

# BRINGING HIV PREVENTION TO SCALE: AN URGENT GLOBAL PRIORITY

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The Global HIV Prevention Working Group is a panel of over 50 leading public health experts, clinicians, biomedical and behavioral researchers, advocates and people affected by HIV/AIDS, convened by the Bill & Melinda Gates Foundation and the Henry J. Kaiser Family Foundation. The Working Group seeks to inform global policy-making, program planning, and donor decisions on HIV prevention, and to advocate for a comprehensive response to HIV/AIDS that integrates prevention, treatment, and care. More information and Working Group publications are available at [www.GlobalHIVPrevention.org](http://www.GlobalHIVPrevention.org).

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# BRINGING HIV PREVENTION TO SCALE: AN URGENT GLOBAL PRIORITY

## EXECUTIVE SUMMARY

We should be winning in HIV prevention. There are effective means to prevent every mode of transmission; political commitment on HIV has never been stronger; and financing for HIV programs in low- and middle-income countries increased sixfold between 2001 and 2006. However, while attention to the epidemic, particularly for treatment access, has increased in recent years, the effort to reduce HIV incidence is faltering. For every patient who initiated antiretroviral therapy in 2006, six other individuals became infected with HIV (1, 2). If current trends continue, it is projected that 60 million more HIV infections will occur by 2015, and the annual number of new HIV infections will increase by 20% or more by 2012. Unless the number of new infections is sharply reduced, global efforts to make AIDS treatment widely available will become increasingly difficult, and millions more people may die as a result of preventable HIV infections. The dramatic rise in antiretroviral coverage, with global access increasing from 8% to 28% between 2003 and 2006, illustrates what the world can accomplish with strong global commitment, increased financing, and collective action. To date, a similar confluence of forces has not been applied to HIV prevention.

This challenge, pivotal to the future health and well-being of millions, is the focus of this report by the Global HIV Prevention Working Group. It offers a new analysis that examines the future course of the epidemic with and without a greatly scaled-up prevention response; surveys the latest evidence on HIV prevention access; reviews the experience in countries where such barriers have been overcome; and closes with a series of urgent recommendations to bring the promise of HIV prevention to the countries and communities that need it the most. As the report shows, even in the midst of global failure to make optimal use of available prevention strategies, a number of countries, including some of the world's poorest, have made tangible progress in reducing the number of new HIV infections through implementation of comprehensive HIV prevention efforts. Strong evidence and replicable models exist for HIV prevention scale-up, underscoring the need to move beyond localized pilot projects to broad-based, comprehensive national programs. If comprehensive HIV prevention were brought to scale, half of the infections projected to occur by 2015 could be averted. We believe that the future need not be a legacy of the past.

### A MISSED OPPORTUNITY

We could slow and even begin to reverse the trajectory of the global HIV epidemic by using the prevention tools currently at our disposal. Strong evidence of effectiveness exists for a broad array of HIV prevention strategies, including approaches to prevent every mode of HIV transmission (3). By delivering comprehensive HIV prevention to those who need it — the right interventions focused on the right people at the right scale — half of all infections projected to occur between now and 2015 could be averted. Annual HIV incidence would be nearly two-thirds lower in 2015 than it would be if the current level of effort is maintained,

resulting in 4 million fewer infections each year by the middle of the next decade, according to a new analysis by the Futures Institute undertaken at the request of the Global HIV Prevention Working Group (4). This degree of success would likely disable the epidemic, causing it to move into a long-term decline.

To realize the promise of available HIV prevention tools, they must be brought to scale. This means that the appropriate mix of evidence-based HIV prevention strategies must achieve sufficient coverage, intensity, and duration to have optimal public health impact.

## ACCESS TO HIV PREVENTION: A GLOBAL FAILURE

Despite the extraordinary potential of available prevention strategies, most people at risk of HIV infection have little or no access to basic prevention tools (1, 2, 6, 7). Although necessary coverage levels vary depending on national circumstances, current coverage levels for essential prevention strategies are woefully inadequate for any national epidemic.

- **CONDOMS.** Only 9% of risky sex acts worldwide are undertaken while using a condom, and the global supply of condoms is millions short of what is needed (1).
- **HIV TESTING.** In the most heavily affected countries of sub-Saharan Africa, only 12% of men and 10% of women know their HIV status (1).
- **TREATMENT FOR SEXUALLY TRANSMITTED INFECTIONS.** It is estimated that fewer than 20% of people with a sexually transmitted infection are able to obtain treatment, even though untreated STIs increase the risk of HIV acquisition and transmission by several orders of magnitude (2).
- **PREVENTION OF MOTHER-TO-CHILD TRANSMISSION.** Years after clinical trials demonstrated that a brief, inexpensive antiretroviral regimen could reduce the risk of mother-to-child HIV transmission by 50% (5), only 11% of HIV-infected pregnant women in low- and middle-income countries receive antiretroviral prophylaxis (1).
- **PREVENTION FOR VULNERABLE POPULATIONS.** Prevention services reach only 9% of men who have sex with men (1), 8% of injection drug users (1), and under 20% of sex workers (6).
- **PREVENTION IN HEALTH CARE SETTINGS.** An estimated 6 million units of unscreened blood are transfused yearly in developing countries, and 40% of injections administered in health care settings are unsafe (7).

## FACTORS IMPEDING SCALE-UP OF HIV PREVENTION

Numerous factors have slowed global efforts to bring HIV prevention to scale.

- **INADEQUATE FINANCING.** While financing for HIV has increased dramatically in recent years, available funding is only slightly more than half of amounts needed to support a comprehensive, scaled-up response (6). In Asia, where the number of HIV infections could double in the next five years to more than 20 million, current spending on HIV/AIDS represents roughly 10% of the amounts needed to mount a comprehensive response (8).
- **MISALLOCATION OF RESOURCES.** In part due to the weakness of HIV information systems (1), many countries do not target limited funds where they would have the greatest impact (9). Misallocation of limited resources by donors and affected countries also often occurs as a result of ideological, non-scientific restrictions imposed by donors on how HIV prevention assistance may be used (10).

- **CAPACITY LIMITATIONS.** Due to inadequate human capacity, countries often have difficulty programming substantial infusions of new funding (1, 11).
- **SERVICE FRAGMENTATION.** HIV prevention has frequently not been integrated into schools, workplaces, and other institutions, and HIV efforts are insufficiently linked with other health-related service systems, such as TB or sexual and reproductive health (1).
- **STIGMA AND DISCRIMINATION.** The stigma associated with HIV and with membership in a vulnerable group deters many at-risk people from seeking HIV prevention services or learning their HIV status (12) and also discourages the kind of political leadership required to implement a robust and evidence-based HIV prevention effort.

## THE FEASIBILITY OF SCALING-UP HIV PREVENTION

Experience teaches, however, that such impediments can be overcome. Numerous countries in multiple regions have demonstrated the feasibility of implementing comprehensive HIV prevention efforts. An early response by Senegal prevented a major epidemic from emerging, while the rapid growth of HIV infection prompted Brazil, Thailand, and Uganda to implement scaled-up measures that reversed their respective epidemics. Prevention efforts in these countries share a number of critical characteristics — adequate and sustained financing, strong political support, evidence-informed action, use of mass media and other channels to raise AIDS awareness, promotion of condoms and STI control, anti-stigma measures, and involvement of affected communities and diverse sectors (13).

In recent years, countries throughout the world have experienced success in expanding access to life-saving HIV prevention:

- **CAMBODIA.** National HIV prevalence was cut in half in a single decade following implementation of comprehensive HIV prevention measures for sex workers and their clients (14).
- **HAITI.** The poorest country in the Western Hemisphere, Haiti has maximized its substantial external assistance to achieve HIV prevention coverage well above global averages, cutting HIV infection levels among pregnant women nearly in half between 1998 and 2004 (15).
- **INDIA.** The Avahan India AIDS Initiative has established sex-worker programs in 76 districts and 550 towns, distributing 5.6 million condoms each month and increasing the percentage of sex workers who visit a sexually transmitted disease clinic from 26% to 90% in little over a year (16).
- **IRAN.** A country where the epidemic is primarily driven by injection drug use, Iran has dramatically expanded access to HIV prevention, treatment, and care services for drug users. At the end of 2006, HIV clinics were operating in one-third of all prisons in Iran, and methadone substitution therapy was reaching 55% of all prisoners in need. (1)

- **KENYA.** National HIV prevalence declined from 10% in the late 1990s to 6.1% in 2005. Strengthened national HIV prevention efforts have led to a near doubling in condom use by young women as well as a rate of prevention of mother-to-child transmission that is twice as high as the average in Africa (1).
- **ZAMBIA.** Implementation of an intensified HIV prevention strategy resulted in above-average coverage for essential prevention services, a 50% increase in condom sales between 2001 and 2003, and delayed age of first sex for young people (17).
- **ZIMBABWE.** Between 2000 and 2004, the number of clients seen at voluntary counseling and testing sites in Zimbabwe increased more than sixfold, and the number of condoms distributed rose 60%. HIV prevalence and incidence have declined since the mid-1990s (18).

## SCALING-UP HIV PREVENTION: A GLOBAL PROGRAM OF ACTION

With an array of proven tools at our disposal and the successes recorded by a growing number of countries, it is clear that we can begin to reverse the global epidemic by bringing HIV prevention to scale. The Global HIV Prevention Working Group recommends the following actions to support and accelerate the scaling-up of HIV prevention efforts:

- **RECOMMENDATIONS FOR NATIONAL GOVERNMENTS.** Based on a thorough and up-to-date understanding of their national epidemic, governments should establish an inclusive national process to develop, monitor, and update a national strategic HIV plan that simultaneously brings evidence-based HIV prevention and treatment to scale. Ambitious HIV prevention coverage and outcome targets should be established, and regular multi-stakeholder reviews should occur, leading where indicated to the revision and refinement of national strategies.
- **RECOMMENDATIONS FOR DONORS.** Funding for the AIDS response should double within the next three years to support a simultaneous scaling-up of HIV prevention and treatment (6). International donors should take primary responsibility for closing the HIV prevention resource gap, although developing countries (especially middle-income countries) should also significantly increase domestic outlays for HIV prevention. Donors should bring their priorities into alignment with national strategies, make timely data reports to national monitoring and evaluation authorities, and avoid funding restrictions that may inhibit access to scientifically validated HIV prevention tools.
- **RECOMMENDATIONS FOR MULTILATERAL AND TECHNICAL AGENCIES.** Technical support for national planning should be strengthened and better coordinated. Multilateral and technical agencies should collaborate in providing countries with an independent assessment of the degree to which national strategies are based on epidemiology and evidence of what works, as well as the degree to which national plans reflect an appropriate balance and integration of HIV prevention, treatment, care, and support. Technical agencies

should also enhance their support to countries to assist them in participating in research and development of new HIV prevention tools and to help them ensure rapid introduction of new prevention strategies once they have been proven effective.

- **RECOMMENDATIONS FOR HEALTH CARE PROVIDERS.** HIV services should be integrated into sites dealing with tuberculosis, STIs, and sexual and reproductive health. All health care settings should train workers in proper infection control and in the delivery of HIV prevention messages to patients, and health care workplaces should maintain a readily available, uninterrupted supply of technologies and supplies needed to prevent HIV transmission in health care settings.
- **RECOMMENDATIONS FOR RESEARCH.** HIV prevention scale-up will help ensure readiness of countries to rapidly introduce new prevention approaches as they emerge. In the meantime, national governments and communities should provide strong support to research efforts to develop new prevention tools and to improve on those that already exist. National governments and research agencies should prioritize social research to improve understanding of factors that increase vulnerability, identify and characterize programs and specific policy actions to address such factors, and inform the development and adaptation of national HIV prevention strategies. Operational research should focus on optimal, cost-effective strategies to accelerate scale-up, ensure sustainability, and maximize the impact of HIV prevention strategies.
- **RECOMMENDATIONS FOR CIVIL SOCIETY.** Donors should prioritize increasing civil society's capacity to participate as full partners in HIV prevention efforts. With such support, civil society should monitor national progress in bringing HIV prevention to scale, identifying obstacles to scale-up that need to be addressed. Civil society should forcefully advocate for a comprehensive response to HIV that moves toward universal access to HIV prevention, treatment, care, and support.

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# BRINGING HIV PREVENTION TO SCALE: AN URGENT GLOBAL PRIORITY

The world should be winning the struggle against the HIV epidemic. Indeed, we have never possessed greater financial or technical resources with which to tackle such a serious global health problem.

The push to expand treatment illustrates what the world can accomplish with strong global commitment, increased financing, and collective action. As of December 2006, more than 2 million people worldwide were receiving antiretroviral therapy — an increase in global coverage from 8% to 28% in just three years. (UNICEF/WHO/UNAIDS, 2007.) Between 2001 and 2006, global spending on HIV programs in low- and middle-income countries increased sixfold. (UN Secretary-General, 2007.) Encouraged by this momentum, the global community recently embarked on an unprecedented mission to come as close as possible to universal access to HIV prevention, treatment, care, and support by 2010. (United Nations General Assembly, 2006.)

