



X-Plain **HIV and AIDS**

Reference Summary

Introduction

AIDS is a life threatening disease caused by the Human Immunodeficiency Virus, or HIV. HIV makes it difficult for the body to fight off infections. There is no cure for AIDS. However, there are new treatments that can slow down its progression.

There are about 42 million people in the world who have HIV or AIDS. In the United States, about 1 million people have HIV or AIDS. More than 3 million people die each year from AIDS-related illnesses.

This reference summary is about HIV and AIDS. First it describes the HIV infection and how that turns into AIDS. This information packet stresses risk factors, screening and prevention. Symptoms and treatment are also reviewed.

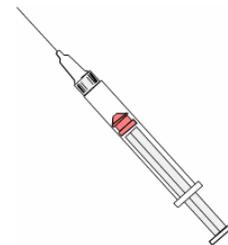
What is HIV?

HIV is the virus that causes AIDS. When a person has HIV it means the HIV virus is in his or her body.

When a person has AIDS it means HIV has made it so the body cannot fight off infections. The person may get infections or tumors that the body can no longer fight off.

Since AIDS is an advanced form of an HIV infection, everyone who has AIDS also has HIV. HIV causes AIDS.

HIV enters the body through blood, semen, vaginal fluid or breast milk from an infected person.



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The body depends on the immune system to fight infections the same way it depends on the digestive system to digest food. The immune system also keeps some types of cancer from taking over the body. With no immune system, a person would die from a simple infection such as a cold or flu.

If we think of the immune system as an army fighting infections, white blood cells are the soldiers. They are called lymphocytes. There are special lymphocytes called CD4 helper lymphocytes. They coordinate the immune system's attack on foreign organisms.

As HIV infects the body, it destroys CD4 helper lymphocytes by using them to make copies of itself. This causes the immune system to not work well. HIV stands for Human Immunodeficiency Virus. "Immuno" means the immune system and "deficiency" means lacking.

Lymphocytes and HIV fight each other for years. Each day the body makes billions of CD4 cells and the HIV uses them to make even more of its own copies. In most people, the HIV eventually wins the battle. However, new medications can make it difficult for HIV to win.

After a person is infected with HIV, the number of CD4 cells goes down. A normal count is 600 to 1500 per cubic millimeter of blood. When the count drops below 200, the body's immune system cannot work well at all. With a CD4 count below 200, a simple infection could cause a lot of trouble because the body cannot fight it off.

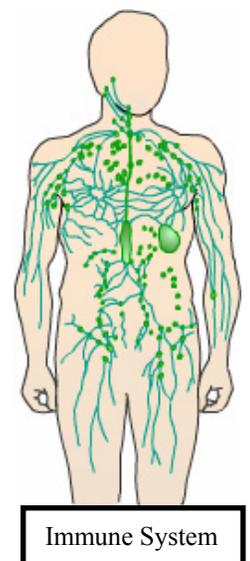
After getting HIV, when does a person have AIDS? There is no clear-cut answer but doctors agree that a person has AIDS if he or she has HIV and BOTH of the following happen:

- The CD4 helper lymphocyte count is 200 or less
- He or she has a serious infection or cancer because the immune system could not fight it off

AIDS Complications

AIDS stands for Acquired Immuno Deficiency Syndrome. This means a disease caused by a weak immune system.

Once HIV turns into AIDS, the risk of death is much higher. Even so, the risk varies a lot from patient to patient.



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Some AIDS patients die shortly after being diagnosed, while others live 12 more years or longer. Fortunately, patients with AIDS are living longer as new treatments are discovered.

Without treatment, a person with AIDS could die from a simple infection. Viruses, bacteria, fungi and parasites can cause infections.

Infections caused by bacteria include:

- Tuberculosis (TB)
- Mycobacterium Avium Complex (MAC)
- Salmonellosis



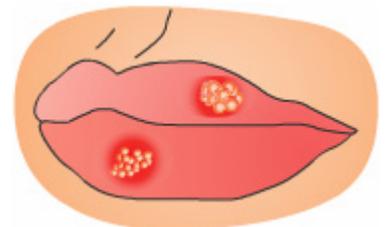
Tuberculosis, or TB, usually affects the lungs. However, people with HIV are more likely to have TB in other places on the body. People with HIV can get TB regardless of their CD4 lymphocyte levels.

Mycobacterium Avium Complex, or MAC, is caused by a group of bacteria called MAC. These bacteria usually cause an infection in the respiratory tract.

Salmonellosis is a bacterial infection that passes into the body from contaminated food or water.

Infections caused by viruses include:

- Cytomegalovirus (CMV)
- Viral hepatitis
- Herpes simplex virus (HSV)
- Human papilloma
- Progressive multifocal leukoencephalopathy (PML)



Herpes simplex virus

Cytomegalovirus, or CMV, is a common herpes virus many healthy adults have in their bodies. However, it usually stays inactive. In people with HIV, it can become active and affect the eyes, digestive tract, lungs or other organs. If not treated, CMV can lead to blindness.

Viral hepatitis is a liver infection. There are several types including hepatitis A, B and C. Viral hepatitis can cause failure of the liver, also known as cirrhosis. If the liver fails, a person dies.

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There are 2 types of herpes simplex viruses, or HSV. Type 1 causes cold sores. Type 2 causes genital herpes.

Human papillomavirus, or HPV, is a very common sexually transmitted disease. Some types of this virus cause common warts. Others cause genital warts.

Progressive multifocal leukoencephalopathy, or PML, is a serious brain infection.

