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## FACT SHEET

### HIV

#### Fast Facts

- Worldwide, an estimated 34 million people are living with HIV, more than two-thirds of whom live in sub-Saharan Africa. Since the epidemic began in the early 1980s, more than 60 million people have been infected with HIV and nearly 30 million people have died of HIV-related causes, according to UNAIDS statistics.
- Approximately 2.7 million people were newly infected with HIV in 2010 – more than 7,000 every day. The number of new infections continues to outstrip advances in treatment: For every person starting HIV treatment, there are two new infections.
- Although the rate of new HIV infections is stabilizing or decreasing in many countries around the world, the global epidemic continues to have its greatest toll on sub-Saharan Africa, a region that accounts for 67 percent of all new HIV infections and 80 percent of the world's HIV-positive women.
- Women account for 59 percent of adults with HIV in sub-Saharan Africa, where unprotected heterosexual intercourse is the primary driver of the epidemic. Young women are especially vulnerable. In southern Africa, young women are up to five times more likely to become infected with HIV than young men. Among both men and women aged 15-24 in sub-Saharan Africa, 71 percent are women.
- Throughout the globe, racial and ethnic minorities and men who have sex with men are disproportionately affected. Men who have sex with men account for more than half of all new HIV infections in the U.S. each year, as well as nearly half of people living with HIV. This population bears the burden of the epidemic in many other parts of the world, such as Europe, Latin America, Australia and New Zealand.

#### Knowing the Enemy

At the root of the HIV epidemic is a formidable foe – a virus a million times smaller than the period at the end of this sentence that is capable of laying a destructive swath across the globe. Although newer drugs have dramatically improved quality and length of life, they are not available to everyone who needs them. Even for those who have access to HIV treatment, the drugs may not always work or may stop working over time. At the cellular level, HIV plays a skillful game of cat and mouse, able to evade a drug's detection by changing its molecular appearance each time it multiplies. In an attempt to keep HIV from winning in its own game, treatment strategies involve a combination of several antiviral medications that take aim at the virus from multiple directions.

Similarly, prevention efforts, if they are to be successful, will likely require a variety of defense strategies working in force. Different approaches being investigated include topical microbicides such as gels or rings, designed to prevent the sexual transmission of HIV; oral pre-exposure prophylaxis (PrEP), which involves taking an antiretroviral (ARV) tablet by people who are not HIV infected; the use of ARVs to prevent mother-to-child transmission; vaccines; and behavior-focused strategies.

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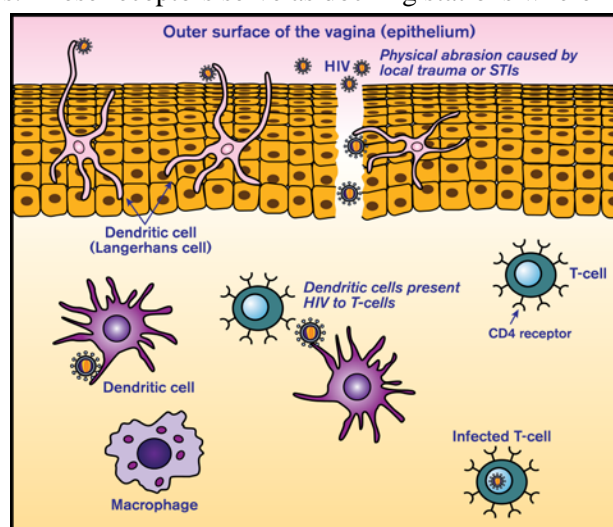
## How is HIV Sexually Transmitted?

Most new cases of HIV result from sex between couples in which one partner is knowingly or unknowingly infected with HIV. Between 70 and 90 percent of all HIV infections in women are due to unprotected sex. In fact, women are twice as likely as their male partners to acquire HIV during heterosexual sex. Yet, the risk of HIV transmission is greatest during anal sex. While commonly practiced among men who have sex with men, heterosexual women in both the developed and developing world also engage in anal sex. According to some estimates, the risk of becoming infected with HIV during unprotected anal sex is 20 times greater than unprotected vaginal sex because the rectal lining is fragile, which allows the virus to more easily reach target cells to infect. Although condoms are effective for protecting against HIV and other sexually transmitted infections, most acts of anal sex go unprotected.

HIV is particular about the cells it infects. It targets important immune system cells, called T cells, that have specific molecules on the surface called CD4 receptors. These receptors serve as docking stations where HIV attaches itself before invading the cells. HIV then directs these cells to incorporate its own genetic blueprint into the cell. By doing this, the virus ensures it will multiply each time a cell divides.

HIV doesn't find many T cells on the surface of the vagina or rectum, but these and other target cells lie in abundance below. In the vagina, this layer, called the epithelium, creates a buffer zone that's 40-cells deep. Merely a single-cell thick, the epithelium of the rectum is more fragile.

Just how HIV burrows below the outer surface to reach its mark is not certain. Researchers think there may be several mechanisms. Perhaps the virus hitchhikes a ride with dendritic cells that straddle the epithelium ready to capture any invader, such as HIV, that dares to come near. As bounty, HIV is handed over to T cells and other immune cells. But, instead of being crippled by the immune cells, HIV is in an ideal position to take them over. Alternatively, the virus may use more direct routes through breaks in the epithelium caused by trauma or sexually transmitted infections (STIs). A known risk factor for HIV among both men and women, STIs may enable HIV infection because reinforcements of immune cells arriving to fight against infection instead become prey to it.



No matter what the underlying mechanisms, an infected cell that migrates to nearby lymph nodes is akin to someone with a highly contagious disease making use of every variety of mass transportation. Very rapidly, the disease will be able to spread out of control. In lymph nodes, the virus is exposed to a host of new immune system cells that it can infect, each with the ability to travel elsewhere in the body, releasing copy after copy of the virus in its wake. Research has suggested that initial infection with HIV can occur within one hour of exposure, and that the virus can reach nearby lymph nodes within 24 hours. Within three weeks of being infected, when individuals are unlikely to have symptoms or to be aware they have HIV, the risk of transmitting HIV through sex is the greatest.

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More information about HIV prevalence can be found in the [UNAIDS Report on the Global AIDS Epidemic 2010](#); the current [U.S. Centers for Disease Control and Prevention HIV Surveillance Report](#), and Kaiser Family Foundation fact sheets on HIV/AIDS: <http://www.kff.org/hiv/aids/factsheets.cfm>. More information about the HIV life cycle can be found at [The Body: The Complete HIV/AIDS Resource's HIV/AIDS Basics](#) and the [Global Campaign for Microbicides Prevention Research E-learning Centre](#).