Yet without dramatically greater progress in preventing new infections, aspirations of limiting the epidemic's breadth and impact are sure to founder. For every patient who began antiretroviral therapy in 2006, six other individuals became infected with HIV. (UNICEF/WHO/UNAIDS, 2007; UNAIDS, 2006a.) Unless this trend is reversed and the number of new infections sharply reduced, global efforts to expand access to HIV treatment will falter and countless millions more people in the world's poorest countries will die as a result of avoidable HIV infections.

A critical reason we are failing on HIV prevention is that we have not yet reached individuals and communities with the level of prevention coverage needed to have a major impact. Globally, only 11% of HIV-infected pregnant women have access to services to prevent mother-to-child transmission, and HIV prevention programs currently reach fewer than 10% of injection drug users and men who have sex with men. (UNICEF/WHO/UNAIDS, 2007.) The overwhelming majority of people living with HIV remain unaware of their infection, a majority of young people in high-prevalence countries do not have accurate and comprehensive knowledge of HIV, and millions of blood donations annually are not properly screened for HIV. (UNICEF/WHO/UNAIDS, 2007.) Even when prevention services and technologies are available, people are sometimes unable to use them or to use them properly. Moreover, the economic and social factors that fuel the epidemic — poverty, gender inequality, stigma, and social marginalization — have yet to be effectively addressed in most countries. As a result of the inadequacy of HIV prevention efforts, the number of new HIV infections worldwide increased from 2004 to 2006, with infection levels doubling in Eastern Europe and Central Asia over the past two years. (UNAIDS, 2006a.)

This challenge of delivering HIV prevention services to those who need them, pivotal to the future health and well-being of millions, is the focus of this report by the Global HIV Prevention Working Group. It serves to update a 2003 report with more recent data and provides a more extensive discussion of scale-up and coverage. Starting with a new analysis that looks at the future course of the epidemic, with and without a greatly scaled-up prevention response, it surveys the latest evidence on HIV prevention access; defines prevention “scale-up” and identifies key barriers to achieving it; reviews the experience in countries where such barriers have been overcome; and closes with a series of urgent recommendations to bring the promise of HIV prevention to the countries and communities that need it the most. We believe that the future need not be a legacy of the past.

## What Is Meant by “Scaling-Up” HIV Prevention?

Effective HIV prevention requires the scaling-up of multiple interventions that work synergistically to achieve maximum impact. “Scaling-up” HIV prevention means ensuring that the appropriate mix of evidence-based prevention strategies achieves a sufficient level of coverage, uptake, intensity, and duration to have optimal public health effect. Prevention efforts should be based on the best available epidemiological evidence and evaluation data, and a broad array of stakeholders, including civil society and people living with HIV, should be integrally involved in the development, implementation, and monitoring of HIV prevention efforts. (UNAIDS, 2007) Because prevention tools are effective only if they are used by consumers, it is important to undertake acceptability studies on new prevention technologies, design prevention services in a way as to make them as attractive to users as possible, and monitor and address factors that might deter individuals from using available prevention options.

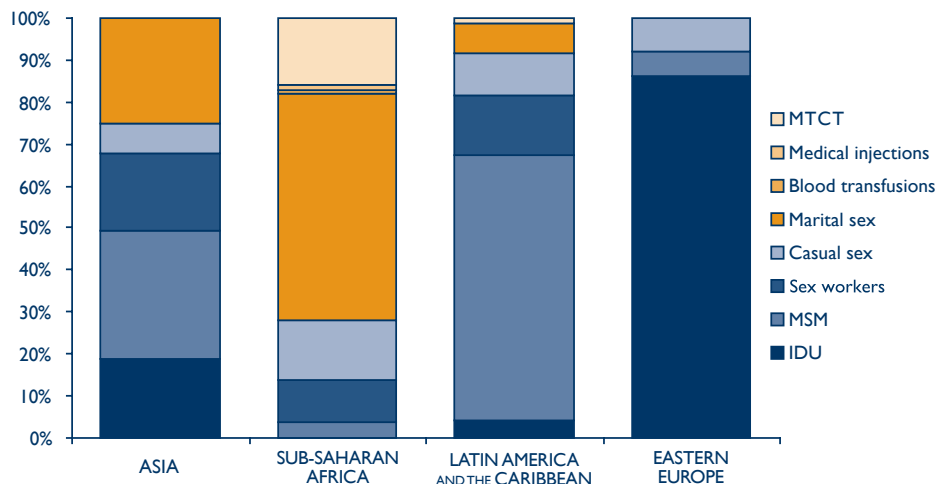
The necessary scope and scale of prevention efforts will vary from country to country. In general, countries with high HIV prevalence are advised to obtain more widespread coverage for HIV prevention strategies than are countries where the day-to-day risk of infection is less pronounced for most people. In all countries, high levels of coverage are needed for HIV prevention efforts for vulnerable populations at elevated risk of infection.

While all countries work with the same basic menu of prevention strategies (see box on “Components of Comprehensive HIV Prevention”), epidemics differ markedly among regions (Figure 1) and require different approaches to the targeting of prevention efforts. In Eastern Europe, where 85% of infections stem from injection drug use, harm-reduction programs for drug users may require a greater share of prevention resources than they would in countries where injection drug use is less common. Likewise, while programs to prevent transmission among men who have sex with men have a role in a comprehensive response in sub-Saharan

Africa, they have higher priority in Latin America, where sex among men is the primary source of infection. The critical importance of matching the response with the epidemic underscores the need for national stakeholders to understand their own epidemic, as emphasized in recent UNAIDS guidelines on scaling-up. (UNAIDS, 2007.)

Where funding is scarce, policymakers may desire to take cost-effectiveness into account in the allocation of resources for HIV prevention scale-up. According to an economic analysis of HIV prevention in sub-Saharan Africa and Southeast Asia, cost-effective prevention strategies include programs for sex workers, mass media campaigns, and treatment of sexually transmitted infections. (Hogan, 2005; see Creese, 2002.) In general, however, because few comprehensive prevention programs have been evaluated and costed, solid evidence of the cost-effectiveness of HIV prevention strategies in diverse epidemics and social settings typically does not exist, complicating efforts to make optimal use of finite resources. (Bertozzi, 2006; Johns & Torres, 2005.) In part, the lack of cost-effectiveness data stems from the fact that most prevention programs bundle a range of activities, making it difficult to evaluate the impact of any single activity. Many behavior-change programs, for example, also promote HIV counseling and testing and treatment for sexually transmitted infections. To assist countries in the design and reporting of HIV prevention strategies, UNAIDS has convened a UNAIDS Reference Group process to clearly characterize and define each of the components of comprehensive HIV prevention.

**FIGURE 1:** Source of New HIV Infections by Region, 2005\*



\*Some data used are from earlier years

Source: Futures Institute, 2007

# A CRITICAL MISSED OPPORTUNITY: PROJECTING THE EPIDEMIC'S FUTURE WITH AND WITHOUT A SCALED-UP RESPONSE

Controlled clinical trials and extensive experience in diverse countries and regions have demonstrated the effectiveness of a host of HIV prevention strategies. Proven prevention strategies include behavior-change programs, biomedical interventions, promotion of prevention technologies, and policy changes to create social and physical environments that are less conducive to HIV transmission. Effective prevention measures exist for every source of HIV transmission. (See box on “Components of Comprehensive HIV Prevention.”)

The Global HIV Prevention Working Group commissioned the Futures Institute to model the potential trajectory of the epidemic with and without a scaled-up prevention response. The Futures Institute and its research partners published similar analyses in 2003 and 2006. (Stover, 2006.) The current analysis updates these prior efforts by including a fuller array of prevention interventions (including adult male circumcision) and latest data on global HIV incidence. The Futures Institute based its modeling on the available scientific literature on the effectiveness of standard HIV prevention interventions and on the latest coverage data for basic HIV prevention interventions.

The new analysis by the Futures Institute indicates that if the current trends in HIV prevention efforts continue, with slow or minimal increases in coverage over the next decade, the annual number of new HIV infections could rise by 20% by 2012 and remain there through 2015. Sixty percent of new HIV infections through 2015 are projected to occur in sub-Saharan Africa. Asia represents the other important center for the epidemic's projected expansion over the next few years, as several Asian countries continue to suffer high rates of new HIV infections.

If comprehensive HIV prevention were brought to scale, however, half of the infections projected to occur by 2015 could be averted; in sub-Saharan Africa alone, 52% of projected infections could be prevented. The annual number of new HIV infections would plummet by nearly two-thirds to fewer than 2 million infections by 2015. In other words, scaling-up available HIV prevention measures would prevent 4 million new infections annually within the next decade.

Not only is HIV prevention a humanitarian imperative; it also makes sound economic sense. When the costs of HIV prevention for each averted infection are compared to

## Components of Comprehensive HIV Prevention

In assembling a national HIV prevention plan, each country should prioritize access to proven prevention strategies, tailoring the targeting and scale-up of HIV prevention to particular national circumstances and needs. The roster of proven HIV prevention approaches includes a range of measures:

### PREVENTING SEXUAL TRANSMISSION

- Behavior-change programs (to increase condom use, delay initiation of sexual behavior in young people, and reduce the number of partners)
- Condom promotion
- HIV testing
- Diagnosis and treatment of sexually transmitted infections (STIs)
- Adult male circumcision

### PREVENTING BLOOD-BORNE TRANSMISSION

- Provision of clean injection equipment to injection drug users
- Methadone or other substitution therapy for drug dependence
- Blood safety (including routine screening of donated blood)
- Infection control in health care settings (including injection safety, universal precautions, and antiretroviral prophylaxis following potential HIV exposure)

### PREVENTING MOTHER-TO-CHILD TRANSMISSION

- Primary HIV prevention for women of childbearing age
- Antiretroviral drugs
- Prevention of unintended pregnancy in HIV positive women
- Breast feeding alternatives
- Caesarean delivery (in the case of high maternal viral load)

### SOCIAL STRATEGIES AND SUPPORTIVE POLICIES

(see box, p. 9, on “Addressing the Factors that Increase Vulnerability to HIV”)

- HIV awareness campaigns (including mass media)
- Anti-stigma measures
- Gender equity and women's empowerment initiatives
- Involvement of communities and HIV-infected individuals
- Visible political leadership
- Engagement of a broad range of sectors in HIV awareness and prevention measures
- Legal reform to create an environment supportive of HIV prevention (such as laws decriminalizing needle possession)

estimated future treatment costs, the Futures Institute found that scaled-up HIV prevention is cost effective everywhere in the world and is actually a cost savings in every region but Asia, where unit costs for HIV prevention services are higher than in Africa. Even in Asia, however, the costs of scaling-up HIV prevention are manageable and compare favorably with other cost-effective health services.

## **FAILURE TO DELIVER HIV PREVENTION TO THOSE WHO NEED IT**

Despite their promise, HIV prevention efforts have received short shrift in the global HIV response. Even many countries that have made remarkable progress in scaling-up complex antiretroviral treatments have yet to achieve minimal coverage for basic HIV prevention strategies.

Many of the 90 countries that by December 2006 had submitted information to UNAIDS on national efforts to establish concrete targets for universal access are still failing to take a comprehensive approach to HIV prevention. While two-thirds of the countries have established targets for condom distribution and for prevention of mother-to-child transmission, only about half have targets for HIV testing, behavior change, and appropriate knowledge among young people. (UN Secretary-General, 2007.)

This section summarizes available data on levels of coverage of key components of comprehensive HIV prevention. As Figure 3 illustrates and the discussion below reveals, the vast majority of people at risk for HIV are not currently reached by HIV prevention measures.

### **Condom Promotion**

Globally, it is estimated that a condom was used in only 9% of sex acts involving a non-regular partner in 2005. Condom use is highest in Asia, where a condom is employed in roughly one-third of risky sex acts, and lowest in Eastern Europe. In most sub-Saharan African countries, fewer than 50% of sexually active young people report having used a condom the last time they had sex. (UNAIDS, 2006c.)

### **HIV Testing**

Most people who know they are HIV-infected take steps to avoid exposing others to HIV. (Kilmarx, 1998; Hays, 1997; Wenger, 1994.) In the US, people who are HIV-infected but unaware are 3.5 times more likely to transmit HIV than people who know their status. (Marks, 2006.) Despite the clear prevention benefits of testing, the vast majority of people in developing countries are unaware of their HIV

status. As shown in Figure 3, coverage is minimal for HIV testing across all regions. In 13 high-prevalence countries in sub-Saharan Africa surveyed between 2003-2005, 12% of men and 10% of women knew their HIV status. (UNICEF/WHO/UNAIDS, 2007.)

### **Services for Sexually Transmitted Infections**

More than 340 million STI cases — 75-85% of them in developing countries — occur annually. In sub-Saharan Africa, up to 80% of women are believed to be infected with herpes simplex virus type 2. (WHO, 2006a.) Untreated STIs significantly increase the risk of sexual HIV transmission and acquisition — by several orders of magnitude in the case of genital herpes. (UNICEF/WHO/UNAIDS, 2007.) STI control constitutes an important component of a comprehensive response to HIV. (WHO/UNAIDS, 2007a.)

