



HIV and AIDS: The Basics

What is HIV?

H- Human: This virus can only infect human beings.

I- Immunodeficiency: The effect of the virus is to create a deficiency—a failure to work properly—in the body's immune system.

V- This organism is a virus, which means that it cannot reproduce by itself. It reproduces by taking over the machinery of the body's cells.

HIV (Human Immunodeficiency Virus) is the virus that causes AIDS. HIV attacks and breaks down the body's immune system, which is our body's defense against infections and disease. When the immune system is weakened, we lose our protection against illness and can develop serious, life-threatening diseases.

How does HIV cause disease?

HIV infects a certain type of white blood cell called the CD4 lymphocyte (also known as the T4 cell or "T-cell"). The CD4 cell is a major component of the immune system that helps keep our bodies free from many kinds of infections and cancers. After a person becomes infected with HIV, the virus determines a "set point," which is its rate of reproduction. As HIV reproduces, it destroys CD4 cells. The body tries to replace these lost CD4 cells, but eventually it is unable to make enough new ones to replace the ones that are lost. This leaves people who have HIV with an inadequate immune system that they cannot ever fix completely.

How is HIV transmitted?

People who have HIV/AIDS can give it to others when certain body fluids--blood, semen, vaginal fluids, or breast milk (for infants only)--pass into another person's body. There are three ways that our body fluids can go into another person's body:

- ◆ By having unprotected sex (sex without a condom). This includes vaginal, anal, and oral penetration. Male and female condoms provide the best possible protection against HIV (and other STIs), but they are not 100% effective either.
- ◆ By sharing needles (shooting drugs) with someone who is infected, or otherwise passing blood, like when hospital syringes are used.
- ◆ From a mother to her baby before or during birth, or through breast milk.

HIV is NOT transmitted by:

- ◆ Tears, saliva, or sweat. There is no scientific evidence that HIV can be passed through these fluids.
- ◆ Kissing.
- ◆ Casual contact with people who are HIV positive. HIV cannot live outside of the human body, so you cannot be infected from toilet seats, phones, water fountains, or anything else a person with HIV may have touched
- ◆ Mosquitoes or other insect or animal bites.
- ◆ Air. HIV is not transmitted through sneezing or coughing. The virus dies as soon as it leaves the human body.

- ◆ Blood transfusions. Today in developed countries, tests are in place to make sure the blood supply is safe. However, in resource-poor countries, the safety of the blood supply remains an issue.

What are the symptoms of HIV?

The earliest symptoms of HIV infection are known as primary HIV syndrome. These symptoms occur soon after a person has been infected and include fever, rash, muscle aches, and swollen lymph glands. However, these symptoms are often misinterpreted as a cold or the flu. Even though a person will not test HIV-positive at this time, they can still pass the disease on to others.

Primary HIV syndrome resolves by itself, and the HIV-infected person usually stays symptom-free for a long time, sometimes years. This is called the clinical latency period. However, during this period, the infected individual can still infect others. During this time, if combination antiretroviral therapy is not started, HIV continues to reproduce, and the CD4 count declines from its normal level of 500-1200. When it drops below 500, the HIV infected person is at serious risk for opportunistic infection.

What's an opportunistic infection?

An opportunistic infection is an infection that would not normally make a healthy person sick, but will often make a person with a weakened immune system sick. The infection takes advantage of the opportunity offered by a compromised immune system.

Some common opportunistic infections:

- ◆ Tuberculosis (see TB/AIDS co-infection factsheet for more info)
- ◆ Kaposi's sarcoma: an AIDS-related cancer in which red or purple lesions form on a person's skin and/or internal organs
- ◆ Cytomegalovirus (CMV): a herpes virus that most commonly damages the eyes but can also affect the brain, nerves, colon, stomach or throat
- ◆ Toxoplasmosis: a disease caused by the organism *toxoplasma gondii* which causes encephalitis in the brain
- ◆ Pneumocystis carinii pneumonia (PCP): caused by a fungus, this pneumonia is the most common opportunistic infection in people with HIV.

