

# QUESTIONS & ANSWERS

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The Children's Hospital of Philadelphia®



VACCINE EDUCATION CENTER

## Human Immunodeficiency Virus (HIV)

### What is HIV?

Human immunodeficiency virus or HIV is a sexually transmitted disease that, if left untreated, can lead to acquired immunodeficiency syndrome (AIDS). What makes HIV particularly difficult to control is that it infects and kills cells of the immune system decreasing the infected person's ability to fight off HIV as well as other infections, such as pneumonia and herpes.

### How common is HIV?

Each year about 50,000 people in the United States become infected with HIV. It is estimated that more than 1 million people in the U.S. are infected with HIV. Of those, about one in five people do not know they are infected. Worldwide, more than 34 million people are infected with the virus.

### How is HIV spread and who is at risk of infection?

HIV is spread through bodily fluids, in most cases via sexual transmission, but it can also occur following exposure to the blood of an infected person such as through the use of contaminated needles. While anyone can become infected with HIV, in the United States, about six of 10 new infections are diagnosed in men who have sex with men. Likewise, many new infections are diagnosed in adolescents and young adults; in fact, more than half of new infections are in people ages 13 to 34 years old.

### Can HIV be treated?

Yes, HIV can be treated. A wide variety of drugs are available to inhibit the replication and spread of the virus. Most people with HIV are on a treatment plan commonly called Highly Active Anti-Retroviral Treatment or HAART. These treatment plans typically include at least three different drugs that inhibit the virus at various stages of replication. In addition, these multi-drug cocktails are more effective in protecting against the frequent viral mutations that HIV undergoes. In order to be successful, a person must remain on HAART for the rest of his or her life making it not only a costly treatment, but also one that can be labor intensive and difficult to adhere to. If left untreated, an HIV infection will progress to AIDS.



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# Human Immunodeficiency Virus (HIV) continued

## Is there a cure for HIV?

No. The only effective treatment at this time is HAART. While this treatment plan helps delay progression to AIDS, it is not a cure.

## Is there an HIV vaccine?

No. Although many researchers are working on an HIV vaccine, there is no licensed vaccine to date.

## Why has development of an HIV vaccine been difficult?

An HIV vaccine has been difficult to develop because of the rapid changes (or mutations) by HIV causing immune responses to earlier versions of the virus to quickly become ineffective. Everyone is familiar with the changes of influenza virus that require a new vaccine annually; however, where influenza virus mutates from one season to the next, HIV mutates during a single infection, making it almost impossible to eliminate.

Some people with HIV, however, are able to mount an immune response that controls infection. Scientists are working to understand how the immune response in these people differs from those of most of HIV-infected individuals.

## What is pre-exposure prophylaxis (PrEP) and who should take it?

Pre-exposure prophylaxis (PrEP) is a relatively new option for preventing HIV; the therapy was approved by the U.S. Food and Drug Administration (FDA) in July 2012. PrEP allows people at high risk of HIV exposure to reduce their risk of becoming infected with the virus by taking a combination of anti-retroviral drugs in the form of a daily pill. While the therapy reduces a person's risk of infection, it does not provide complete protection and

thus should not be used as a sole preventative method. In order to be most effective, the drugs must be taken as prescribed by the physician. Decreased adherence to drug regimens will lead to a decrease in the effectiveness of the treatment and thus increased risk of infection. Anyone who believes he/she is at high risk of HIV exposure should discuss this option with their doctor as there are strict guidelines for the use of PrEP.



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