Although reliable data are not available regarding current coverage of STI diagnostic and treatment services, WHO in 2001 estimated that such services reached fewer than 18% of people with an STI. (UNAIDS, 2006c.) Since 2001, global financing for STI control has actually declined. (WHO, 2006a.) In addition to increasing coverage, comprehensive HIV prevention efforts must also encourage greater care-seeking, as only about 50% of men with a suspected STI seek care from a trained professional. (UNICEF/WHO/UNAIDS, 2007.) The asymptomatic nature of many STIs also inhibits efforts to treat STIs and prevent their further transmission (WHO, 2006a), underscoring the need for improved diagnostic tools.

### **Adult Male Circumcision**

Over the last two years, a new and promising tool has been added to the roster of efficacious HIV prevention strategies. Efficacy studies in Kenya, South Africa, and Uganda indicate that male circumcision reduces the risk of female-to-male sexual HIV transmission by roughly 60%. (Bailey, 2007; Gray, 2007; Auvert, 2005.) In March 2007, an expert consultation convened by WHO and UNAIDS recommended promotion of adult male circumcision in HIV-uninfected men as part of a comprehensive approach to HIV prevention, although important questions remain regarding implementation of male circumcision in practice (see box on “Roll-Out of Adult Male Circumcision”). (WHO/UNAIDS, 2007b.)

In sub-Saharan Africa, an estimated 62% of males are circumcised, either at birth or in early adolescence. However, rates of circumcision vary throughout the region, with potentially important implications for HIV prevention efforts. In Southern Africa, where one in three adults is infected in some countries, only about 20% of males are circumcised. (NIAID, 2006.)

# Addressing the Factors That Increase Vulnerability to HIV

HIV-related risk involves the interplay between individual behavior and epidemiological circumstances. Where HIV prevalence is high — or, as in the case of blood transfusions, where the likelihood of transmission from any particular exposure is great — even a single instance of unsafe behavior may result in an extremely elevated risk of transmission.

In addition to individual risk, HIV transmission dynamics are also a function of vulnerability, which stems from social, economic, or legal circumstances that increase susceptibility to infection, deter individuals from seeking essential prevention services, or enhance the likelihood of engaging in unsafe behavior. To optimize the impact of HIV prevention efforts, programmatic initiatives should be supplemented by policy actions that address the underlying “drivers” of the epidemic.

## Key factors that increase vulnerability include:

**Gender Inequality.** Women’s low status increases their vulnerability to HIV — by reducing their access to essential information and services, diminishing their ability to negotiate safer sex with partners on whom they may be economically dependent, increasing their risk of being victimized by sexual violence, and placing them in circumstances where survival sex may be their only viable option. Strategies to empower women and reduce their vulnerability include legal reform to recognize and protect inheritance and other property rights, microfinance programs and other initiatives to enhance women’s economic independence, universal education for girls, enactment and enforcement of laws against sexual violence, international efforts to eradicate human trafficking, and research initiatives to develop new HIV prevention methods that women can control. Programs to influence the gender norms of men and boys are also essential.

**Institutionalized Discrimination Against Vulnerable Groups.** Laws and social customs in many countries condone discrimination against the populations most vulnerable to HIV. The preference for law enforcement over public health approaches in addressing drug use, for example, weakens political support for proven HIV prevention strategies for drug users, discourages utilization of services, and makes such programs vulnerable to official harassment or closure. Where needle possession is against the law, individuals run the risk of arrest merely by participating in a needle-exchange project. Similarly, both sex work

and sex between men are criminalized throughout much of the world, complicating efforts to deliver life-saving HIV prevention services and to engage affected populations as essential partners in the HIV response.

**Poverty.** While epidemics sometimes begin among affluent or elite segments of the population, the HIV burden on the poorest and most marginalized members of society inevitably increases over time. The countries most heavily affected by HIV tend to be among the world’s poorest. The proportion of the population living on less than US \$1 per day is 76% in Zambia, 71% in Nigeria, 56% in Zimbabwe, and 54% in Haiti. (UNDP, 2006.) While HIV in high-income countries was initially concentrated among more affluent gay populations, the epidemic has come primarily to affect poorer groups. (Open Society Institute, 2006.) Conditions of poverty can increase vulnerability to HIV, reducing access to information and services, placing individuals in situations of increased risk, and rendering unaffordable certain basic elements of effective prevention, such as condoms. Reducing poverty and its associated conditions plays a key role in decreasing HIV-related vulnerability, underscoring the importance of integrating AIDS responses within broader development efforts.

**HIV Stigma.** Prevalence of stigmatizing attitudes toward people living with HIV discourages individuals who are at risk from learning their HIV status. HIV stigma deters individuals with diagnosed infection from disclosing their status to others or from accessing HIV-related services. (Rankin, 2005.) Where breast feeding is common, HIV-positive mothers may avoid infant feeding alternatives out of fear that use of such alternatives might increase suspicion that they are HIV-infected. Strategies to alleviate HIV stigma include enactment and enforcement of laws prohibiting HIV-related discrimination, energetic national leadership on AIDS, and visibility of people living with HIV.

**Conflict and Humanitarian Emergencies.** While the relationship between conflict and HIV can be complicated, broad-scale population displacement as a result of conflict can deepen poverty, uproot individuals and households from social support networks, and reduce their access to information and health services. For women and girls, living in refugee camps may increase the risk of sexual violence. UNAIDS recommends that countries integrate plans for refugees in national strategic AIDS plans, as indicated by national circumstances.

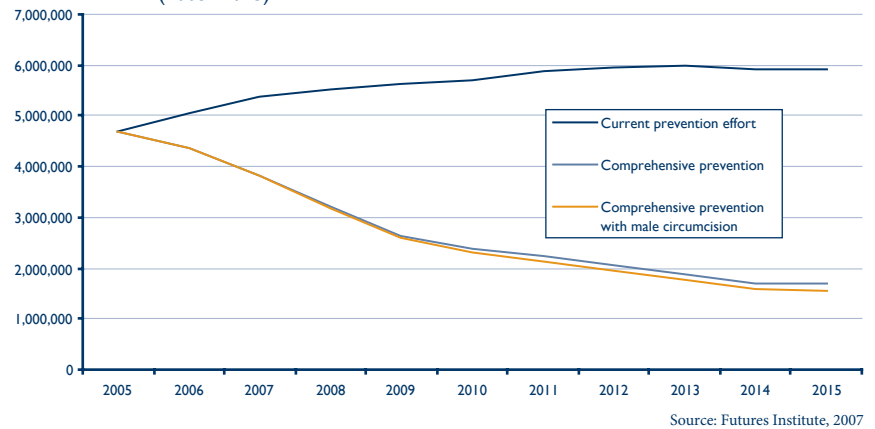
## Roll-Out of Adult Male Circumcision

There is still much that is unknown about how best to convert the efficacy of adult male circumcision into effective programs in countries. Research is needed to determine whether adult male circumcision provides a degree of protection to the partners of infected men (e.g., women during vaginal intercourse, insertive partner in anal intercourse). (WHO/UNAIDS, 2007b.) Although preliminary data from the Kenya trial indicate that men in their first year after being circumcised did not engage in higher levels of risk behavior than uncircumcised men (Agot, 2007), little is known about the long-term behavioral impact, if any, of introducing adult male circumcision. As preliminary data from the Uganda trial suggests, it is also possible that engaging in unprotected intercourse before circumcision wounds have completely healed might actually increase the risk of HIV transmission to female partners. Circumcised men may still contract HIV and transmit the virus to others. Circumcision is not a substitute for other standard HIV prevention approaches, but it provides additive benefit when used in combination with other prevention tools.

WHO and UNAIDS advise countries implementing adult male circumcision to ensure that circumcision is performed under safe conditions and that such services are culturally appropriate. Health experts stress the importance of accompanying the roll-out of adult male circumcision with strengthened HIV prevention efforts to avoid giving circumcised men the impression that the procedure obviates the need for other standard prevention precautions, such as condom use or limiting the number of sexual partners. In addition, clinic-based communications and other prevention programs should caution against unprotected sexual intercourse before circumcision wounds have completely healed.

Scale-up will also require considerable, but manageable, new financial outlays. It is estimated that establishment of new surgical facilities and annual operating costs for circumcision scale-up will require an additional US \$32 million in financing. However, projections indicate that scaling-up adult male circumcision could save as much as US \$1 billion annually in HIV treatment costs. ("Circumcision and Circumspection [editorial]," *Lancet Infectious Diseases*, 2007.)

**FIGURE 2:** Global HIV Incidence With and Without Comprehensive Prevention Package (2005- 2015)



Given the recent attention to circumcision, the Global HIV Prevention Working Group asked the Futures Institute to incorporate the latest efficacy results into their updated analysis of the epidemic's future trajectory with and without scaled-up HIV prevention. The available efficacy data on male circumcision was used to assess the potential impact of scaling-up male circumcision from current levels to 70% by 2015 in 11 countries in sub-Saharan Africa with high HIV prevalence and low prevalence of circumcision (Botswana, Burundi, Lesotho, Malawi, Namibia, Rwanda, South Africa, Swaziland, Uganda, Zambia, and Zimbabwe). Collectively, these countries account for 41% of new HIV infections in sub-Saharan Africa and for 27% of HIV incidence in all low- and middle-income countries.

When scaled-up as part of a comprehensive HIV prevention effort, adult male circumcision reduces new infections by 8% as of 2015. (See Figure 2.) The impact of circumcision scale-up on the epidemic would be greatest in sub-Saharan Africa (a 14% reduction). Such a large incremental benefit in the most heavily affected region could help some African countries in their efforts to turn the tide against HIV. Male circumcision, however, is not a panacea, but rather a potentially important strategy that takes its place alongside other essential evidence-based approaches in the HIV prevention continuum.

### Prevention of Mother-to-Child Transmission

In 2006, an estimated 530,000 children under age 15 became infected with HIV, with the vast majority due to HIV transmission from their mothers during gestation or delivery or as a result of breast feeding. (UNAIDS, 2006a.) Although eight years have passed since clinical trials demonstrated that a brief, inexpensive regimen of nevirapine to mother and newborn could reduce the risk of mother-to-child transmission by almost half (Guay, 1999), the vast major-

ity of pregnant women and newborns lack access to PMTCT services. In 2005, it is estimated that only 11% of HIV-infected pregnant women received antiretrovirals to reduce the risk of mother-to-child transmission. Coverage ranged from a low of 5% in Asia, to 11% in Africa, to a high of 70% in Eastern Europe and Central Asia. (UNICEF/WHO/UNAIDS, 2007.)

Some countries that have made progress in expanding access to antiretroviral therapies more generally have been slow to achieve meaningful coverage for PMTCT services. In Nigeria, for example, while antiretroviral coverage reached 10% in 2006, less than 1% of HIV-infected pregnant women received prophylaxis for PMTCT. (UNICEF/WHO/UNAIDS, 2007.) The most effective method of PMTCT is prevention of unwanted pregnancy in HIV infected women by providing them with contraception.

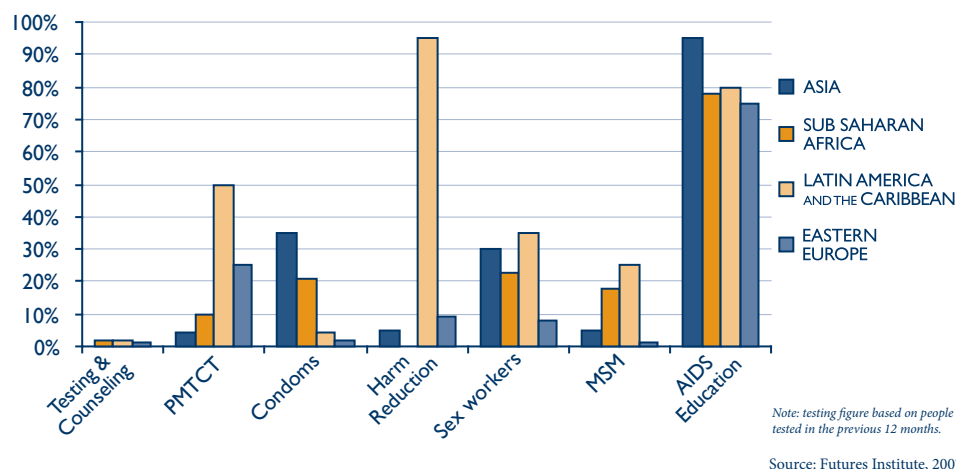
### HIV Prevention for Injection Drug Users

Injection drug use is a highly efficient route for HIV transmission, accounting for nearly one-third of all new HIV infections outside sub-Saharan Africa. (UNAIDS, 2006c.) Individuals infected through injection drug use may, in turn, expose their sex partners to HIV.

HIV prevention for injection drug users involves delivery of a package of services, including HIV counseling and testing, behavioral interventions, access to clean injecting equipment (through needle projects or pharmacy-based sales), STI treatment and other health services, and methadone or buprenorphine substitution therapy or other forms of drug treatment. (UNAIDS, 2005a.) Studies have found these measures to be closely correlated with reductions in drug-related HIV risk behaviors. (Institute of Medicine, 2006; see Wodak & Conney, 2006.)