The difference between HIV and AIDS

HIV is the virus that causes AIDS. An HIV-positive person is diagnosed with AIDS when his or her immune system is significantly compromised and manifestations of HIV infection are severe. In an adult or adolescent, AIDS is defined as the presence of one of 26 conditions demonstrating severe immunosuppression associated with HIV infection. Most AIDS-defining conditions are opportunistic infections such as Kaposi's sarcoma or pneumocystis carinii pneumonia. An AIDS diagnosis is also given to HIV-positive individuals whose CD4+ T-cell count is less than 200 cells per cubic milliliter of blood.

What is AIDS?

- A- Acquired: it's a condition one must acquire or get infected with, not something transmitted through genes.
- I- Immune: because it affects the body's immune system, which is the body system responsible for fighting disease.
- D- Deficiency: AIDS makes the immune system deficient; that is, it doesn't work properly.
- S- Syndrome: a person with AIDS may experience a variety of different diseases and opportunistic infections.

People who die from HIV/AIDS die not from the virus itself, but from opportunistic infections that their bodies' immune systems are no longer strong enough to fight.

Testing for HIV

There are many different kinds of blood tests which test for HIV. Standard HIV tests look for HIV antibodies, which are cells the body makes after HIV enters the blood. It can take up to three months to produce enough antibodies so that they will show up on the test. If an infected person tests too soon during this "window period", the HIV test may not find infection, but the person can still infect others. Another type of HIV test is known as the viral load test which measure what is called HIV RNA. RNA is a part of HIV that knows how to make more virus. Viral load tests are used to diagnose HIV as well as to check the health of HIV-positive individuals and measure the effectiveness of anti-HIV drugs.

Treatment for HIV

There are several groups of drugs used to treat HIV infection. Some drugs function by interrupting the virus from replicating itself. Others work by interfering with HIV's ability to enter healthy cells.

Since HIV can become resistant to any of these drugs, it is best to use a combination treatment to suppress the virus. When three or more drugs are used in combination, it is called highly active antiretroviral therapy, or HAART. HAART has been credited with greatly reducing the number of AIDS deaths in the United States but for a variety of reasons, including the high cost of medications, it available to only 20% of the people who need it in developing countries.

There is currently no cure for AIDS. However, with access to the right drugs, HIV/AIDS becomes a manageable chronic illness rather than the death sentence it was once assumed to be.

How to protect yourself

Since there is currently no vaccine available to prevent AIDS, the only way to avoid getting HIV/AIDS is to avoid behaviors that put you at risk.

The easiest way to do this is to use male or female condoms correctly every time you have vaginal, anal, or oral sex. Using condoms will greatly reduce your risk of getting HIV and other sexually transmitted infections.

Reducing the number of sexual partners helps lower the risk. And, for some people, abstaining from sex is an option.

To protect themselves from blood contamination, injected drug users should use new, clean needles every time they use drugs and should avoid mixing drugs in containers used by other drug users.

To learn more about HIV and AIDS and how the disease affects us, and to get involved in generating the political will to end the HIV/AIDS pandemic, join the Global AIDS Alliance Grassroots Network. Sign up at <http://www.globalaidsalliance.org/getinvolved.cfm> or email grassroots@globalaidsalliance.org.

References

<http://www.thebody.com/nmai/whatisaids.html>
<http://www.gmhc.org/health/basics.html#treatment>
<http://www.niaid.nih.gov/factsheets/hivinf.htm>
<http://www.aegis.com/factshts/network/simple/viral.html>
<http://www.aegis.com/factshts/network/simple/viral.html>
<http://www.aidsmeds.com/lessons/StartHere8.htm>
<http://www.niaid.nih.gov/factsheets/evidhiv.htm>
<http://www.advocatesforyouth.org/youth/health/hiv/index.htm>