

## The AIDS Epidemic — A Progress Report from Mexico City

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A quarter-century after the discovery of the human immunodeficiency virus (HIV), the world is finally gaining ground against AIDS. Yet the millions of new infections and deaths each year are

sobering reminders of the daunting challenges ahead. The presentations at the XVII International AIDS Conference, held in Mexico City in early August, and the meeting's theme — “universal action now” — reflected the fact that the pandemic continues to rage not only in developing countries, but also in developed countries where it is often overlooked, such as the United States. At the opening session, Pedro Cahn of Argentina, the outgoing president of the International AIDS Society and the conference cochair, exhorted participants: “We can — and we must — do better.”

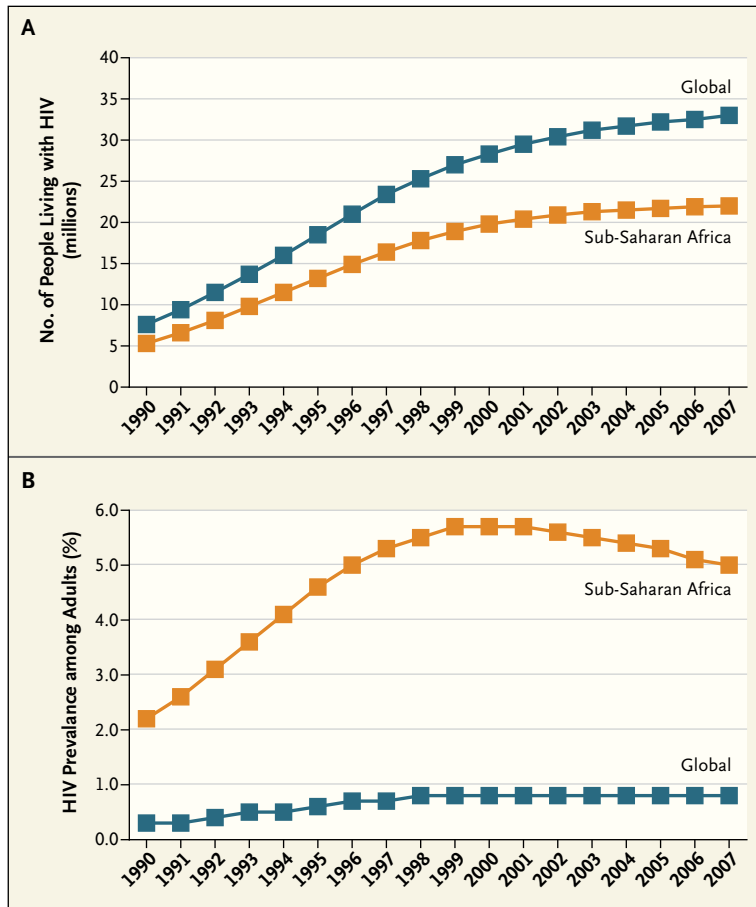
The conference, the first to be held in Latin America, had 20,716 delegates, nearly half of them from the United States or Mexico.

Although no longer the preeminent forum for biomedical research that it once was, the meeting is unique and provides an overview of the epidemic. The speakers at the main sessions were diverse, ranging from a 13-year-old Honduran girl with HIV infection and a female sex worker from Argentina to Felipe Calderón, the president of Mexico, and Ban Ki-moon, the secretary-general of the United Nations.

According to the Joint United Nations Program on HIV/AIDS (UNAIDS), there are an estimated 33 million people (range, 30.3 million to 36.1 million) living with HIV worldwide, of whom 2.7 million (range, 2.2 million to 3.2 million) became infected in 2007; 2.0 million people (range,

1.8 million to 2.3 million) died from AIDS in 2007 (see graphs).<sup>1</sup> Yet for the first time, both fewer children (who account for about 15% of the totals) and fewer adults are becoming infected, and fewer people are dying than in previous years. In sub-Saharan Africa, most national epidemics have stabilized or — in Zimbabwe, for example — have begun to diminish, as measured by annual determinations of HIV prevalence among women receiving prenatal care. However, in Kenya, infections are on the rise, as they are in Russia and Ukraine, which have the largest epidemics in Eastern Europe and Central Asia. In Russia, injection-drug users lack access to methadone and to large-scale programs providing clean needles and syringes.

Highly active antiretroviral therapy is remarkably effective for infected persons who can receive treatment on an ongoing basis. Indeed, many people with HIV



Estimated Number of People Living with HIV (Panel A) and HIV Prevalence among People 15 to 49 Years of Age (Panel B), Globally and in Sub-Saharan Africa, 1990–2007.

Data are from UNAIDS.<sup>1</sup>

infection can now look forward to achieving nondetectable viral loads and relatively normal lives and life spans — developments that were once hard to imagine. There are 25 approved antiretroviral drugs, and more are on the way. Unfortunately, poverty, stigma, discrimination, inadequate health care systems, and other social problems remain powerful barriers to treatment and prevention programs. The search for an effective AIDS vaccine, the holy grail of biomedical HIV-prevention research, remains unsuccessful, in large part because there is insufficient understanding of the critical immune responses for controlling the virus (see Perspec-

tive article by Johnston and Fauci, pages 888–890). Many countries with HIV epidemics among heterosexuals in the general population lack effective preventive interventions, such as programs of male circumcision, programs to prevent mother-to-child transmission, and educational and cultural efforts to discourage engagement in multiple concurrent sexual partnerships.