However, only 8% of injection drug users worldwide had access to these HIV prevention services in 2005 (compared to 4% in 2003). While all HIV prevention strategies have extremely low coverage, the rate of increase in coverage for educational services and sterile injecting equipment is much greater than the increase in drug substitution therapy, which reached only 33,000 people in low- and middle-income

**FIGURE 3:** Coverage of Essential HIV Prevention Services (2005)



countries in 2005. (UNICEF/WHO/UNAIDS, 2007.) Expansion of prevention services for drug users is particularly apparent in Eastern Europe and Central Asia, where access to HIV-related informational services increased almost six-fold between 2003 and 2005, and use of needle and syringe exchange programs grew nearly fourfold, although the vast majority of injection drug users in the region remain unserved by existing prevention programs. (UNICEF/WHO/UNAIDS, 2007; see Figure 3.) From a regional standpoint, HIV prevention coverage for drug users is highest in Latin America (Figure 3), where several countries have invested heavily in needle projects.

### HIV Prevention for Men Who Have Sex With Men

Globally, HIV transmission among men who have sex with men accounts for 5%-10% of all HIV infections (UNAIDS, 2006c), and surveys indicate that a substantial percentage of men who have sex with men are already infected with HIV in countries throughout the world — 28% in Bangkok (CDC, 2006a), 15% in Phnom Penh (MAP, 2005), and 21.5% in urban areas of Senegal (Wade, 2005). According to a five-city survey in the US, 46% of African-American men who have sex with men are living with HIV. (CDC, 2005.) Not only are men who have sex with men at high risk of HIV infection, but a large share of such men (e.g., one in five in Asia) also have sex with women, underscoring the potential for men who have sex with men to serve as an important epidemiological bridge to the general population. (MAP, 2005.)

Prevention services currently reach only 9% of men who have sex with men, with Latin America and the Caribbean reporting the highest coverage (22%) of any region. In

Eastern Europe and Central Asia, only 1% of men who have sex with men have access to prevention services. (UNAIDS, 2006c.)

### **HIV Prevention for Sex Workers**

Sex workers have some of the highest HIV infection rates in the world — 50% prevalence in South Africa, 27% in Guyana, 33% in St. Petersburg (Russia), and 73% in urban areas of Ethiopia. (UNAIDS, 2006c.) Sex workers are not only highly vulnerable themselves but may also expose their clients, who in turn may transmit the virus to their spouses or partners, thereby helping generalize epidemics that once may have been highly concentrated. Even though countries that have prioritized prevention services for sex workers have often succeeded in retarding or halting their national epidemic, most countries have been slow to bring prevention efforts for sex workers to scale. Fewer than 20% of sex workers globally had access to HIV prevention services in 2005. (UN Secretary-General, 2007.)

### **HIV Prevention for Prisoners**

HIV infection rates are typically much higher among prisoners than in the non-incarcerated population. Although most countries have developed written HIV prevention policies for correctional inmates, experts in the field report that, in practice, few inmates have access to proven prevention strategies such as condoms. (UN Secretary-General, 2007.) Scattered prison systems have successfully implemented needle exchange programs for inmates, while only very few make methadone or other substitute drug therapies available. (WHO Europe, 2005; Wood, 2005.)

### **School-Based HIV Education**

Studies indicate that HIV education in schools reduces young people's risk behaviors, although there is less evidence regarding the impact of school-based programs on HIV and STI incidence. (Maticka-Tyndale, 2007; Maticka-Tyndale, 2006; Wegbreit, 2006.) Globally, half or more of school attendees receive no school-based HIV education. Five of 15 countries reporting to UNAIDS in 2006 said HIV education coverage in schools was below 15%. Among all 18 countries in which standardized health surveys were administered between 2001 and 2005, fewer than 50% of young people (15-24) had accurate knowledge about HIV. (UNAIDS, 2006c.)

### **Blood Safety**

Transfusion with HIV-infected blood is the most efficient route of HIV transmission (Baggaley, 2006), accounting for an estimated 2%-3% of HIV infections worldwide. (UNICEF/WHO/UNAIDS, 2007.) An estimated 6 million

units of blood annually are transfused without appropriate screening for HIV, hepatitis B, or hepatitis C. (WHO, 2005.) As of 2001-2002, 22% of blood donations globally were not screened for HIV in a reliable manner. Overuse of blood remains widespread, as up to 50% of transfusions may be medically unnecessary. (WHO, 2005a.) A comprehensive approach to blood safety includes centralization of blood collection in a single national authority; use of low-risk, voluntary, and uncompensated donors; routine screening of all blood donations; and measures to reduce overuse of blood and blood products. (WHO, 2002.)

In the US, serologic testing of blood donations for HIV has reduced the odds of transfusion-association HIV transmission from 1 in 100 in the 1980s to 1 in 1.5 million currently. (Goodman, 2004.) Although nearly all countries report that blood is now routinely screened for HIV (UNAIDS, 2006c), WHO has determined that most developing countries lack national blood-safety systems that meet international standards. Forty-two countries have no centralized agency responsible for blood safety, although the proportion of countries with national blood-transfusion authorities increased from 60% in 1998-1999 to 71% in 2001-2002. (WHO, 2005a.)

### **Injection Safety**

Unsafe injections in health care settings, primarily through national vaccination programs, are the source of an estimated 5% of HIV infections worldwide. (Hauri, 2004.) Globally, 40% of injections are administered unsafely. (WHO, 2005a.) Inexpensive, auto-disable syringes avert blood-borne transmission by preventing the reuse of injection equipment, while reducing inappropriate injections can further limit the risk of injection-related transmission of HIV. (Safe Injection Global Network, 2005.)

### **Universal Precautions in Health Care Settings**

An estimated 327,000 health care workers, including 19% of workers in sub-Saharan Africa, suffer a blood exposure to HIV each year. (WHO, 2003) Although the number of HIV infections caused by occupational exposure in health care settings is small in comparison to other transmission routes — with an estimated 200 to 5,000 infections annually as a result of sharps injuries to health care workers (Hauri, 2004) — the societal and public health impact of such infections is magnified by the pressing shortages of health care personnel in many developing countries. (WHO, 2006b.) To reduce the risk of HIV transmission to health care workers, it is recommended that workers routinely take barrier precautions when performing an invasive procedure or one that could potentially expose them to blood or other body fluids.



Adherence to universal precautions, knowledge of sound HIV prevention strategies in health care settings, and access to appropriate devices and infection-control materials are spotty among health care workers in developing countries. Few medical students working in a tertiary-care center in Thailand reported using standard protective equipment such as plastic aprons or double gloves. (Apisarnthanarak, 2006.) Similar findings have been reported for doctors in Delhi (India). (Kermode, 2005; Wig, 2003.) Fewer than 60% of health care workers surveyed in Nigeria always use protective equipment (Sadoh, 2006), with 60% of Nigerian health care workers in a separate study indicating that they lacked access to materials needed for universal precautions. (Aisien, 2005.)

Health care workplaces should also be prepared to initiate antiretroviral prophylaxis for workers within 72 hours of likely exposure to HIV. Although most countries have developed national guidelines for post-exposure prophylaxis (PEP), only three in 10 countries surveyed in October 2006 made PEP available in all districts. (UNICEF/WHO/UNAIDS, 2007.) Only 41% of Thai medical students referenced above knew it was important to initiate antiretrovirals within hours of an exposure to HIV. (Apisarnthanarak, 2006.)

## IMPEDIMENTS TO HIV PREVENTION SCALE-UP

Considering the devastating human, societal, and economic impact of the global HIV epidemic — and the fact that so many effective prevention tools are available — it is puzzling at first glance that the global community has thus far failed to meet the HIV prevention challenge. In fact, numerous factors impede efforts to bring HIV prevention to scale and to maximize the public health benefit of prevention programs. These barriers, which must be overcome to bring HIV prevention to scale, include:

## Reaching Marginalized and Neglected Populations

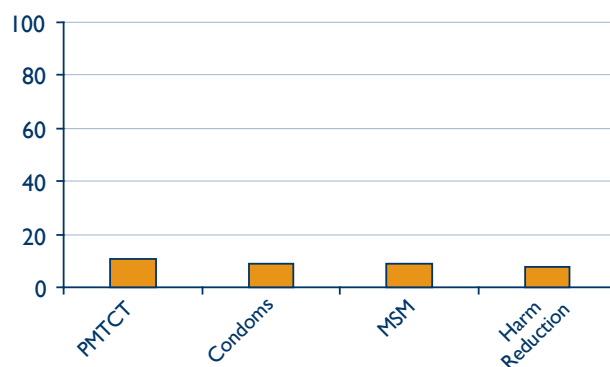
In virtually all countries, the epidemic's burden is heaviest on groups that are poor, disenfranchised, and/or socially marginalized. Key populations at higher risk for HIV exposure include injection drug users, men who have sex with men, sex workers, prison inmates, and mobile populations. Yet these populations are often invisible, even to HIV prevention planners. Many countries lack reliable data on the size, characteristics, and distribution of populations most at risk. Needed epidemiological, behavioral, and ethnographic research should be undertaken in a culturally appropriate manner, with the active involvement and guidance of the affected community.

Members of vulnerable populations should not be viewed as passive beneficiaries of prevention services, but rather as “change agents” who should be integrally involved in program planning, delivery, and monitoring. (Jana, 1999.) Peer-based services have proven especially effective in reaching marginalized groups. In addition, prevention programs are more likely to be accepted by the community if they offer needed services, such as primary health care or screening and treatment of sexually transmitted infections.

Efforts to reach marginalized groups are often impeded by counterproductive legal prohibitions that facilitate discrimination in these at-risk communities. According to UNAIDS, two-thirds of countries have no laws in place to prohibit discrimination against key populations most at risk of HIV exposure, and 45% of countries have laws on the books that may

hinder the delivery of prevention services to marginalized populations. (UNAIDS, 2006c.) Legal reforms or other policy interventions are typically necessary to maximize the coverage, acceptance, and effectiveness of prevention programs for vulnerable populations.

**FIGURE 4:** Global Coverage for Select HIV Prevention Strategies in 2005



Source: United Nations Secretary-General Ban Ki-Moon, 2007; UNICEF/WHO/UNAIDS, 2007

## Renewing HIV Prevention Efforts in High-Income Countries

Many high-income countries experienced important HIV prevention successes in the 1980s, when sharp increases in new infections among gay men and injection drug users prompted countries to initiate programs to prevent HIV transmission. Following the establishment of HIV prevention measures in the US, for example, the annual number of new HIV infections declined from 150,000 in the late 1980s to 40,000 by the early 1990s. (CDC, 2006b.) In New York City, implementation of needle and syringe projects (primarily through city, state, and private sector support due to legal prohibitions on the use of federal funds for needle exchange) led to a 75% drop in new HIV infections among drug users between 1990 and 2002. (Desjarlais, 2005.)

Yet in several high-income countries, early HIV prevention successes have given way to complacency, as illustrated by rising HIV infection rates. In Australia, for example, reported HIV infections increased by 41% between 2000 and 2005, with men who have sex with men accounting for roughly 80% of new infections. (Daily Telegraph, 2007.) Between 1998 and 2004, the incidence of reported HIV cases rose more than 150% in the UK. (UNAIDS, United Kingdom Country Profile, [http://www.unaids.org/en/Regions\\_Countries/Countries/united\\_kingdom.asp](http://www.unaids.org/en/Regions_Countries/Countries/united_kingdom.asp).) In Canada, new HIV cases have increased by roughly 20% since 2000. (Public Health Agency of Canada, 2006.)

These disturbing trends have prompted a number of countries to take steps to strengthen HIV prevention. Canada's national HIV strategy for 2005-2010 provides for a doubling of domestic HIV funding. (Public Health Agency of Canada, 2005.) Similarly, the US Centers for Disease Control and Prevention are now pursuing an HIV prevention strategy that increases emphasis on routinizing HIV testing and knowledge of HIV status.

## Insufficient, Uncertain Financing

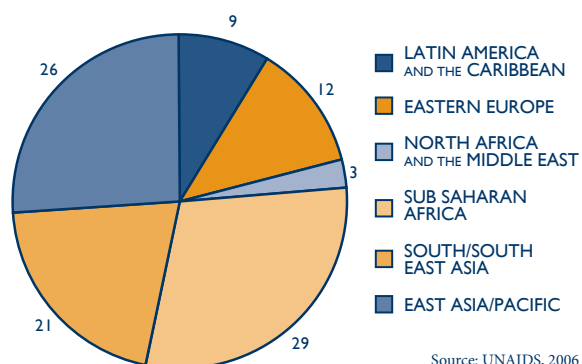
UNAIDS and its research partners estimate that US \$18 billion is needed in 2007 for a comprehensive, scaled-up response to HIV, with prevention efforts accounting for 56% of resource needs. In 2008, financial requirements for a comprehensive AIDS response will grow to US \$22 billion, as the world ramps up toward universal access in 2010. (UNAIDS, 2005b.)

In 2008, it is estimated that US \$10 billion will be available for HIV programs in developing countries. While this will be a 12% increase in spending over 2006, it represents barely half of the amount needed for an adequate AIDS response. (Report of the UN Secretary-General, 2007.) In Asia — where the Commission on AIDS in Asia projects the number of HIV infections could double in the next five years to more than 20 million — current spending on HIV represents roughly 10% of the amounts needed to support a comprehensive response. (AP/ABCNews, 2007.) As the Global HIV Prevention Working Group has documented in earlier reports, the shortage of critical funding has meant that HIV prevention has never been given a reasonable chance to work.

