More Than Medicine?

A new study shows that providing antiretroviral treatment to all who need it can prevent new HIV infections. This “treatment as prevention” concept was a hot topic at the XVII International AIDS Conference and may have far-reaching implications for getting more of the planet’s positive people into care.

August 27, 2008 By David Evans

Results from a new study led by Julio Montaner, MD, the director of the British Columbia Centre for Excellence in Vancouver, and conducted in Canada indicate that providing antiretroviral (ARV) treatment to all HIV-positive people who need it could cut HIV transmission in British Columbia by nearly 70 percent. The study results, first published in July in *The Journal of Infectious Diseases*, provoked much discussion at the XVII International AIDS Conference (IAC) this past summer in Mexico City because they provide rationale to lobby for widespread and global access to care.

Though great progress has been made—3 million people now receive ARV treatment worldwide, up by 1 million people since just last year—experts say that at current rates of infection, five new people become infected with HIV for every two who receive treatment. The study proves a direct, proportional relationship between widespread access to ARVs and a reduction in the spread of HIV through a populace. It also shows that this relationship exists even when compliance to drug regimens and safe-sex practices are less than perfect.

The study focused on the spread of HIV in a province of Canada that has free access to ARV treatments and a fairly well-controlled HIV epidemic. This is nearly the opposite of the conditions found in much of Africa and Asia, where HIV infection rates are among the world’s highest. Yet the implications for the rest of the world are stunning, especially considering that some researchers say that a vaccine with only 30 percent effectiveness could ultimately avert millions of new infections. If this is true, what could an approach that is 70 percent effective achieve?

The study results were especially welcome news given the string of failures among vaccine and microbicide candidates this past year. The study may also give researchers, community members and—hopefully—governments worldwide futher impetus to more rapidly scale up access to ARV treatment in the developing world. Indeed, Dr. Montaner, who is also the incoming president of the International AIDS Society, closed the IAC with these words: “We must strive for universal action now. Anything less would be a crime.”

Crunching the Data

Montaner's team came by their estimates through sophisticated mathematical modeling techniques. They built the model by crunching several sets of data. These included the number of people estimated to be living with HIV in British Columbia, the number of people receiving ARV treatment, an estimate of treatment adherence in those taking ARVs based on pharmacy refill records, and the number of new HIV infections recorded each year since combination therapy was introduced in 1996.

They found that the number of new infections dropped from a high of more than 800 people per year in 1994 to a low of just over 400 people by 1999—a number that remained stable through 2005. This decrease neatly matched the increase in the number of positive people who initiated combination ARV treatment after 1996. Montaner's team estimates that, despite having universal health care in Canada, only 50 percent of people who need ARV treatment based on older treatment guidelines are actually receiving it. These are people with HIV symptoms or CD4 counts less than 200. The team also recorded that many people in British Columbia are waiting until well after their CD4 counts drop below 200 to start treatment. Moreover, pharmacy records indicate that adherence to treatment among those receiving it is less than 80 percent, meaning that people's viral loads are unlikely to remain consistently undetectable. Yet despite these deficiencies, there has been a dramatic and sustained reduction in the number of new HIV infections. As Montaner noted during an IAC panel discussion, several other studies have found similar decreases that can be attributed to expanded ARV treatment.

Once Montaner's team had a working model to project the cause and effect between treatment and prevention, they ran a number of simulations to estimate how much further HIV transmission might be reduced if an even greater percentage of people who need treatment took it. They found that even if they only got 75 percent of people on treatment, new infections would be further reduced by 40 percent. If 100 percent who need treatment could be reached, the reduction would be 62 percent. This reduction in new infections could reach nearly 70 percent if providers also followed newer treatment guidelines and started everyone on ARV therapy as soon as their CD4 count dropped below 350.

Historically, some studies designed to identify whether or not widespread use of ARV treatment in a community can reduce new infections have found no benefit. The authors of this latest study point out, however, that no previous model was as sophisticated as theirs; others were limited in the number of variables that could be taken into account—variables ranging from when a person is most likely to transmit HIV to how regularly he or she will adhere to ARV therapy.

During the IAC panel discussion, one participant asked whether expanded ARV use has also led people, notably men who have sex with men (MSM), to take greater risks, thus potentially negating any prevention benefits. Montaner responded that when British Columbia saw decreases in new HIV cases, it also experienced increases in syphilis and other sexually transmitted infections. So, there is evidence that the rate of unprotected sex has increased but, according to the study's data, ARV therapy is potent enough to significantly reduce new HIV infections even if people are taking greater risks or adhering less perfectly to their regimen.

The Global Potential

At the conclusion of their paper in *The Journal of Infectious Diseases*, Montaner's team said, "We have successfully simulated and validated the dynamics of the HIV epidemic in British Columbia, particularly as it relates to the impact of expanding [ARV] coverage and the emergence of individuals testing newly positive for HIV."

Montaner and other researchers have begun a new international study to validate the real-life potential for the results of this mathematical model. Though many answers, such as whether the study results will translate to actual conditions, remain years away, Montaner has made clear that his eye is not only on ARV treatment's impact on the epidemic in British Columbia, but also on the slow and steady progress to roll out universal ARV therapy in Africa and elsewhere.

The IAC theme was "Universal Action Now!" Some recent editorials in major newspapers have criticized the significant funding that the United States (and other nations) has pledged to make that theme a reality, claiming that the focus on HIV draws much needed funding and attention away from other big killers, such as malaria, tuberculosis and unsanitary water supplies. Montaner's team has hopefully proved that, theoretically at least, widespread ARV therapy in the developing world can do more than just treat HIV—it could possibly ensure that many people won't become infected in the first place.

© 2026 Smart + Strong All Rights Reserved.
http://beta.docker.poz.com/article/hiv-treatment-prevention-15196-5132