

are concerned about the administration of funds, about the security of drugs, and about the sustainability of programs. On the other hand, they recognize the need and are excited at the prospect of investing in programs that do address their concerns.

An experience during the first week of our work in the Bahamas reinforced the need for someone to assist in the planning and administration of these programs. One week after our arrival, we discovered that the government was buying generically produced antiretroviral medication from a third-party distributor for \$3,600 per person per year. In one week, simply by cutting out the middleman, we were able to cut the cost of medication by \$3,100, to less than \$500 per person per year. This means that they can now serve more than seven times as many people for the same amount of money. Although that is a small victory, the experience confirms the value that those with experience in managing large-scale programs can bring to a struggling country.

TIME FOR ACTION

Our goals are ambitious, and there are risks involved. However, the presence of risk cannot be used as an excuse for timid action. The crisis demands that we act boldly and give our best efforts for a comprehensive solution.

The efficacy of this initiative will be measured by the numbers of people enrolled in successful treatment programs and in the declines in the rate of infection in the countries in which we are active. However, our long-term goal is to establish models that can be replicated in resource-poor settings all over the world. The long-term success of this initiative will be measured by the number of countries that adopt the methods and lessons of the direct initiatives that the foundation creates.

The nations of the world have much work to do to combat this global crisis, but I am encouraged by the sense of urgency that is beginning to develop on every continent. I am grateful for the announcement that President George W. Bush made in his State of

the Union address, in which he recommended that we increase spending from \$1 billion to \$3 billion per year for the next five years to fight the global AIDS epidemic. It is now our duty to lobby Congress so that the money is appropriated at the proposed levels, without irresponsible restrictions to limit its use.

It is also important to press Congress on the source of the funding. We do not want to see money taken out of other health care initiatives. Medicaid takes care of 40 percent of persons with AIDS in the United States. There are 18 states today thinking about cutting Medicaid funding because they have such terrible budget problems. It is therefore very important that this be new money, not money taken away from other programs, including our other commitments to developing nations. I must also advocate on behalf of the Global Fund. President Bush's current proposal is to allocate only \$200 million to the fund — even less than we are giving this year. I would like to see more money used for that purpose.

As the leaders in this fight against AIDS, you in the medical community deserve our thanks for your tireless efforts. You have made it possible for us to prevent the modern-day AIDS crisis from wiping out entire nations. We now need to turn that possibility into a reality. I call on you to continue your efforts to combat this catastrophic pandemic, both through your work as medical professionals and through civic action as citizens of the world. Together, we can ensure that this money is appropriated and that we spend it in the right way.

My pledge to you is that you will not be alone in your fight to combat this growing crisis. I am committed to working in partnership with the governments of developing countries, experts in AIDS research, public health, education, and health care policy, and all citizens until, together, we turn the tide on the AIDS pandemic.

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Curbing the Global AIDS Epidemic

Helene D. Gayle, M.D., M.P.H.

President George W. Bush's recent pledge of \$15 billion to fight human immunodeficiency virus (HIV) infection and AIDS is another welcome sign

of the increased priority placed on the global epidemic. The announcement calls for a strong focus on prevention along with increased access to treat-

ment. The critical steps now are to ensure that these resources are appropriated rapidly and that they complement other critical health and development initiatives. The hope is that other donor governments will follow the lead of the United States with commitments to increased resources, because the global AIDS epidemic threatens to grow far graver. Stover et al. predict that the incidence of HIV infection will increase by 25 percent by 2005, with at least 45 million new infections between 2002 and 2010.¹ Analysts at the National Intelligence Council anticipate an even more severe scenario, projecting at least 50 million new cases by 2010 in five countries alone — China, Ethiopia, India, Nigeria, and Russia.²

Even though the AIDS epidemic has prompted much compassion and concern, the world behaves as if a massive expansion of the epidemic is unavoidable and as if there were little choice but to watch and hope that AIDS will eventually burn itself out. This sense of inevitability ignores the extraordinary resources available and the fact that extensive studies have shown the effectiveness of numerous existing strategies for preventing the transmission of HIV.