The nature of HIV prevention makes it challenging for prevention programs to attract sufficient funding. HIV prevention is complex and involves multiple interventions that can be difficult to evaluate; the timeframe for HIV prevention is beyond the terms of most political leaders; and prevention success is defined by the absence of an undesirable result, often less compelling than treatment and care programs, which provide demonstrable help to individuals and households to enable them to transition from sickness and vulnerability to good health and security. As monitoring of national HIV resource flows indicates, HIV prevention efforts are consuming a progressively smaller share of HIV expenditures in developing countries. (UNAIDS, 2004.)

Lack of consistency and coordination in donor support also hinders national efforts to implement strategic HIV prevention plans. According to country reports provided to UNAIDS for purposes of monitoring the Declaration of Commitment on HIV/AIDS, of 73 strategic HIV plans developed by low- and middle-income countries as of January 2007, only 51 encompassed the efforts of all partners, while less than half (35) of the countries had a unitary monitoring and evaluation system that incorporated reports of donors, NGOs, and other stakeholders. Without a clear understanding of the focus and reach of prevention services in a country, including those supported or administered by external partners, it is impossible for national planners to identify key prevention gaps and to ensure proper allocation of limited resources among various prevention strategies. In many

**FIGURE 5:** % Distribution by Region of Required HIV Prevention Funding, 2006-2008



cases, donor priorities do not accord with nationally determined HIV strategies. While the multiyear support from the Global Fund to Fight AIDS, Tuberculosis and Malaria has enhanced the stability of funding in many countries, financing from other sources remains less predictable.

### Weak Surveillance Systems

To decide the proper mix and relative priority of HIV prevention interventions, countries need to “know their epidemic.” WHO and UNAIDS recommend that countries implement second-generation surveillance, which complements traditional biologic surveillance of HIV and STIs with systematic monitoring of relevant behaviors. (WHO, 2004a.) Sound surveillance systems enable countries to identify and characterize the populations at greatest risk, spot emerging epidemiological trends, and identify opportunities to curb the epidemic’s spread.

Many countries, however, lack systems to collect and analyze critical information on HIV. Among 132 low- and middle-income countries, WHO reports 44 have fully implemented HIV surveillance systems that comply with international recommendations, 42 have partially implemented systems, and 46 systems are rated poor. (UNICEF/WHO/UNAIDS, 2007.) In the absence of strong information systems, countries are aiming in the dark as they develop prevention approaches.

### Misallocation of Resources

The impact of finite prevention resources is further limited by the failure of many donors and national governments to direct funding toward initiatives that would have the greatest public health impact. UNAIDS reports that many countries with low-level or concentrated epidemics fail to adequately fund the programs that would be most effective in this scenario — those aimed at populations most at risk — in favor of more visible but less cost-effective information and awareness programs for the general population. In Latin America, where men who have sex with men account for the largest share of HIV infections (Cáceres, 2002), many countries provide scant support for HIV prevention programs for this population. (UNAIDS, 2004a.)

National epidemics evolve, underscoring the need for prevention strategies and allocations to adapt to epidemiological and behavioral changes. In some instances, the epidemic may change radically in only a few years. While a decade ago more than 80% of all HIV infections in Thailand were among sex workers and their clients, women infected by their husbands or sex partners now represent half of new infections, and the percentage of cases stemming from injection drug use is steadily increasing. (Ainsworth, 2003.)

## Why Has PMTCT Scale-Up Been So Slow?

The Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) is among those working to expand access to PMTCT services, supporting 1,500 sites in 17 countries in 2006. More than 1 million pregnant women accessed EGPAF-supported PMTCT services in 2006 — an increase of 35% over 2005. (EGPAF, 2007.)

EGPAF reports that several barriers impede more rapid expansion of PMTCT services.

**INSUFFICIENT POLITICAL WILL.** As success in scaling-up antiretrovirals has demonstrated, strong political commitment can dramatically accelerate service expansion, even in parts of the world where resources are most limited. In many countries, political leaders have yet to prioritize PMTCT scale-up.

**INADEQUATE UTILIZATION OF PRENATAL CARE.** PMTCT uptake can be limited when services are largely based in antenatal facilities. While most pregnant women visit an antenatal site at least once, far fewer make multiple visits. In Uganda, for example, although 92% of pregnant women make at least one visit to a antenatal site, only 40% make four or more visits. (UNDP, 2006.) In the least-developed countries, only 36% of births are attended by a skilled health professional. (UNDP, 2006.) Improved strategies are needed to reach women who are not regular clinic attendees. In this regard, the failure in many parts of the world to integrate PMTCT with reproductive health services is especially damaging to scale-up, as such integration would offer the prospect of improved and continuous follow-up of mother and newborn.

**CAPACITY LIMITATIONS.** Health care worker shortages slow scale-up of PMTCT, as such services must compete with other health priorities for an insufficient pool of human capacity.

**INCREASINGLY COMPLEX REGIMEN.** As recommended by WHO (WHO, 2006c), PMTCT programs are using combination regimens that are more complex than single-dose nevirapine. While such regimens are likely to offer greater protection against mother-to-child transmission, they may increase the challenge faced by overburdened clinics of reaching large numbers of pregnant women.

### Political Impediments to Success

Individual donor priorities can sometimes result in a failure to take optimal advantage of proven prevention tools. For example, the US government’s ban on use of funds from the national government for needle exchange prevents the resources of the single largest AIDS donor from being used

## Common Elements of Successful, Scaled-Up Public Health Programs

In 2004, a panel of health experts convened by the Center for Global Development, a Washington-based think tank, surveyed global experience in public health to identify the most important global health successes. The 2004 effort identified 17 examples of broad-based public-health success, including eradication of smallpox, Thailand's reversal of its burgeoning HIV epidemic, improvements in maternal health in Sri Lanka, sharp declines in TB in China, and elimination of polio in the Americas. In 2007, three new case studies were added. (Levine, 2007.)

According to the analysis by the Center for Global Development, all successful global health initiatives share certain basic characteristics:

- Predictable, adequate funding from both international and local sources;
- Strong political leadership and high-level champions;
- Technical innovation within an effective delivery system, at a sustainable price;
- Expert consensus regarding the appropriateness and evidence base for the strategy;
- Strong management on the ground; and
- Effective use of strategic information, such as public health surveillance data, research findings, and monitoring and evaluation results.

for a highly effective strategy to prevent HIV transmission as a result of drug use. Similarly, US laws that earmark funding for abstinence programming find no support in the scientific literature and cause limited resources to be directed away from the proven, cost-effective measures that could have major public health impact. The independent US Government Accountability Office concluded in 2006 that abstinence earmarks in US foreign assistance legislation often impede the ability of national programs to tailor US-supported HIV prevention programs to national needs. (GAO, 2006.)

While senior political leaders in some of the most heavily affected countries have rightly given strong (and in some cases unprecedented) support to efforts to bring AIDS treatment to scale, fewer have spent political capital in energetically expanding HIV prevention. In certain high-prevalence countries, leaders have questioned the effectiveness of condoms or even challenged the link between HIV and AIDS. In many countries with concentrated epidemics, governments have opted for politically expedient information initiatives

rather than the carefully targeted initiatives for marginalized and disfavored populations that would have the greatest impact. WHO cites the low priority accorded sexual-behavior-change programs as a primary reason why STI control coverage remains low. (WHO, 2006a.)

### Inadequate Human and Infrastructure Capacity

Especially in sub-Saharan Africa, countries often lack the capacity and management skills to effectively utilize substantial new infusions of financial support for HIV programs. (Makoa, 2004.) In part, this reflects a vicious cycle created by the epidemic, which has devastated civil service sectors, education systems, and private industry at the very moment their contributions to the AIDS response are most needed. In addition, many countries are experiencing a well-documented "brain drain," with many of the best-educated and most promising young professionals emigrating to pursue more lucrative careers in high-income countries. Human capacity limitations slow efforts to expand access to key HIV prevention strategies in developing countries and threaten the sustainability of those efforts over the long term.

While the human resource crisis affects all sectors, shortages in health care personnel are particularly crippling to national efforts to respond to HIV. Globally, an additional 4 million doctors, nurses, and midwives are needed to provide basic health services in developing countries. (WHO, 2006b.) Home to 11% of the world's population and nearly two-thirds of all people living with HIV, Africa accounts for only 3% of the world's health care workforce and less than 1% of health care spending. (WHO, 2006b.)

Shortages in health care personnel undermine prevention efforts in a variety of ways, slowing uptake of HIV testing, STI treatment, and delivery of prevention services in prenatal and other clinical settings. In Rwanda, less than one-third of the country's sites for prevention of mother-to-child transmission are able to provide antiretroviral prophylaxis due to a shortage of trained staff, CD4 monitoring machines, and other laboratory equipment. (UNICEF/WHO/UNAIDS, 2007.) By contrast, a key reason why Thailand succeeded in slowing the spread of its epidemic in the 1990s was that HIV prevention efforts were able to build on a strong and well-developed health system, including an extensive network of STI services and a robust family-planning program. (Ainsworth, 2003.) In many countries, a shortage of health workers trained in the administration of methadone or buprenorphine substitution therapy has impeded scale-up of HIV prevention efforts for injection drug users. (Institute of Medicine, 2006.)

## Service Fragmentation

In many parts of the world, HIV services have not been integrated into primary care, prenatal settings, STI service settings, or TB clinics. As a result, access to PMTCT services has suffered, while opportunities to promote knowledge of HIV serostatus have been missed.

The impact of service fragmentation is vividly illustrated in the case of TB, the leading cause of death for people with HIV. Only 13% of TB patients globally were tested for HIV in 2006. In Africa, home to 80% of the world's TB cases, only 5% of people with TB receive HIV testing. (UNICEF/WHO/UNAIDS, 2007.)

An effective way to expand the reach of prevention services is to integrate HIV into existing systems that already have broad coverage, such as schools, health clinics, or programs for refugees or other individuals displaced as a result of conflict or humanitarian emergency. Often, however, countries have been slow in mainstreaming HIV into broader systems. Many countries, for example, report that the large majority of teachers have yet to be trained in HIV or life-skills education.\*

## Stigma, Discrimination, and Human Rights

As noted earlier (see p. 9), the stigma associated with HIV deters many people at risk from seeking HIV prevention services or from being tested for HIV, can increase the risk of HIV transmission in some cases, and reduces political support for evidence-based prevention programs. Although anti-stigma initiatives have proven effective in reducing negative attitudes about people living with HIV (Brown, 2001), many countries and donors have not prioritized such efforts.

## SUCCESSFUL PREVENTION SCALE-UP

While only a few countries have brought comprehensive HIV prevention to scale, many others have overcome implementation barriers with respect to key components of a sound prevention response. The growing number of countries that have achieved strong results on HIV prevention demonstrates that scale-up is feasible in resource-limited settings and that extraordinary results can be achieved through strategic use of existing prevention tools.

\*See generally country reports monitoring implementation of the Declaration of Commitment on HIV/AIDS, National Commitment and Action Indicator on life-skills education, available at <http://www.unaids.org/en/Publications/2005ungassreporting/default.asp>.

## Sustaining HIV Prevention: Experience in Uganda and Thailand

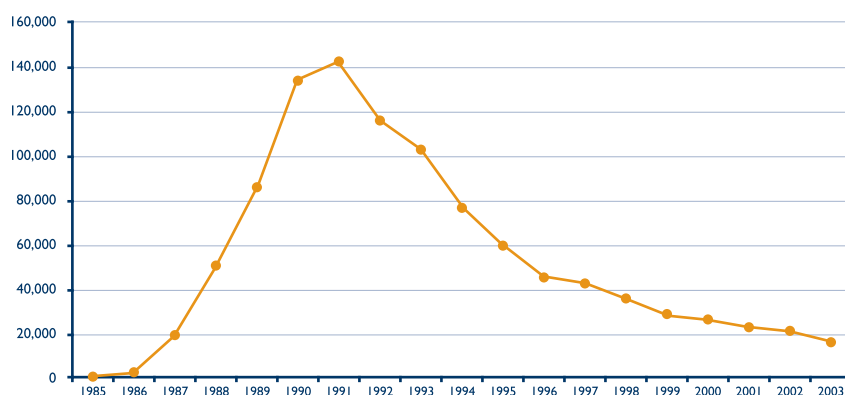
While Uganda has garnered worldwide praise for its pioneering success in reversing its serious epidemic, worrisome signs suggest that prevention efforts may be losing momentum. Anti-HIV messages are less visible in public, and critics contend that the country has not energetically promoted condoms in recent years. According to surveys, the share of sexually active men with multiple partners has more than doubled in recent years, while incidence of sexually transmitted infections has increased. (Timberg, 2007.)

In Thailand, a similar slowing of national HIV prevention efforts was observed in the late 1990s, when spending on HIV prevention fell by more than half, following the Asian economic crisis. (Ainsworth, 2003.) Thailand was also slow to adapt its prevention efforts to rapid increases in infections among injection drug users and men who have sex with men. (UNDP, 2004.)

