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Visa bill requires NSF to launch new training grants program

HIV EPIDEMIOLOGY

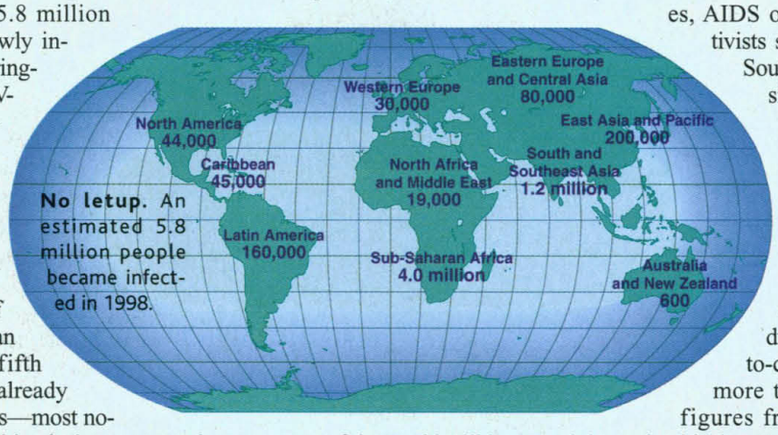
On World AIDS Day, a Shadow Looms Over Southern Africa

PARIS—Each year, just before World AIDS Day on 1 December, United Nations AIDS officials release the latest statistics on the epidemic. This year's figures brought more bad news: An estimated 5.8 million people worldwide were newly infected with HIV in 1998, bringing the total number of HIV-infected people to 33.4 million. Over the same period, some 2.5 million people died of AIDS. Nearly 70% of the new infections occurred in sub-Saharan Africa, which continues to be the hardest hit region of the globe. In several African countries, more than one-fifth of the adult population is already HIV-positive, while in others—most notably South Africa—the epidemic is growing so explosively that this figure will probably soon be reached.

"The worst is yet to come," predicted Agathe Lawson, the Côte d'Ivoire–based representative of UNAIDS—the U.N.'s special AIDS program—at a press conference last week in Paris, one of several venues where UNAIDS officials unveiled the depressing global figures. Yet, despite these extraordinary numbers, AIDS activists and physicians continue to question whether political leaders are treating the epidemic with the urgency it deserves. In South Africa, this simmering issue has boiled over into a major public controversy. South African health officials have decided not to provide the antiviral drug AZT to HIV-infected pregnant women—despite its proven effectiveness in preventing transmission of the virus to their offspring—because, they argue, it is too expensive.

Drug dispute. South African health minister Nkosazana Zuma and UNAIDS's Peter Piot.

Although Africa is currently taking the brunt of the epidemic, the new statistics show that no corner of the world will be spared the ravages of AIDS. Of particular concern is the growing HIV infection toll in India, a nation of nearly 1 billion people, where random sampling in rural areas has shown adult HIV infection prevalences reaching 2%, while among women who visited clinics for treatment of sexually transmitted diseases the figure is as high as 13.6%. Even in Western Europe and North America, where death rates from AIDS have plummeted thanks to cocktails of antiviral therapies, the proportion of the population infected with HIV is continuing to rise, with 74,000 new infections on the two continents during 1998.



No letup. An estimated 5.8 million people became infected in 1998.

Nowhere, however, is the situation worse than in sub-Saharan Africa, where more than a dozen countries now harbor adult HIV infection prevalences of 10% or higher. On 30 November, at a press conference in Johannesburg, South Africa, UNAIDS executive director Peter Piot delivered the latest bad news personally: In four countries—Botswana, Namibia, Swaziland, and Zimbabwe—more than 20% of adults are now infected. Moreover, South Africa, where the epidemic did not take off until the early 1990s, registered about 700,000 new infections during 1998 among adults, defined as people between 15 and 49 years old. UNAIDS's senior epidemiologist, Bernhard Schwartländer, told *Science* that the adult HIV prevalence may now be as high as 15%, up from the 12.8% estimated for the end of 1997 (*Science*, 19 June, p. 1864).

In the face of these dramatic increases, AIDS officials, physicians, and activists say they are perplexed by the South African government's decision not to treat HIV-infected pregnant women with AZT. Earlier this year, a clinical trial in Thailand conducted by the U.S. Centers for Disease Control and Prevention concluded that administering AZT over the last several weeks of pregnancy and during labor decreases mother-to-child transmission of HIV by more than 50%. And according to figures from South Africa's national health department, HIV prevalence among pregnant women is as high as 20% to 25% in some parts of the country. But a pilot program of the "short course" AZT regimen was axed in October by South African health minister Nkosazana Zuma, after a meeting with the health ministers of the nation's nine semiautonomous provinces. Zuma (who is a member of UNAIDS's program coordinating board) was unavailable for comment this week, but her special adviser, physician Ian Roberts, told *Science* that funds to support the program "were not available at the provincial level. … We consider the price of the drug unaffordable."