Despite these resources, today fewer than one in five persons at risk for HIV infection worldwide has access to even the most basic preventive interventions. If standard preventive strategies were to be fully implemented worldwide, analysis suggests that at least 29 million new infections — or 63 percent of all expected new infections — could be prevented by 2010 (Fig. 1).¹

If the course of the epidemic is to be altered, new resources must immediately be directed toward bringing to full implementation multiple, complementary preventive strategies, and investments must be made to ensure that these programs are sustainable. If preventive efforts are to be successful in the long term, they must also be sufficiently flexible to adapt quickly to new developments, such as the emergence of new preventive techniques and increased access to antiretroviral treatment in developing countries.

EXPANDING ACCESS
TO "COMBINATION PREVENTION"

Jha et al. estimate that preventive services currently reach only 10 to 20 percent of people at risk in low- and middle-income, or developing, countries that account for 95 percent of new cases of infection.³

Closing this gap in access to HIV prevention will require, at a minimum, a fourfold increase in global spending. Stover et al. estimate that at least \$4.8 billion is needed to implement a comprehensive HIV-prevention effort in developing countries by 2005,¹ and a panel of health care economists convened by the Joint United Nations Programme on HIV/AIDS (UNAIDS) advises that the funding needed for prevention programs in low- and middle-income countries will amount to \$5.85 billion by 2007.⁴ Yet total spending from all sources in 2002 on HIV-prevention efforts in those countries was approximately \$1.2 billion, just one quarter of the minimum needed, according to a recent analysis by the Global HIV Prevention Working Group, a panel of public health experts convened by the Bill and Melinda Gates Foundation and the Henry J. Kaiser Family Foundation.⁵

The fourfold increase in expenditures for HIV prevention must focus on "combination prevention": multiple strategies that work synergistically to reduce risk. Certain interventions such as voluntary HIV counseling and testing⁶ raise awareness of the need for risk reduction and help bring the disease into the open. More intensive, targeted behavioral interventions build motivation and risk-reduction skills among populations at especially high risk.⁷ Treatment of sexually transmitted diseases reduces the likelihood that unprotected sex will result in HIV transmission,⁸ antenatal antiretroviral regimens decrease the risk that HIV will be passed from mother to infant,⁹ and drug treatment and programs to distribute sterile needles and syringes help

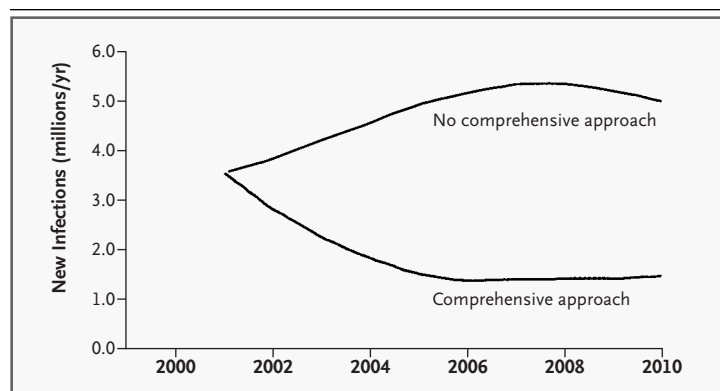


Figure 1. Projected New Cases of HIV Infection among Adults throughout the World, According to the Approach to Prevention.

Modified from Stover et al.¹ with the permission of the publisher.

prevent the spread of HIV among injection-drug users, which, in turn, prevents transmission to their children and sex partners.¹⁰

BUILDING RESOURCES FOR PREVENTION

Not only will financial assistance be necessary to underwrite prevention programs, but also major investments will be required to ensure sustainable human and technical resources in developing countries. Personnel in developing countries must be trained to implement effective preventive measures. Key measures, such as rapid HIV testing and antiretroviral regimens for the prevention of mother-to-child transmission, must be swiftly transferred to resource-poor settings. Infrastructure must be created to administer treatment for sexually transmitted diseases more effectively, offer universal voluntary HIV counseling and testing, and ensure access to prenatal care. Furthermore, national authorities must learn how to implement cost-effective means to monitor the epidemic.