More recently, Thailand has taken steps to reinvigorate its HIV prevention efforts. In 2007, the country adopted a three-year strategic plan to enhance HIV prevention among young people. In partnership with international and local NGOs, the Thai government in 2006 implemented its first prevention campaign targeting men who have sex with men.

The struggles of Uganda and Thailand to preserve their early HIV prevention successes underscore the need to sustain and revise HIV prevention strategies over time.

FIGURE 6: Annual Number of New HIV Infections in Thailand, 1985-2003



Source: Thai Ministry of Public Health, 2004

## Comprehensive Prevention Scale-Up

Although the countries that have succeeded in mounting a comprehensive, successful response to the epidemic are well known, their examples remain compelling, enabling policymakers to identify common elements of success for national HIV prevention efforts.

### Thailand

As evidence began to emerge in the late 1980s of significant increases in HIV infection in certain populations, Thailand mounted a major, multisectoral national response, with the strong and sustained backing of senior political leaders. The public health results of Thailand's national commitment on AIDS remain unprecedented in the history of the epidemic, as annual HIV incidence declined from 143,000 in 1991 to 19,000 in 2003. Had Thailand not brought comprehensive HIV prevention to scale, it would now have 7.7 million HIV infections rather than the estimated 580,000 people currently living with HIV. (Ravenga, 2006; UNAIDS, 2006c.)

### Uganda

For nearly two decades, Uganda has been regarded as a singular success story in sub-Saharan Africa. In the mid-1980s, long before most other countries responded to the epidemic, the country initiated a public AIDS awareness campaign that emphasized sexual fidelity and delayed initiation of sex among young people. Whereas roughly 50% of 15-year-old girls in Uganda were sexually active in 1989, fewer than one in four had initiated sexual activity in 1995. In comparison with their counterparts in Kenya, Zambia, and Malawi, young men (15-19) in Uganda were significantly more likely in 1995 to have never had sex, to be married and monogamous, and to have fewer sexual partners. (UNAIDS, 2001.) By the late 1990s, infection levels in Kampala had fallen by two-thirds, and national HIV prevalence had been cut in half. (UNAIDS, 2002.)

### Brazil

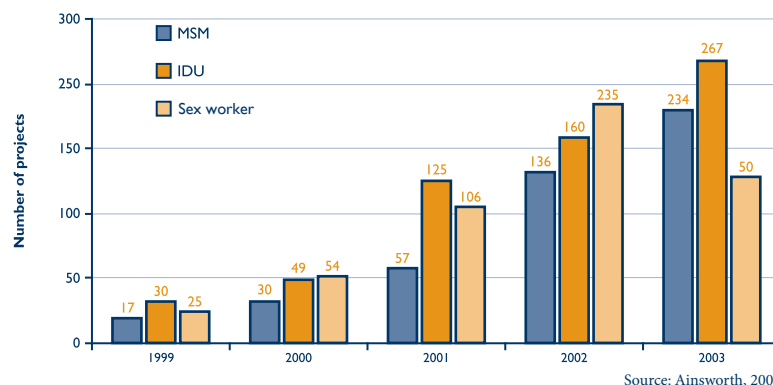
Brazil's national AIDS program has simultaneously expanded HIV prevention and treatment, undertaken sustained efforts to combat HIV stigma and discrimination, and integrally involved people living with HIV and other parts of civil society in the national AIDS response. (See Okie, 2006.) As a result of these energetic measures, Brazil has succeeded in bringing a measure of control to its HIV epidemic. Although the World Bank had predicted in 1990 that that 1.2 million Brazilians would be infected by 2000, fewer than 600,000 were living with HIV in 2002. (Ministry of Health, 2003.)

### Senegal

Senegal is a prime example of a country that prevented the emergence of a major epidemic through early action. As infection rates began to climb throughout much of Africa in the late 1980s and the early 1990s, Senegal initiated a multi-sectoral HIV prevention strategy that emphasized the active involvement of civil society, including faith-based leaders. (UNAIDS, 2001.) Condom use has climbed threefold over the last 10 years, and sex workers have access to weekly health care visits. (Reaves, 2007.) In addition, as circumcision is prevalent in Senegal, the country may have been able to benefit from its protective effect years before evidence emerged from recent clinical trials.

Strong national HIV prevention leadership has enabled Senegal to keep its epidemic at a low level in intervening years, with national adult HIV prevalence of 0.9% in 2006. By contrast, many neighboring countries have experienced much higher infection rates. An estimated 7.1% of adults are infected in Côte d'Ivoire, while adult HIV prevalence is 3.8% in Guinea-Bissau. (UNAIDS, 2006c.)

**FIGURE 7:** Growth in Number of Targeted HIV Prevention Interventions for High-Risk Groups in Brazil, 1999-2003



## Successful Scale-Up of Comprehensive HIV Prevention: Common Elements of Successful National Efforts

The national efforts of Brazil, Senegal, Thailand, and Uganda share key elements of success:

**Adequate and Sustained Financing.** Where comprehensive HIV prevention efforts have been scaled-up, they have been well funded. In Thailand, spending on HIV/AIDS rose from less than US \$1 million in 1988 to more than US \$10 million in 1991, with the Thai government supplying 72% of funding. (Ainsworth, 2003.) Consistent external support has been vital to Uganda's success; Uganda was the first country to obtain debt relief under the Heavily Indebted Poor Countries (HIPC) initiative, and external donors account for 91% of funding for HIV-related programs. (Tumashabe, 2006.) Brazil used substantial loan support from the World Bank to finance its HIV prevention efforts.

**Visible Political Support.** In each of these countries, the strong support of political leaders has been central to the success of HIV prevention efforts. In Thailand, national leaders responded energetically to evidence of increasing infection rates among military personnel in the late 1980s and early 1990s (UNAIDS, 2004b), while Ugandan President Yoweri Museveni was the first major African political leader to prioritize the response to HIV. (UNAIDS, 2001.) Political leaders in Brazil have repeatedly defended evidence-based HIV prevention efforts from attacks by opponents of condom promotion and needle exchange.

**Targeted, Evidence-Informed Action.** An early understanding of the epidemic informed Thailand's decision to implement its 100% condom program in brothels. Indeed, each of the countries profiled has strongly promoted condom use; in Senegal, for example, condom use increased threefold over the past decade (Reaves, 2007), while in Uganda use of condoms among sexually active young people increased from 49% in 1995-1996 to 73% in 2000-2001. (Kilian, 2007.) With funding from the United Nations Population Fund, Senegal in 1994 integrated HIV prevention and education in schools, leading young girls to delay initial intercourse (by three years in comparison with their mothers' generation). (Reaves, 2007.) Dozens of needle exchange programs operate throughout Brazil, and nationwide imple-

mentation of PMTCT programs has resulted in near-universal access to services for HIV-infected pregnant women and has given Brazil a rate of mother-to-child transmission that is comparable to those of high-income countries. (See Rosa, 2006; Goldani, 2003.) Since 2000, Thailand has also implemented a national PMTCT program that has reduced the number of infants infected with HIV. (Plipat, 2007.) In the profiled countries, HIV prevention initiatives have been tailored and targeted to the needs of particularly vulnerable populations, such as sex workers in Thailand. In Brazil, the number of World Bank-supported HIV prevention projects for injection drug users increased from 30 in 1999 to 267 in 2003. (Ainsworth, 2004.)

**Use of Mass Media and Other Channels to Raise HIV Awareness.** Early prevention efforts in Uganda and Thailand used mass media to disseminate information about HIV, while more recently media campaigns in Brazil have mobilized celebrities to influence popular attitudes about safer sex.

**Anti-Stigma Measures.** Countries that have achieved broad-based success in preventing new HIV infections have undertaken concerted efforts to reduce the stigma associated with HIV and to encourage respect, tolerance, and compassion for people living with the disease. Legal reforms were enacted in Thailand to promote and protect the human rights of people living with HIV, while leaders in Uganda and other countries have promoted the visibility of HIV-infected people and networks. (UNAIDS, 2001.)

**Involvement of Affected Communities and Diverse Sectors.** National HIV prevention efforts in the profiled countries have been multisectoral. Community-based organizations have been at the forefront of the HIV response in Uganda and Brazil. Senegal made special efforts to involve religious leaders in HIV prevention efforts (UNAIDS, 2001), while Uganda has enrolled traditional healers in the HIV response. (UNAIDS, 2002a.)

## Prevention Scale-Up in Different Regions: Emerging HIV Prevention Successes?

Although it is often too soon to tie results to specific prevention measures, clear signs are emerging of success against HIV in diverse countries in multiple regions. Even in some of the poorest countries in the world, access to HIV prevention has been substantially expanded. In some countries, these initiatives have already achieved important public health results. These successes demonstrate that the low coverage levels for HIV prevention seen globally are not inevitable and that barriers to scale-up can be overcome through concerted, evidence-informed action.

**Cambodia.** Following implementation of brothel-based HIV prevention programs, condom use among sex workers and their clients increased, while the proportion of men visiting brothels declined. Nationally, HIV prevalence has fallen from 3.2% in 1997 to 1.6% in 2006 (National AIDS Program of Cambodia, 2005; VOA News Reports, 2007), and prevalence among brothel-based sex workers dropped from 43% in 1997 to 21% in 2003. (WHO, 2005b.) The number of sites providing voluntary HIV counseling and testing increased from 12 in 2000 to 109 in 2005, while the number of individuals tested for HIV rose from 1,766 in 1997 to 152,147 in 2005. (WHO, 2005b.) Steady donor support has enabled Cambodia to expand a broad range of prevention services, as international donors provide more than US \$37 million annually for HIV-related programs. Cambodia is now adapting its prevention strategies to emerging changes in its national epidemic; while the country's first-generation prevention efforts focused on brothel-based programs, services now reach one-third of injecting drug users and one-half of men in Phnom Penh who have sex with men. (UNICEF/WHO/UNAIDS, 2007.)

**Haiti.** Significant and sustained financial support from the Global Fund and the US government's PEPFAR initiative has enabled Haiti's government to implement a multisectoral AIDS strategy that integrates HIV prevention and treatment. Despite its status as the poorest country in the Western hemisphere, Haiti has achieved above-average coverage on a number of key HIV interventions: 19.4% of HIV-infected pregnant women in 2005 received a complete course of antiretroviral prophylaxis; 100% of blood donations are screened for HIV; and 84% of individuals presenting with an STI are appropriately diagnosed, treated, and counseled. Between 1998 and 2004, HIV prevalence among pregnant women declined from 6% to 3.4%. (Haitian Children's Institute, 2006.)

**India.** Although overall national HIV prevalence is low, infection levels vary significantly by state and among key risk groups. Prevalence is significantly higher in some southern states, and among men who have sex with men, injection drug users, and commercial sex workers. (UNAIDS, 2006a.) With the goal of averting a potentially catastrophic growth of HIV in India, the Bill & Melinda Gates Foundation in 2003 launched the Avahan India AIDS Initiative. Working closely with the Indian government, the Gates Foundation has to date committed US \$258 million toward scaled-up HIV prevention in India. These efforts are now bearing fruit, with access to HIV prevention services dramatically increasing in the most heavily affected parts of India between August 2005 and December 2006. Avahan has established sex worker programs in 76 districts and 550 towns, as well as health services for male clients in 53 districts and 112 towns. During this 16-month period, the percentage of sex workers who have ever visited a clinic increased from 26% to 90%, while the proportion of sex workers contacted monthly by outreach workers rose from 29% to 70%. (Figure 8.) The number of free condoms distributed monthly grew from 1.3 million to 5.6 million, while condom sales increased by 56%. (Steen, 2006.) Studies are underway to determine the impact, if any, such programs are having in reducing new infections.

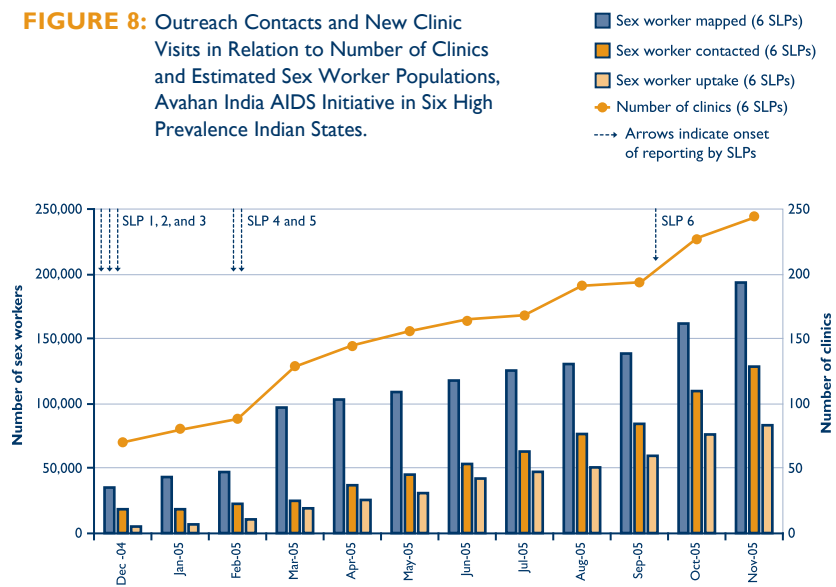
**Kenya.** With one of the world's most severe HIV epidemics, Kenya in 2000 launched a national initiative to intensify HIV prevention. Between 1998 and 2003, rates of condom use among young women (15-24) nearly doubled, as did basic knowledge about HIV. (UN Common Database, 2003.) Surveys also found that age of first sex rose among young people, and the percentage of people with multiple sex partners declined. HIV prevalence among adults has fallen sharply in recent years, from 10% in the late 1990s to 6.1% in 2005. (UNICEF/WHO/UNAIDS, 2007.) The number of public HIV testing sites grew from 3 in 2000 to 650 in 2005, and Kenya's national strategic HIV plan for 2006-2010 provides that by the end of the decade at least 2 million people will have received an HIV test (including results) within the past year. In 2005, an estimated 20% of HIV-infected pregnant women received antiretroviral prophylaxis — nearly double the coverage for sub-Saharan Africa as a whole. (UNICEF/WHO/UNAIDS, 2007.)



