

Top 10 Factors Why HIV Vaccine or Cure is Very Difficult for Medical Researchers to Create

By [Ryan Inoyori](#) | August 7, 2013

Brazilian scientists developed a new vaccine for HIV which planned to be tested on rhesus monkeys before 2013 ends. However, most vaccines made for the virus ended up ineffective against it. Why is it so difficult to create a vaccine against the Human Immunodeficiency Virus?

According to experts today, HIV vaccine cannot give immunity against infection or re-infection.

1. Almost No Recovered AIDS Patients

Classic vaccines work by mimicking the natural immunity against re-infection which generally seen in individuals who recovered from infection. Since there are almost no recovered AIDS patients, creating a vaccine by duplicating the immune system is not effective.

2. HIV Causes Infection Not Diseases

Most vaccines available today are made to prevent diseases, not infection. In the case of HIV, the virus causes infection throughout the system by making the host vulnerable against pathogen. HIV can remain latent for several years before the real disease comes - Acquired Immune Deficiency Syndrome or AIDS.

3. Risk of Using Live Retrovirus as Vaccine

Scientists commonly use weakened or killed pathogen as vaccine which allows the immune system to destroy them but "remembers" the identity of the enemy. HIV-1 type which is the global variant of the virus does not retain antigenicity - a property to activated immune response - when killed. Using a weakened but live HIV as a vaccine can pose serious threat to the host.

4. Ineffectiveness for Daily Encounters

People with risky behaviour and lifestyle can expose them daily to HIV. Vaccines are designed to protect against invaders that are encountered rarely - not all the time. Diphtheria, Polio and Tetanus are not commonly encountered by the body which differs in the case of HIV with its high risk in everyday basis especially to unprotected sexual activity.

5. HIV Infection Usually Goes Through Genitals

Infections of respiratory mucosal surfaces and gastrointestinal tract are commonly protected by most vaccines but not genital tract - most majority of HIV infection. With all of the advancement in medicine, vaccines for other STDs such as Syphilis and Gonorrhoea remain unavailable.

6. Mutation Properties

Rapid mutation is one of the most evasive qualities of HIV and scientists are having a hard time dealing with it. HIV and the Rhinovirus - the common cold - share this property and when science found a cure for the colds, expect HIV very soon.

7. High Variability of HIV

Aside from being so mutable, HIV is also highly variable that it possesses so many multiple clades or ancestry. The virus has a high degree of genetic diversity which requires any developed vaccine to be well-diverted or it will be a failure. Scientists remain puzzled which strain is the "original" version of the virus.

8. DNA Binding Property

HIV binds directly to the DNA of our cells which makes it very scary compared with other viruses. Vaccine with broad diversity can control HIV but the virus may create another strain never seen before once it binds to a new DNA type of a cell or another virus. One example is the SHIV or Simian Human Immunodeficiency Virus which is a combination of HIV and SIV made by medical researchers to study more about the different aspects of HIV.

9. HIV Can Become US, Literally

Since the virus can bind to cell DNA, HIV can become literally part of us which makes vaccine useless. The nonstop changes of HIV and variability make it one hell-of-a-virus to scare the world.

10. Research is Very Expensive

Do not forget that medical researchers need funding to perform any research for HIV vaccine and without financial support, there will be no progress. However, the medical resources for HIV/AIDS organisations are pretty small because the finances are divided to both research and medications used on patients.

Centre for Disease Control and the World Health Organisation recommends safety and prevention against HIV. Some prevention tips include early testing for HIV, safe sex practices; avoid illegal drug abuse and immediate medical intervention.

<http://au.ibtimes.com/articles/497274/20130807/top-10-factors-why-hiv-vaccine-cure.htm#.VF1A3PnF81Y> ; Extracted November 2014.