CAPITALIZING ON NEW PREVENTION OPPORTUNITIES

Prevention efforts will need to be more flexible than they have been in the past. An array of research efforts are already under way to test potential new prevention tools. Although success cannot be predicted, there is strong reason to believe that some of these tools will be ready for wide use in the next 5 to 10 years. Several major phase 3 trials of candidate vaccines and microbicides for primary use in developing countries are already planned. Research is also planned on other potential new preventive strategies, such as prophylactic use of antiretroviral therapy after sexual exposure, pre-exposure use of antiretroviral agents as prophylaxis against sexual transmission, use of the diaphragm, circumcision of men, acyclovir treatment for herpes simplex virus type 2, and pre-exposure application to the penis of a microbicide agent to reduce the risk of female-to-male sexual transmission.

Such advances will be of little consequence, however, if they are not rapidly integrated into prevention programs. It has been years since short-course antiretroviral therapy was found to be effective for the prevention of vertical transmission, yet

only about 4 percent of mothers who desire such therapy are able to obtain it. Efforts to integrate this breakthrough in prevention into services in developing countries have encountered a host of barriers — including low rates of voluntary HIV counseling and treatment, limited access to prenatal care, and the persistent risk of vertical transmission as a result of breast-feeding. Some 800,000 infants contract HIV infection each year, justifying an emergency response that has yet to occur. If the international community is to capitalize on important new preventive measures in this critical decade, it must rapidly assess and overcome logistical barriers to their implementation.

As new approaches are integrated into prevention efforts, the need will remain to implement aggressively existing interventions, such as strategies to change high-risk behavior and maintain low-risk behavior, access to condoms, treatment of sexually transmitted diseases, and voluntary counseling and treatment. The expectation that first-generation vaccines and microbicides will have limited efficacy underscores the need for continued risk reduction. Planning must begin now for the public education and counseling that will be needed to help people understand the continued importance of risk reduction despite the availability of vaccines and microbicides.

PREVENTION IN THE ERA OF TREATMENT

Perhaps the most important change to which prevention programs must adapt is the likely growth of access to treatment in developing countries. Capitalizing on substantial declines over the past two years in the price of antiretroviral agents in developing countries, the World Health Organization has embarked on a strategy to increase the number of patients in low- and middle-income countries who receive antiretroviral therapy from approximately 230,000 in 2002 to 3 million by 2005.¹¹

In addition to greatly improving lives and delaying illness, enhanced access to treatment could bolster prevention efforts. A realistic prospect of obtaining treatment would provide persons at risk for infection with greater incentive to seek counseling and treatment. By implicitly valuing the lives and health of persons infected with HIV, treatment initiatives may reduce the stigma that poses a major impediment to prevention. Given that the risk of sexual transmission of HIV is closely correlated with the plasma viral RNA level in the infected person,¹²

some have hypothesized that the decline in viral load typically associated with highly active antiretroviral therapy could reduce population-wide rates of HIV transmission. This hypothesis will be tested in a randomized, placebo-controlled trial to be conducted among HIV-serodiscordant couples in five countries.

Although expanded access to treatment is essential, both to address the global humanitarian crisis related to HIV infection and to strengthen prevention efforts, prevention programs must anticipate and address the likelihood that improved treatment will lead some people to become less fearful of infection and therefore more likely to engage in high-risk behavior. Using mathematical models to assess the potential preventive benefits of widespread antiretroviral therapy, Blower determined that increases in high-risk behavior associated with optimism regarding treatment could negate any beneficial effect of the therapies on transmission.¹³ Indeed, there is evidence that attitudinal changes in response to the availability of antiretroviral therapy may have led to increases in high-risk behavior in industrialized countries.¹⁴ To ensure that greater access to treatment will advance HIV-prevention efforts, it is essential to implement behavioral interventions among people with HIV infection and to develop public education campaigns that will be effective in the context of improved access to treatment.

