant role of the private sector could potentially mitigate the fiscal burden of scaling up, to the extent that privately financed health providers could be mobilized in scaling up treatment. However, in light of the small role of private insurance and the costs of treatment, especially regarding a transition to second-line treatment, ART may not be affordable for a large number of households.

The latter point is accentuated by an assessment of the costs of treatment against the income distribution (using India as an example). For a four-person household, the costs of first-line ART would push a household at the 40th percentile of the income distribution down to the poverty line, that is, to a level of consumption at par with the 20th percentile of the income distribution. The costs of second-line treatment would exceed the entire income of a four-person household for more than half of the population.

There are several consequences from these findings regarding access to and the financing of ART. In the absence of public (and free) ART or some form of insurance, the medical costs of HIV infection alone (not to mention the broader costs described in chapters 3 or 4) put a large proportion of the population at risk of poverty. One implication of this is that economic constraints may lead to problems with adherence to treatment in privately financed ART. Further, the limited ability of many households to pay "catastrophic" health expenses associated with ART, and the negative externalities associated with poor adherence, suggest a larger role for the public sector in the provision of ART than is the case for overall public health services. Finally, the major role of the private sector in South Asia gives prominence to the issue of the quality of private vs. public health services, and the chapter concludes by summarizing the limited evidence in this direction.

Indrani Gupta, Mayur Trivedi, and Subodh Kandamuthan (Chapter 6—*Recurrent Costs of India's Free ART Program*) develop a detailed framework for analyzing the recurrent costs of India's Free Antiretroviral Treatment (ART) Program, illustrating the complexities of obtaining accurate estimates of unit costs that could be used in planning a scaling-up program.

India's Free ART Program was launched in 2004, with the objective of initially expanding access to antiretroviral treatment in the high-prevalence states, and with the plan of subsequent expansion to other states. As of March 2006, there were about 39,000 patients receiving ART under the program. The estimates and projections are based on an assumed increase in coverage to 146,000 by 2011, roughly in line with the program's objectives.

Gupta and others primarily distinguish among the costs of antiretroviral (ARV) drugs, treatment of opportunistic infections (OI), diagnostic tests, outpatient services, and inpatient services, providing detailed documentation of the data sources and assumptions used in deriving the cost estimates, and of the types of services rendered at the five participating hospitals. Recurrent costs that cannot be attributed to ART directly (for example, hospital staff that is paid a fixed salary, but only spends part of its time rendering ART services) are assigned to the ART program based on different measures of utilization.

There is some considerable variation in the costs of ART across participating sites, with costs ranging from Rs. 971 to Rs. 1,847 per month, with an average of Rs. 1,287. The most important cost components were ARV drugs (47 percent on average), CD4 kits and reagents (20 percent) and human resources (20 percent). The unit costs of treatment appear to decline substantially with the number of patients (at least in the range between 200 and 800 patients per site) and—for two sites that started early—between year one and year two of participating in the Free ART program.

One important finding regards the out-of-pocket expenses of participating in the Free ART program, based on a survey of patients participating in the ART program. These were estimated at Rs. 911 per month. The largest items were (additional) food (23 percent), transport (17 percent), and drugs for opportunistic infections (12 percent). Thus, even though ART treatment is free, the private costs of accessing treatment and other medical costs amount, on average, to about 70 percent of the costs of ART.

Overall, Gupta and others estimate the recurrent costs of the Free ART Program at Rs. 1,517 million, or US\$35 million in 2007 (based on an assumed number of patients of 100,000), and corresponding to about 1.5 percent of the total health and family welfare budget.