**Zambia.** Zambia appears to be making strides in curbing its AIDS epidemic. Between 1998 and 2005, the average age of first sex increased from 16 years to 18.5 years for young men, and from 17 years to 18.5 years for young women. The percentage of young people with a non-regular sex partner declined between 1998 and 2003, and reported condom use during the most recent sex act with a non-regular partner rose from 28% in 1998 to 38% in 2005 among men. (Zambian National HIV/AIDS/STI/TB Council, 2006.) Declines in HIV prevalence have been reported among pregnant women in urban areas; among 20-24-year-old pregnant women, HIV prevalence fell from 30% in 1994 to 24% in 2004, while the percentage of 15-19-year-olds who were infected dropped from 20% to 14%. (UNAIDS, 2006a.) Although it is currently impossible to correlate these epidemiological and behavioral trends with specific policies or programs, Zambia's progress against HIV/AIDS has coincided with a notable strengthening of national AIDS efforts. In 2005, Zambia dedicated US \$32 million — or 1.5% of its national budget — for HIV prevention, treatment, care, and support, guided by a multi-sectoral national strategy finalized in 2005 and coordinated by a national body that includes civil society. Coverage for services to prevent mother-to-child transmission reached 25% in 2005 — five times higher than the regional average — and HIV education is mandatory at all education levels. Social marketing of condoms has intensified in recent years, with sales of male condoms increasing from 8.6 million in 2001 to 12.3 million in 2003. (National HIV/AIDS/STI/TB Council, 2006.)

**Zimbabwe.** HIV surveillance and serosurveys reveal a decline in HIV prevalence and incidence among pregnant women and young people in Zimbabwe since the late 1990s. HIV prevalence among 15-24-year-old pregnant women, for example, fell from 29% to 20% between 2000 and 2004, while levels of HIV infection among young men and women declined by nearly half between 1998-2000 and 2001-2003. Increases in condom use with non-regular partners, delayed initiation of sexual activity, and substantial HIV-related mortality appear to have contributed to the declines in HIV prevalence in Zimbabwe. While linking these infection reductions with particular national HIV prevention efforts is difficult, behavioral changes occurred at the same time that key services were substantially strengthened. Between 2000 and 2004, the number of clients seen at voluntary counseling and testing sites in Zimbabwe increased more than sixfold. Distribution of male condoms also rose fourfold between 1990 and 2004 — from 20 million to 80 million — including a 60% increase since 2000. (UNAIDS, 2005b.)

**FIGURE 8:** Outreach Contacts and New Clinic Visits in Relation to Number of Clinics and Estimated Sex Worker Populations, Avahan India AIDS Initiative in Six High Prevalence Indian States.



Source: Steen, 2006

## Successful Scale-Up of Key HIV Prevention Services

In addition to countries that have brought comprehensive HIV prevention to scale, a number of countries have also made significant progress in expanding access to key components of HIV prevention. By building on these successes, countries can move toward broad-based coverage for the full array of essential prevention strategies.

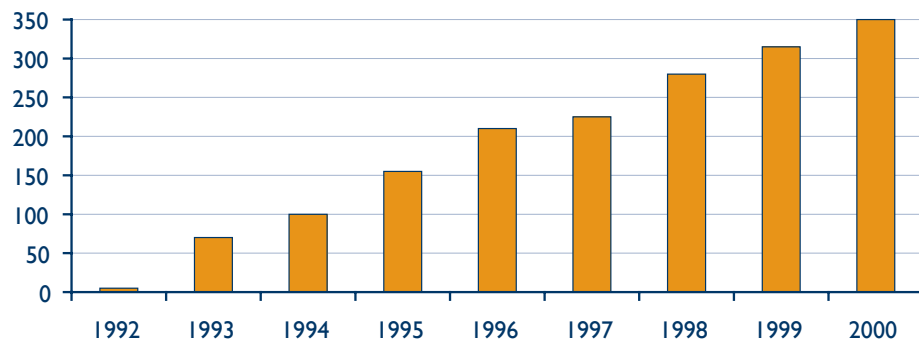
### HIV Testing

Several countries have implemented radical policy changes to boost HIV testing rates. In early 2004, for example, Botswana initiated a new national policy requiring the routine offer of an HIV test to patients in health care settings, leading to a sharp upsurge in HIV testing, with the number of people receiving rapid HIV testing increasing from 60,846 in 2004 to 157,894 in 2005. (Steen, 2007.) In South Africa, integration of HIV testing services in public clinics has helped the country achieve testing rates well above regional and global averages; according to a national household survey conducted in 2005, 30% of adults have previously been tested for HIV. (UNICEF/WHO/UNAIDS, 2007.) The number of voluntary HIV counseling and testing sites in Rwanda grew from five in 2003 to more than 250 by May 2007. (J Ruxin, personal communication, 8 May 2007.)

With nearly one in four adults infected with HIV (UNAIDS, 2006c), Lesotho in December 2005 embarked on an extraordinary national effort to ensure that all people over age 12 know their HIV status by the end of 2007. Building on successful strategies used in prior national vaccination campaigns, workers in the “Know Your Status” campaign are going door to door to offer free testing services. It is too soon to gauge the success of this initiative.

Forging strong links between multiple service systems has proven to be an effective means of increasing knowledge of HIV serostatus. While global access to HIV testing among TB patients is low, Rwanda, Kenya, and Malawi now deliver HIV testing services to roughly half or more of individuals treated for TB, illustrating the feasibility and potential of integrating service systems in resource-limited settings. (UNICEF/WHO/UNAIDS, 2007.)

**FIGURE 9:** Male Condoms Sold in Brazil (Millions), 1992-2000



Source: Ainsworth, 2004

### Condom Promotion

To have an impact on infection rates, condom use must expand beyond the 9% coverage reported in 2005. Brazil has energetically promoted condoms through mass media initiatives that also emphasize HIV testing. In 2006, the government distributed 25 million free condoms at the annual Carnival festival in Rio de Janeiro. Nationally, the government distributes 150 million condoms annually, and condom social marketing has increased condom sales (see Figure 9). As a result of Brazil's many condom-promotion initiatives, condom use among Brazilians has significantly risen, with surveys finding that condom use during the first sexual encounter increased from 4% in 1986 to 63% in 2003. (Levi, 2002; Chequer, 2005.) Key factors contributing to Brazil's success include strong and sustained funding, an adequate supply of condoms, and unwavering political support.

### Mass Media Campaigns

While mass media alone is not sufficient as a prevention strategy, it constitutes a key component of comprehensive HIV prevention, especially for countries with generalized epidemics. A 2006 meta-analysis of 15 studies of HIV media campaigns in developing countries found that mass media efforts are associated with increased HIV knowledge, increased condom use, and improved interpersonal communication about HIV among sex partners. (Bertrand, 2006.) In Nigeria, individuals who were heavily exposed to a media campaign on reproductive health and HIV prevention were more than twice as likely as those unexposed to the campaign to know that condom use protects against HIV infection. (Keating, 2006.)

As experience in Brazil, Uganda, and other countries has demonstrated, the media serves as a cost-effective means of increasing knowledge and awareness among the broader population, including those who might otherwise be difficult to reach through conventional outreach or institutional

channels. In Cambodia, a national mass media awareness initiative supported by the BBC World Service has reached 97% of the population. (BBC World Service Trust, 2006.)

### Prevention Programs for Young People

In countries where recent success has been reported in preventing new infections, behavior change among young people appears to have driven broader progress against the epidemic. (UNAIDS, 2006a.) Effective prevention for young people is challenging, however, in part because of the need to reach successive generations of young people each year.

South Africa’s loveLife program provides an example of a nationally scaled, comprehensive, evidence-based approach to HIV prevention for young people. Program components include the establishment of youth-friendly health services in public clinics; a national network of youth centers; community-level outreach and support to young people through schools and other venues; a national toll-free hotline; and a sustained multimedia HIV education and awareness campaign. Each month, more than 500,000 young people participate in loveLife programs, and the hotline logs approximately 350,000 calls. More than 80% of young people in South Africa are aware of loveLife, with more than half reporting participation in at least one of loveLife’s programs. In addition, a recent study found a correlation between loveLife participation and lower infection rates, with those having participated in at least one loveLife program less likely to be infected than non-participants. (Pettifor, 2005.) Although it is not yet possible to establish a causal relationship with loveLife, HIV prevalence appears to have stabilized among young people in South Africa. (UNAIDS, 2006a; Dorrington, 2006.) It is hoped that the recent stabilization of infections is a precursor to an eventual lessening of infection rates among South African adolescents.

### Prevention of Mother-to-Child Transmission

Although global PMTCT coverage remains low, a number of countries in different regions have successfully expanded services for HIV-infected pregnant women. In 2005, seven countries reached at least 40% of HIV-infected pregnant women with PMTCT services — Ukraine (90% coverage), Argentina (87%), Jamaica (86%), Russian Federation (84%), Botswana (54%), Brazil (48%), and Thailand (46%). (UNICEF/WHO/UNAIDS, 2007.) The share of HIV-infected pregnant women in South Africa who received antiretroviral prophylaxis rose from 22% to 30% in 2005 alone. (UNICEF/WHO/UNAIDS, 2007.)

In Rwanda, which is working to implement a national PMTCT strategy developed in 2005, the percentage of HIV-exposed infants who were tested at 15 months increased from 3% in 2005 to nearly 46% in 2006. Namibia, and Swaziland have dramatically increased PMTCT coverage, with access to PMTCT growing from 4% in Swaziland in 2004 to 34% in 2005. (UNICEF/WHO/UNAIDS, 2007.)

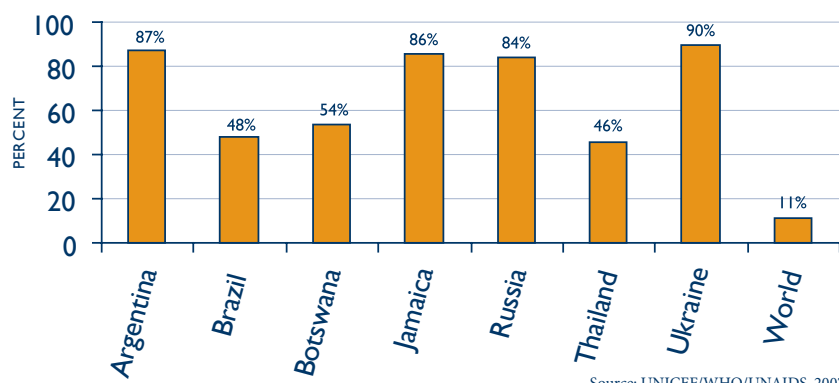
Access to HIV counseling and testing plays a central role in PMTCT scale-up, as the eight countries with the greatest PMTCT coverage also have relatively high testing rates for pregnant women. In Botswana, 95% of pregnant women received an HIV test in 2005. (UNICEF/WHO/UNAIDS, 2007.) In Ukraine, where PMTCT coverage is highest, implementation of “opt-out” HIV counseling and testing in antenatal clinics significantly increased uptake of HIV testing among pregnant women. (Malyuta, 2006.)

### HIV Prevention for Injection Drug Users

Iran — home to an estimated 137,000 injection drug users, one in four of whom may be HIV-infected — has made major strides in bringing harm-reduction services to scale. Beginning in 2001, Iran established a network of clinics to provide comprehensive HIV prevention, treatment, and care to injection drug users. (WHO/EMRO, 2004.) HIV clinics were operating in one-third of all prisons in Iran by the end of 2006, and methadone substitution therapy was reaching 55% of all prisoners in need. (UNICEF/WHO/UNAIDS, 2007.) A key element of Iran’s clinic model for injection drug users is the clinics’ sustained advocacy for a public policy environment conducive to harm reduction. (WHO/EMRO, 2004.)

Similar successes in expanding harm-reduction coverage have been reported in cities in Bangladesh, Belarus, Brazil,

**FIGURE 10:** PMTCT Coverage in Select Countries (2005)



Source: UNICEF/WHO/UNAIDS, 2007

## Integration of HIV Prevention and Treatment

In a previous report, the Global HIV Prevention Working Group urged the adaptation of HIV prevention strategies in the era of expanded treatment access, including the careful integration of prevention interventions in health care settings. (Global HIV Prevention Working Group, 2004.) Improved treatment access, the Working Group concluded, has the potential to buttress prevention efforts by providing individuals at risk with an incentive to learn their serostatus, reducing HIV stigma, and creating new opportunities for the delivery of targeted prevention services to people living with HIV. By emphasizing prevention at the same time that treatment is brought to scale, countries can also reduce the potential that improved treatment outcomes might encourage some to relax their guard against HIV.