Yet many South African physicians who treat HIV-infected mothers and children argue that the therapy makes good economic sense. Glenda Gray, a pediatrician at the Chris Hani Baragwanath Hospital in Soweto—where nearly 1000 HIV-infected babies have been born this year—argues that the AZT short course is "ridiculously cheap," especially now that the drug's maker, Glaxo Wellcome, has agreed to lower the price by more than 70% in developing countries. Indeed, some even poorer African countries, such as Botswana, have already decided to make the drug available to all HIV-positive pregnant women. Gray adds that a cost-

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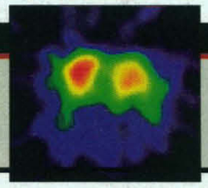

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benefit analysis that she and other South African colleagues recently carried out indicated that her country's government would actually save money on health care costs to HIV-infected children by providing short-course AZT, which costs under $70 at the reduced price, to pregnant mothers.

Roberts says that he has not seen Gray's cost-benefit study. (Gray says, however, that she personally told Zuma about the study back in October and that preliminary details were presented at last June's international AIDS meeting in Geneva.) Roberts also cites the government's recent approval of a $14 million AIDS prevention campaign as evidence that "we are taking AIDS very seriously in this country." As for future plans to purchase AZT for pregnant mothers, "if Glaxo makes the drug affordable or gives it free, we will definitely use it." But some observers believe that South Africa's decision not to make AZT widely available to pregnant women reflects long-standing suspicions, dating back to the apartheid era, that pharmaceutical companies such as Glaxo Wellcome want to get a toehold in the South African market so they can later raise their prices. "There is a big issue in South Africa about affordable drugs for its population," says one source who asked not to be identified.

Piot told *Science* he agrees that the situation in South Africa is "complex" but adds that this is "no excuse" not to do something about the alarming rate of mother-to-child HIV transmission. "They clearly haven't done enough, that's for sure." **–MICHAEL BALTER**

Kick-Starting the AIDS Vaccine Effort

As the latest worldwide figures dramatically indicate, the AIDS epidemic shows no signs of slowing down (see main text). As a result, most AIDS experts have concluded that only a vaccine can turn the tide. But progress on this front has been painfully slow. Last week, the New York–based International AIDS Vaccine Initiative (IAVI) announced that it will invest $9.1 million in two new vaccine preparations, in hopes of breaking this deadlock. The vaccines could be ready for preliminary human testing by next year.

The move comes 6 months after the release last June of IAVI's "Blueprint for AIDS Vaccine Development," which argued that only a major acceleration of candidate vaccine testing could speed things up. "We are trying to widen the pipeline" of vaccine development, says Seth Berkley, president of IAVI, a private organization funded by an assortment of foundations as well as the World Bank and the British government.

Wider pipeline. IAVI President Seth Berkley.

IAVI chose to support two vaccine strategies that have shown promise in experiments with rodents and monkeys. The first, developed by immunologist Andrew McMichael's team at Oxford University, combines DNA that codes for proteins in HIV's core with a modified vaccinia virus engineered to also express these proteins. The second approach, developed by AlphaVax, a biotech company based in Durham, South Carolina, uses a modified version of the Venezuelan equine encephalitis virus as a vector to carry HIV genes into host cells.

Norman Letvin, an immunologist at Harvard Medical School in Boston and a member of IAVI's scientific advisory board, says that exploring new ways to expose the immune system to HIV proteins is a high priority in vaccine research: "We need to get as many new live vector technologies out there as possible." And Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases (NIAID) in Bethesda, Maryland—which coordinates U.S. government–supported vaccine research—says that "both of the IAVI vaccine initiatives hold promise." Should one or both of the approaches begin to show results in human trials, Fauci says, NIAID might eventually move in with additional support.

To ensure that any successful vaccine candidates will be affordable in the developing world, IAVI has negotiated intellectual property agreements with potential vaccine manufacturers that require them either to produce the vaccines at a "reasonable price" or give IAVI the right to recruit other companies that will. AIDS experts will be watching closely to see if IAVI's approach can indeed break through the logjam in AIDS vaccine development. Says Letvin: "The way to get these programs going is to just do it." **–M.B.**

CREDIT: (RIGHT) PETER P. MARRA/SMBC/NATIONAL ZOOLOGICAL PARK

ECOLOGY

Songbirds Stressed In Winter Grounds

Human inhabitants of North America may dream of relaxing winter escapes to the Caribbean, but for the American redstart, a diminutive migratory songbird, winters down south are a time of stress. The birds compete there for choice, insect-rich habitat—a contest in which young and female redstarts often lose out to older males. And as a study on page 1884 shows, a lean winter down south can have a lasting legacy, limiting the birds' reproductive success during the next breeding season up north.

Southern survivor. Female redstarts like this one spend winters in scrubby habitat.

The work, by avian ecologists Peter Marra and Richard Holmes of Dartmouth College in Hanover, New Hampshire, and Keith Hobson of the Canadian Wildlife Service in Saskatchewan, is the first to show that the quality of a migratory songbird's tropical wintering grounds can affect its survival and breeding success when it arrives in the north—an achievement avian ecologists call the Holy Grail of songbird biology. "Before now, no one has ever even come close to linking up quality of habitat in winter with reproductive success in the breeding grounds," says avian ecologist Scott Robinson of the Illinois Natural History Survey.

Based on an isotopic marker in the bird's blood that is keyed to winter habitat type, the work has also provided a crucial piece of information for conservation. Many Neotropical songbirds are in decline, but many biologists have concentrated their efforts on northern breeding grounds rather than southern wintering grounds. But for the redstart, at least, it seems that winter habitats can be limiting. "Conservation ef-