SEIZING THE OPPORTUNITY

With substantial additional funding and a more strategic and timely approach to HIV prevention, a sustained reversal of the global spread of AIDS is achievable. This effort is urgently needed in southern Africa, where up to one in three adults is already infected. The window of opportunity to prevent large numbers of new HIV infections will soon close in some of the world's most populous nations, such as China, India, and Russia.

In India, for example, at least 4 million people are already infected with HIV, but they make up less than 1 percent of the population.¹⁵ If prevention programs in India were to be expanded now, the country's epidemic could be contained. If we fail to act, the world could witness a repetition of the situ-

ation in South Africa, where the prevalence of HIV among pregnant women increased from less than 1 percent a decade ago to 25 percent today.

Every moment of delay means lives lost. History — and the millions of people who are healthy today but could be infected with HIV by the end of this decade — can only hope that we choose a renewed commitment to HIV prevention over business as usual.

From the Bill and Melinda Gates Foundation, Seattle.

1. Stover J, Walker N, Garnett GP, et al. Can we reverse the HIV/AIDS pandemic with an expanded response? *Lancet* 2002;360:73-7.
2. National Intelligence Council. The next wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India, and China. Washington, D.C.: Central Intelligence Agency, September 2002. (NIC publication no. ICA 2002-04D.)
3. Jha P, Mills A, Hanson K, et al. Improving the health of the global poor. *Science* 2002;295:2036-9.
4. Report to the Programme Coordinating Board of UNAIDS: financial resources for HIV/AIDS programmes in low- and middle-income countries over the next five years, November 2002. Geneva: UNAIDS, 2002. (Accessed March 24, 2003, at http://www.unaids.org/about/governance/governance.html#pcb_meet.)
5. Global mobilization for HIV prevention: a blueprint for action. Global HIV Prevention Working Group, 2002.
6. The Voluntary HIV-1 Counseling and Testing Efficacy Study Group. Efficacy of voluntary HIV-1 counselling and testing in individuals and couples in Kenya, Tanzania, and Trinidad: a randomised trial. *Lancet* 2000;356:103-12.
7. Ford K, Wirawan DN, Fajans P, Meliawan P, MacDonald K, Thorpe L. Behavioral interventions for reduction of sexually transmitted disease/HIV transmission among female commercial sex workers and clients in Bali, Indonesia. *AIDS* 1996;10:213-22.
8. Grosskuth H, Mosha F, Todd J, et al. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised controlled trial. *Lancet* 1995;346:530-6.
9. Guay LA, Musoke P, Fleming T, et al. Intrapartum and neonatal single-dose nevirapine compared with zidovudine for prevention of mother-to-child transmission of HIV-1 in Kampala, Uganda: HIVNET 012 randomised trial. *Lancet* 1999;354:795-802.
10. Des Jarlais DC, Hagan H, Friedman SR, et al. Maintaining low HIV seroprevalence in populations of injecting drug users. *JAMA* 1995;274:1226-31.
11. Scaling up antiretroviral therapy in resource-limited settings: guidelines for a public health approach. Geneva: World Health Organization, June 2002.
12. Gray RH, Wawer MJ, Brookmeyer R, et al. Probability of HIV-1 transmission per coital act in monogamous, heterosexual, HIV-1-discordant couples in Rakai, Uganda. *Lancet* 2001;357:1149-53.
13. Blower S. Calculating the consequences: HAART and risky sex. *AIDS* 2001;15:1309-10.
14. Van de Ven P, Kippax S, Knox S, Prestage G, Crawford J. HIV treatments optimism and sexual behaviour among gay men in Sydney and Melbourne. *AIDS* 1999;13:2289-94.
15. Report on the global HIV/AIDS epidemic. Geneva: UNAIDS, July 2002.

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