

Positive Prevention Intervention Center
SANKOFA FACT SHEET

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The HIV Vaccine

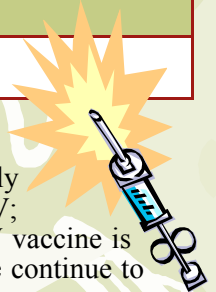
What is an HIV vaccine?

A preventive HIV vaccine is a substance that teaches the body's immune system to recognize and protect itself against HIV - the virus that causes AIDS. All of the HIV vaccines currently being tested in humans are made from man-made materials that cannot cause HIV infection.

Scientists believe that an effective HIV vaccine, given before exposure to HIV, could have a number of possible outcomes. These include:

- Preventing infection in most people
- Preventing infection in some people
- Preparing a person's immune system to block continued infection and eliminate the virus (Vaccines against measles, mumps and polio work this way.)
- Delaying or preventing the onset of illness or AIDS

The goal is to develop a vaccine that is 100 percent effective and protects everyone from infection. However, even if a vaccine only protects some people, it could have a major impact on controlling the epidemic. A partially effective vaccine could decrease the number of people who get infected with HIV; those people, in turn, would not pass the virus on to others. Even when an HIV vaccine is developed, education and other prevention efforts will be needed so that people continue to practice safe behaviors.



How Vaccines Work

Vaccines are designed to stimulate the immune system to protect against microorganisms such as viruses. When a foreign substance invades the body, the immune system activates certain cells to destroy the invader. The activation of the immune system involves two main types of cells: B cells and T cells. B cells make antibodies, molecules that attach to and neutralize viruses floating free in the bloodstream, thereby preventing the viruses from infecting other cells. T cells can be helper cells or killer cells. Helper T cells organize the immune response. Killer T cells (known as CTLs) attack cells infected by viruses.

Microorganisms such as viruses contain many molecules that are seen as foreign to the body. These different molecular shapes are called antigens, or epitopes. The B cells and T cells are activated by recognizing these antigens. Each individual T cell or B cell will only recognize and respond to its individual "destiny antigen."

Once a T cell or B cell is activated by its destiny antigen, the B or T cell clones itself, making many duplicate copies of itself. Some of these cloned T cells attack and destroy cells infected by the invading virus. Other cloned B or T cells remain in the body as memory cells.

If the body is re-invaded by the virus in the future, the memory cells will be reactivated and respond faster and more powerfully to destroy the virus. This is the principle behind vaccines, such as the vaccinations we received in childhood against measles or mumps.

Preventive Versus Therapeutic HIV Vaccines

Multiple HIV vaccines may be necessary to prevent infection or disease in the same way multiple drugs are needed to treat people already infected with HIV.

Preventive HIV vaccines are being developed to control the spread of HIV and are not a cure for AIDS.

Source: Adapted from: <http://www.niaid.nih.gov>

