

The best strategy to defeat HIV in South Africa—study challenges WHO's approach

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The World Health Organization is about to roll out a new strategy for AIDS prevention in South Africa, a country where more than 5 million people are infected with HIV. Based on a mathematical model, the WHO predicts this strategy will completely eliminate HIV in South Africa within a decade.

But not so fast, suggests a group of UCLA researchers. Their work challenges the proposed strategy by showing it could lead to several million individuals developing drug-[resistant strains](#) of [HIV](#). And further, they say, it will cost billions of dollars more than the WHO has estimated.

Reporting in the current issue of the journal [PloS ONE](#), senior author Sally Blower, director of the UCLA Center for Biomedical Modeling, and first author Bradley Wagner, a postdoctoral scholar in Blower's lab, used sophisticated computer modeling to evaluate the WHO's proposed strategy.

"By developing our own [mathematical model](#) and reevaluating the WHO's proposed strategy for South Africa, we found the WHO's predictions are wrong," Blower said.

"This is because their [model](#) is unrealistic," Wagner added. "If you use an unrealistic model, you get the wrong answer."

The method under debate is the WHO's universal "test and treat"

strategy. This strategy is based on testing the entire population of South Africa annually for HIV, then treating every individual immediately after infection, before they develop symptoms. "Test and treat" uses [treatment](#) as a method of prevention, as treatment makes individuals less infectious. It would mean treating nearly 5 million individuals in South Africa almost immediately, the UCLA researchers say.

The WHO model predicts "test and treat" would be better than only treating the 1.6 million people in South Africa who have symptoms and actually need treatment. The organization's model predicts that treating the 1.6 million alone would not eliminate HIV and, over 40 years, such an approach would be more expensive than the "test and treat" strategy.

"But," Blower said, "our model shows the opposite."

"Our model shows that providing treatment to the 1.6 million people who are in need of treatment would be very effective as a form of 'treatment as prevention,'" said Wagner. "It could bring the HIV epidemic in South Africa close to elimination and prevent 11 million infections over the next 40 years. Our model also shows the WHO's 'test and treat' strategy would actually cost \$12 billion more than providing treatment to the 1.6 million in need."

"The difference between our results and those of the WHO is because we assume that drug-resistant strains can develop in treated individuals, and therefore they will need more expensive 'second-line' drugs," Blower said. "The WHO assumes drug resistance will not evolve, and, essentially, there will be no need for 'second-line' drugs."

The UCLA researchers said they agree that the WHO's "test and treat" strategy would indeed prevent many infections. But realistically, that strategy would require substantial financial resources and a robust health infrastructure. Unfortunately, they say, such resources are not available.

"Before implementing a 'test and treat' strategy, we recommend trying to provide treatment for all those in need as quickly as possible," said Wagner. "This is desperately needed in South Africa."

Blower added, "If we could provide treatment to the 1.6 million people in need, it would increase their life expectancy by several decades and also save millions of lives. And this is a strategy that can be implemented immediately."

Provided by University of California, Los Angeles

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