In low- and middle-income countries, about 3 million people were receiving antiretroviral medications at the end of 2007, including 2.1 million people in sub-Saharan Africa (see table) and nearly 200,000 children.<sup>2</sup> Unfortunately, only about 20% of peo-

ple with HIV infection in low- and middle-income countries know that they are infected, and less than a third of those who need therapy are receiving it. Although mother-to-child transmission has been almost entirely preventable for years, only a third of infected pregnant women receive antiretroviral drugs to prevent transmission, and even fewer receive medications for their own health.<sup>2</sup>

Because of the lack of an AIDS vaccine, discussion in Mexico City focused on the use of antiretroviral agents to prevent infection, either before sexual or other exposure to HIV or after exposure, or to make infected persons less infectious. The Swiss National AIDS Commission recently concluded that persons with HIV infection cannot transmit the virus through sexual relations if they are receiving effective treatment, take their medicines as prescribed, have had undetectable virus in plasma (<40 copies per milliliter) for at least 6 months, and have no additional sexually transmitted diseases.<sup>3</sup> However, the promotion of antiretroviral treatment strictly for rendering infected persons less infectious is controversial: although this intervention is biologically plausible and a trial is under way, there is currently no evidence from randomized trials that therapy is effective in preventing the sexual transmission of HIV in serodiscordant couples either in the short or long term. In addition, the medications cost money and have side effects, and the approach could encourage people to continue to engage in high-risk behaviors.

Days before the conference, President George W. Bush signed legislation to reauthorize the President's Emergency Plan for AIDS Relief (PEPFAR) and increase the

Estimated Numbers of People in Low- and Middle-Income Countries Who Need and Who Are Receiving Antiretroviral Therapy.*			
Region	No. Receiving Therapy, December 2006	No. Receiving Therapy, December 2007	No. Needing Therapy, 2007
Sub-Saharan Africa	1,375,000	2,120,000	7,000,000
Latin America and the Caribbean	345,000	390,000	630,000
East, South, and Southeast Asia	280,000	420,000	1,700,000
Europe and Central Asia	35,000	54,000	320,000
North Africa and the Middle East	5,000	7,000	100,000
Total	2,040,000	2,990,000	9,700,000

\* Data are from the World Health Organization.<sup>2</sup> Numbers may not sum to totals because of rounding.

funding from \$15 billion over the past 5 years to \$48 billion over the next 5 years. The legislation also removed the provision that required one third of the plan's prevention funding to be spent on abstinence and fidelity programs and ended the long-standing Congressional ban on the travel and immigration of HIV-infected persons into the United States. The ban, widely criticized for being discriminatory and having no public health rationale, will remain in effect until the Secretary of Health and Human Services takes the additional step of removing HIV from an administrative list of diseases that bar entry. When the ban is finally lifted, others of the approximately 70 countries with HIV-related travel restrictions may be encouraged to take similar actions. And the International AIDS Conference will be able to return to the United States, where it was first held in Atlanta in 1985 and last held in San Francisco in 1990.

The expansion of PEPFAR also focused attention on the AIDS epidemic in the United States, which has been — and is — worse than was previously known, particularly among blacks and

men who have sex with men. Approximately 56,300 new HIV infections occurred in 2006 (95% confidence interval, 48,200 to 64,500), a figure that has been relatively stable for about a decade but which is about 40% higher than the previous estimate of 40,000 infections per year.<sup>4</sup> Of the new infections, 73% are in men, and 53% in men who have sex with men; 45% are in non-Hispanic blacks, and 17% are in Hispanics — rates of infection that are, respectively, seven times and three times those among whites. Heterosexual transmission accounted for 31% of estimated new infections, and infections in injection-drug users for 12%. The Centers for Disease Control and Prevention (CDC) estimates that the one quarter of HIV-infected people in the United States who are unaware that they are infected account for more than half of all new infections. The CDC has yet to update its estimate that roughly 1 million persons were infected as of the end of 2003.

Before the conference, the Black AIDS Institute issued a scathing report on the U.S. government's "timid and lethargic" response

to the domestic AIDS epidemic, noting: "there are more Black Americans infected with HIV than the total HIV populations in seven of the 15 [PEPFAR] focus countries."<sup>5</sup> At the conference, Dr. Kevin Fenton of the CDC described the incidence data as a "wake-up call," adding that HIV infection should not be a "rite of passage" for gay and bisexual men. In response, Congresswoman Barbara Lee (D-CA) and other black leaders called for the United States to develop a national AIDS strategy and a "domestic PEPFAR" program.

Now that the world is gaining ground against the AIDS epidemic, the challenge is to sustain and accelerate the progress before the XVIII International AIDS Conference convenes in Vienna in July 2010. The message from Mexico City was that individuals and societies must implement effective and multifaceted treatment and prevention programs, advance human rights, and invest in AIDS and health care systems.

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2. Towards universal access: scaling up priority HIV/AIDS interventions in the health sector. Progress report 2008. Geneva: World Health Organization, 2008. (Accessed August 12, 2008, at [http://www.who.int/hiv/pub/towards\\_universal\\_access\\_report\\_2008.pdf](http://www.who.int/hiv/pub/towards_universal_access_report_2008.pdf).)
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4. Hall HI, Song R, Rhodes P, et al. Estimation of HIV incidence in the United States. *JAMA* 2008;300:520-9.
5. Left behind: black America: a neglected priority in the global AIDS epidemic. Los Angeles: Black AIDS Institute, August 2008. (Accessed August 12, 2008, at <http://www.blackaids.org>.)

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