Early indications suggest that treatment scale-up supports, rather than undermines, HIV prevention efforts. After obtaining access to antiretrovirals, a cohort of 926 HIV-infected people in rural Uganda reduced risky sexual behavior by 70% over a six-month period. (Bunnell, 2006.) In a treatment program in rural KwaZulu-Natal (South Africa), patients who initiated antiretroviral therapy were more likely to disclose their HIV status to another person. (Maarschalk, 2007.) As treatment has been brought to scale in Botswana, the prevalence of stigmatizing attitudes regarding people living with HIV has significantly declined. (Gopalakrishan, 2006.) A growing body of data also demonstrates the effectiveness of HIV prevention services specifically tailored for people living with HIV. (Crepaz, 2006.) In addition, it is possible that antiretrovirals may reduce the infectivity of people living with HIV (McCormick, 2007; Spacek, 2006), although such prevention benefits could potentially be offset by increases in risk behavior. (Baggaley, 2006.)

Russia, and Ukraine. Myanmar doubled the number of needles and syringes distributed in 2005 (UNICEF/WHO/UNAIDS, 2007), while China, encouraged by the success of a pilot project in 2004, had by late 2006 opened more than 200 clinics to provide methadone maintenance therapy for drug dependence. (People's Daily Online, 2006.) Common features of high-coverage programs for injection drug users include involvement of community organizations and faith-based groups, work with law enforcement agencies to minimize harassment, adequate and sustained funding, ease of access for clients, and involvement of injection drug users in advisory bodies and other appropriate structures. (UNAIDS, 2006b.)

### Prevention Programs for Sex Workers

In countries where sex work is largely brothel-based, strategies such as the 100% condom program pioneered by Thailand are able to achieve extensive coverage. In Cambodia, which has used the 100% condom approach, 96% of sexual transactions in brothels are protected, and HIV prevalence among sex workers declined from 43% in 1998 to 21% in 2003. (National AIDS Authority of Cambodia, 2005.) In the Dominican Republic, studies have found that sex workers are significantly more likely to use condoms if the establishment where they work actively encourages and promotes condoms and facilitates regular STI check-ups. (Kerrigan, 2003.) Active involvement of sex workers in program implementation and monitoring has contributed to the rapid scale-up of services to treat STIs among sex workers in India. (Steen, 2006; see box above on "Prevention Scale-Up in Different Regions: Emerging HIV Prevention Successes?")

### Prevention Programs for Men Who Have Sex With Men

Brazil is one of the rare countries to scale-up prevention programs for men who have sex with men. Between 1999 and 2003, the number of HIV prevention projects for Brazilian men who have sex with men supported by the World Bank increased from 17 to 234. (Ainsworth, 2004)

# Recommendations

To expedite the scale-up of comprehensive HIV prevention in diverse settings, the Working Group makes the following recommendations:

## RECOMMENDATIONS FOR NATIONAL GOVERNMENTS

To accelerate the scale-up of HIV prevention, national governments should use inclusive, broad-based processes to develop comprehensive, evidence-based, target-driven national prevention strategies.

- **INCLUSIVE NATIONAL PLANNING PROCESS.** An inclusive national process, bringing together multiple sectors and ensuring strong participation by civil society, affected communities, and people living with HIV, should develop a comprehensive strategy for the HIV response, with a simultaneous and integrated scaling-up of HIV prevention and treatment strategies. Available data should help guide national decision-making on allocating prevention resources among different program components.
- **ESTABLISHING PREVENTION TARGETS.** National HIV authorities should establish and disseminate concrete goals for coverage, intensity, and impact of HIV prevention efforts.
- **HIV INFORMATION SYSTEMS.** Each national HIV authority should develop and implement plans for strengthening HIV surveillance and other HIV-related information systems. Through collection and analysis of reliable and up-to-date data, countries should fully understand their epidemic, including HIV prevalence and incidence, the relative sources of HIV infection, the size and characteristics of groups most at risk, important sources of HIV-related vulnerability (e.g., social, economic, legal, etc.), and key gaps in the HIV response.
- **ADDRESSING FACTORS THAT INCREASE VULNERABILITY.** National governments should complement programmatic HIV prevention initiatives with broader social and structural actions to reduce vulnerability. (For a discussion of relevant policy actions, see box above on “Addressing the Factors That Increase Vulnerability to HIV.”)
- **ADAPTING HIV PREVENTION STRATEGIES.** Working with international technical agencies, national HIV authorities should assess HIV prevention scale-up on an ongoing basis and identify factors that impede program expansion. Joint reviews of the HIV response should be regularly undertaken by national stakeholders. National strategies should be revised as needed, based on epidemiologic trends, evaluation findings, and the emergence of new prevention tools.
- **INTEGRATING HIV TREATMENT AND PREVENTION.** National governments should investigate incentives, training programs, and other policy actions to encourage field-level integration of HIV treatment and prevention, including the delivery of HIV prevention services in treatment settings. Similar incentives should be explored to encourage integration of HIV prevention in service settings for TB, sexual and reproductive health, and STI treatment.
- **ACCOUNTABILITY.** With assistance from technical agencies and donors, where needed, each national HIV authority should establish a comprehensive HIV monitoring and evaluation system that encompasses regular reporting by all relevant national and sub-national stakeholders, including international NGOs, bilateral donors, UN agencies, workplaces, and faith-based groups. Each national HIV authority (or designated agency) should submit accurate, comprehensive, and timely reports to UNAIDS on national HIV progress. National HIV authorities should also work with UNAIDS to undertake National AIDS Spending Assessments.
- **STIGMA AND DISCRIMINATION.** All countries should have in place laws that prohibit discrimination on the basis of real or perceived HIV status or of membership in a vulnerable population at elevated risk of HIV infection. Such national laws should adhere to the 2006 consolidated version of the International Guidelines on HIV/AIDS and Human Rights, jointly issued by UNAIDS and the Office of the United Nations High Commissioner for Human Rights.
- **HIV PREVENTION RESEARCH.** National governments should welcome, facilitate, and build community support for clinical trials and other research projects associated with the development of new HIV prevention strategies.

## RECOMMENDATIONS FOR INTERNATIONAL DONORS

International donors must assume primary responsibility for closing the HIV prevention resource gap.

- **DOUBLING HIV ASSISTANCE, INCLUDING FOR PREVENTION.** International donors and domestic governments should take immediate steps to dramatically increase financing for HIV prevention, with the aim of making US \$22 billion available in 2008 for HIV prevention, treatment, care, and support. Dramatically increasing resources to reach the needed funding levels, donors should aim to ensure that 52% of available HIV funding in 2008 is allocated toward HIV prevention efforts, as recommended by UNAIDS. The balance of funding between HIV prevention, treatment, and other needs will vary, based on regional and national needs. Donors should ensure that the HIV prevention efforts they support are based on sound scientific evidence.
- **COORDINATION, HARMONIZATION, AND ALIGNMENT.** Bilateral donors should work with each other and with the Global Fund, World Bank, UNAIDS regional teams, and international NGOs to develop coordinated, multi-year plans for external HIV assistance. Such efforts should be undertaken in close consultation with national governments and HIV authorities and should align with nationally determined HIV priorities, strategies, and targets.
- **BUILDING CIVIL SOCIETY CAPACITY.** Donors should prioritize capacity-building assistance to civil society organizations, with particular emphasis on support to networks for people living with HIV for anti-stigma initiatives and “positive prevention” programs.
- **ENDORISING UNIVERSAL ACCESS FOR HIV PREVENTION.** Building on their endorsement of treatment scale-up in 2006, the Group of 8 industrialized countries should formally endorse universal access to HIV prevention and make firm commitments for increased resources to support prevention scale-up.

## RECOMMENDATIONS FOR MULTILATERAL AND TECHNICAL AGENCIES

The technical resources available to countries to support HIV prevention scale-up should be stronger and better coordinated.

- **COORDINATED TECHNICAL SUPPORT FOR NATIONAL HIV PREVENTION PLANNING.** A coordinated system of technical support is needed to assist countries in developing comprehensive national HIV plans that include well-targeted, evidence-based, and scaled-up prevention programming. Ongoing technical support services should be made available, as opposed to traditional time-limited technical assistance. Technical support must be designed to meet the needs of national planners and should utilize and build in-country technical capacity.
- **INDEPENDENT ASSESSMENT OF NATIONAL STRATEGIES.** Through coordinated technical mechanisms, such as the UNAIDS AIDS Strategy and Action Plan service, housed at the World Bank, technical experts should provide independent feedback on national HIV prevention plans. This effort should assess the degree to which national programmatic actions are evidence-based, the alignment of prevention allocations with available epidemiological data and documented national needs, and whether needed programmatic actions are supported by social or structural policy actions that address nationally relevant factors that increase vulnerability. Such independent assessments would not serve as an official “imprimatur” for donors but would rather solely focus on assisting countries in adapting national strategies to maximize their public health impact.
- **IMPROVING NATIONAL HIV INFORMATION SYSTEMS.** WHO, UNAIDS, CDC and other technical agencies should continue and enhance technical support to countries in building and strengthening national HIV-related data systems.
- **MONITORING RESOURCE FLOWS.** UNAIDS and its research partners should improve their capacity to differentiate available funding by category of intervention, comparing expenditures with global and regional projections of resource needs for specific kinds of programs. UNAIDS should also build on the experience of prior National AIDS Spending Assessments to improve estimates of HIV spending in countries, including better understanding of the magnitude, nature, and targeting of HIV prevention efforts.

## RECOMMENDATIONS FOR HEALTH CARE AND OTHER SERVICE SETTINGS

Scaling-up HIV prevention requires action by not only national governments but also by health clinics and systems in localities and districts. Health care workers should be trained to maximize their capacity to function as partners in HIV prevention efforts.

- **INTEGRATING HIV PREVENTION IN LARGER SERVICE SYSTEMS.** HIV services should be closely integrated with key service systems, such as TB clinics, STI clinics, and sexual and reproductive health settings. Health systems and providers should incorporate detection of active syphilis and the routine offer of HIV testing in antenatal care.
- **ACCOUNTABILITY AND TRANSPARENCY.** All prevention service providers, including those supported or administered by external sources, should regularly report data on utilization and impact of services to the designated national agency for monitoring and evaluation.
- **INFECTION CONTROL.** All health care settings should educate and actively encourage health care workers to adopt sound infection-control practices. Such initiatives should extend beyond provision of education materials and include opportunities for audit and feedback. With the support of national governments, international donors and multilateral agencies, all health care settings should make safer technologies readily available to workers, including auto-disable syringes and up-to-date kits for antiretroviral prophylaxis.
- **TRAINING IN SEXUAL HEALTH.** Health care workers should be trained on sexual health to increase their facility in discussing sexual practices and risk exposure with patients and to reduce workers' prejudicial attitudes toward vulnerable populations.

## RECOMMENDATIONS FOR RESEARCH

In addition to the continuing urgency of the search for new HIV prevention technologies, social and operational research is also imperative in the effort to bring prevention to scale.

- **SOCIAL RESEARCH.** Public-sector research agencies, academic researchers, and leading foundations should prioritize relevant social research in countries to improve understanding of factors that increase vulnerability, identify and characterize programs and specific policy actions to address such factors, and inform the development and adaptation of national HIV prevention strategies.
- **OPERATIONAL AND IMPLEMENTATION RESEARCH.** Public-sector research agencies, academic researchers, and leading foundations should increase investment in research on optimal, cost-effective strategies to accelerate scale-up, ensure sustainability, and maximize the impact of HIV prevention strategies. Focused research should investigate strategies to integrate new HIV prevention technologies and approaches in the broader HIV prevention and service continuum. WHO and UNAIDS should actively work to coordinate integration of new approaches in countries.
- **NEW HIV PREVENTION APPROACHES.** Continued and sustained efforts should focus on the development of new prevention technologies and approaches and on improving those that already exist.

## RECOMMENDATIONS FOR CIVIL SOCIETY

The active involvement of civil society is essential to effective HIV prevention advocacy and to efforts to hold key stakeholders accountable for their commitments.

- **HIV PREVENTION ADVOCACY BY TREATMENT ACTIVISTS.** At national and global levels, HIV advocates should actively support a comprehensive response to the epidemic that simultaneously brings HIV prevention and treatment to scale.
- **MONITORING HIV PREVENTION PROGRESS.** With support from donors and multilateral agencies, civil society networks should assist in monitoring national HIV prevention efforts and work to hold governments, donors, and other actors accountable for agreed targets.
- **PARTICIPATION IN NATIONAL PREVENTION PLANNING AND MONITORING.** Civil society should be integrally involved in national bodies that develop and/or monitor national efforts to bring HIV prevention to scale, including National AIDS Councils and Country Coordinating Mechanisms for the Global Fund. Countries should define civil society broadly to encompass community-based organizations, faith-based groups, business and labor, and people living with HIV.

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