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## AIDS meeting spotlights pills to prevent infection

Gels, creams and pills that can prevent HIV infection are the most promising new tools in the fight against HIV/AIDS: that was the recurring theme at the 16<sup>th</sup> international AIDS conference in Toronto in August.

Faced with growing numbers of HIV infections and the dim prospects of a vaccine to prevent them, researchers are pinning their hopes on circumcision, microbicides and antiretroviral drugs taken to thwart HIV infection.

Trials of 16 microbicides, championed by the Bill & Melinda Gates Foundation and others, are under way in Africa and India. Five of those are in advanced trials and results are expected next year. One large trial last year showed that circumcision can reduce HIV infections by up to 60% (*Nat. Med.* 11, 1261; 2005).

But antiretroviral drugs are only just beginning to get attention as a means of prevention.

In his keynote speech, Bill Gates said his foundation would dedicate funds for drugs that prevent HIV infection. "Oral prevention has not gone as fast as it should," he said. "We blame ourselves for not pushing that more."

An early trial, funded by the foundation and led by the nonprofit Family Health International, has shown that the antiretroviral drug tenofovir (Viread) is safe when given to healthy people. Because too few people became infected during the trial, however, it is not yet clear whether the drug can protect against HIV, says Leigh Peterson, lead investigator of the trial.

Other trials of the approach are under way in Thailand, Botswana, Peru and the US, testing either tenofovir or Truvada, a combination of tenofovir and emtricitabine. Results from the Thai trial, expected next year, should clarify whether the approach works.

These studies are testing the method in sex workers, men who have sex with men and drug users—high-risk groups for whom the drugs are likely to be the most effective. Oral drugs would also allow women to protect themselves without the knowledge or cooperation of their partners, notes Joep Lange, an AIDS specialist at the University of Amsterdam.

"There's an enormous need for female-controlled methods," Lange says. "If you

think about it, what is more female-controlled than taking a pill in the morning that can protect you from getting infected?"

### Trials and tribulations

The concept of using antiretroviral drugs is not new. Drugs such as AZT and nevirapine have been used in HIV-positive pregnant women to prevent transmission of the virus to their children. Members of some high-risk groups, such as men who have sex with men, are already thought to take AIDS drugs as prevention.

If rigorous trials back the use of these pills for preventing infections, several questions follow: who would pay to provide the pills, and to whom? What about the potential for misuse and for resistance to the drug? Is it safe to give these potentially toxic medicines to otherwise healthy individuals?

A few concerns arose even before the trials began. Activists asked whether the drug would be available to participants after the trial ended and whether those who become infected during the trial would be cared for long term. The intense media scrutiny that followed shut down studies in Cambodia and Cameroon.

Trials since then have taken these concerns into account, says Peterson. For instance, she says, researchers negotiated to provide treatment for at least 15 years to trial participants in Ghana who became infected.

-  **38.6 million** Number infected with HIV worldwide
-  **4.1 million** Number of new infections in 2005
-  **1.65 million** Number of individuals on antiretroviral therapy
-  **8,000** Number of deaths each day from AIDS-related illnesses
-  **9%** Proportion of adults at risk with access to condoms
-  **33%** Proportion of US funds for prevention set aside for abstinence

### Against abstinence

Solutions to the many other ethical concerns are starting to emerge. Tenofovir is long-lasting and safe. Other antiretroviral drugs, such as 3TC, have been available longer and are known to be safe even after long-term use.

To combat the potential problems with resistance, ideally some companies would reserve specific drugs for prevention, says Lange. Despite all the hurdles that remain, he says, "I still think it's far easier in the end to do this than to put 30 million people on therapy."

Researchers at the meeting also discussed the use of cervical barriers, such as diaphragms, and suppressing herpesvirus infections, which increase HIV risk by up to three times.

For the first time, world leaders also loudly criticized the US government's emphasis on abstinence. President Bush's \$15 billion AIDS program earmarks 33% of its prevention funds for abstinence-based programs.

"On balance, this program has done a lot more good than harm," said former President Bill Clinton. But "an abstinence-only program is going to fail."

*Apoorva Mandavilli, Toronto*



**Safety first:** New tools for prevention and the US policy on abstinence were hot topics at the AIDS meeting in Toronto.

Jorge Uzon/Agence France Presse