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A Happy Poke

The quest for a safe and effective HIV vaccine

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It has been estimated that there are currently 40 million people worldwide living with HIV or AIDS. In the United States, there are approximately 50,000 new cases each year. More than 3 million people died of AIDS in 2004 worldwide, the highest number of people for any year since the epidemic began. An HIV vaccine is the best long-term hope to bring this epidemic under control.

That said, let's move on to the good news: The HIV Vaccine Trials Network (HVTN) is an international collaboration searching for an effective and safe vaccine. Formed in 1999 by a division of the National Institutes of Health (NIH), the HVTN currently has 14 trials

underway. This past year, the HVTN began its first trial. It will be run simultaneously in the U.S. and South Africa; moreover, it is the first vaccine trial to be approved in South Africa ever.

Researchers have followed many different strategies that could possibly lead to an effective vaccine, all using small parts of the HIV virus that are altered in the laboratory to create synthetic copies. As a result, experimental vaccines do not use whole or live HIV. The vaccines *cannot* cause HIV.

Despite limited progress toward a safe, effective AIDS vaccine, several encouraging developments have taken place over the past several years. There has been significant progress in understanding the structure of the HIV-1 envelope and the types of antibody responses likely to neutralize this strain.

A strong interest remains in determining whether a vaccine could have therapeutic benefits in HIV-infected persons. Some researchers believe that identifying a successful therapeutic vaccine would provide valuable information on the immune responses desired in a preventive vaccine.

Many of the early candidate envelope vaccines were evaluated in HIV-infected persons. In most cases, new immune responses were induced.

And now some bad news: One of the major challenges to the development of the vaccine is the existence of more than 9 genetic subtypes of HIV, also known as *clades*, dispersed throughout the globe. Specific vaccine preparations have to be developed for the specific viral subtype. So, even if one vaccine is proven effective, we will—most likely—only be 11 percent of the way to a successful vaccination campaign.

Bottom line? Even though the NIH has recently embarked on an expanded effort to accelerate AIDS vaccine development by doubling their funding towards vaccine development, we've still got a long way to go.