Infections caused by fungi include:

- Candidiasis
- Cryptococcal meningitis

Candidiasis is a common infection. It causes a thick, white coating on the mucous membranes of the mouth, tongue, esophagus or vagina. Cryptococcal meningitis causes inflammation of the membranes and fluid around the brain and spinal cord.

Infections caused by parasites include:

- Pneumocystis carinii pneumonia (PCP)
- Toxoplasmosis
- Cryptosporidiosis

Pneumocystis carinii pneumonia, or PCP, attacks the lungs. This makes it difficult for the person to breathe. Toxoplasmosis causes serious and deadly brain lesions. Toxoplasmosis is a parasite spread mostly by cats.

Cryptosporidiosis is caused by an intestinal parasite usually found in animals. It is passed to humans through contaminated food. The parasite grows in the intestines and bile ducts and can cause severe diarrhea that does not go away.

HIV also makes the body helpless against certain types of cancer. People with HIV are more likely to develop cancers such as:

- Kaposi's sarcoma
- Cervical cancer
- Non Hodgkin's lymphoma

Kaposi's sarcoma is a tumor of the blood vessel walls. It can also affect the internal organs including the digestive tract and lungs and often affects the skin.

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Cervical cancer is cancer of the cervix. The cervix is the opening that separates the vagina from the uterus. Non Hodgkin's lymphoma is cancer that starts in the lymphocytes. Lymphocytes are white blood cells.

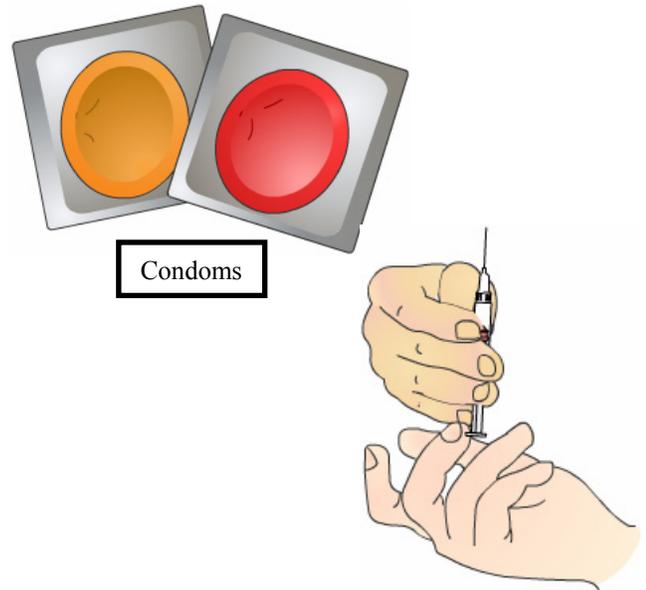
Infection

Anyone can get HIV. A person with HIV can give it to another person through blood, semen, vaginal fluid or breast milk. HIV is not transmitted through saliva, sweat, spit, tears, air or insects.

There are different amounts of HIV in various bodily fluids. The highest amounts of HIV are in blood.

The most common way to get HIV is through unprotected sex - sex without a condom. If a person has HIV, the virus is in their blood and semen or vaginal secretions. It could enter another person's body through tiny cuts or sores on the skin or the lining of the vagina, penis, rectum or mouth.

Another common way of getting HIV is by sharing a needle or syringe with someone who has HIV.



Infection – Facts

- Between $\frac{1}{4}$ and $\frac{1}{3}$ of untreated pregnant women who have HIV give it to their babies during pregnancy or delivery. However, if a pregnant woman with HIV gets treatment for HIV while she is pregnant, her baby has up to $\frac{2}{3}$ less chance of getting HIV. If she gets treatment and has a Caesarean section, the chance of passing it to her baby is even less.
- Tattoo equipment can transfer HIV if not sterilized. If the person giving a tattoo does not sterilize the equipment, the person getting the tattoo could get HIV if the equipment is contaminated from previous use on someone with HIV.



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- A razor can transfer contaminated blood. If a person with HIV shaves and cuts him or herself, it will contaminate the razor. If another person uses the same razor to shave with, he or she could get HIV.
- A healthy person cannot get HIV by using the same toilet seat as an infected person. HIV is not transmitted through sweat or urine.
- HIV can be transmitted through semen and blood during anal intercourse. Anal sex is even more hazardous than vaginal sex in transmitting HIV. Anal sex is likely to cause tears in the covering of the anus. This makes it easy for HIV to spread through exchange of blood and semen.
- HIV cannot be spread by kissing an infected person on a cheek with no cuts or sores on it. HIV is not transmitted through sweat.
- Open-mouthed kissing with an infected person is not recommended. If there are any cuts or sores in the mouth, blood exchange could pass the virus to the uninfected person. Exchange of only saliva is not enough to transmit HIV.
- Sharing a swimming pool is not a known risk for getting HIV.
- HIV can spread through oral sex. Since semen carries HIV, the virus can spread through the lining of the mouth. There is more chance of it spreading if the mouth has any cuts or sores.
- HIV can spread through blood transfusion during surgery if any of the blood is contaminated. If a person receives a transfusion of contaminated blood, he or she can get HIV. However, since 1985 all donated blood is screened for HIV in the United States. It would be extremely rare to get HIV through a blood transfusion in the United States.



In sub-Saharan Africa, there were 3 million new HIV infections in 2003 and 2.3 million AIDS deaths. This is the area of the world most severely affected by AIDS. AIDS is also growing fast in China, India, Indonesia, Russia, Eastern Europe and Central Asia. If you have to have a blood transfusion overseas, have an HIV screening when you come back to the United States.

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Symptoms

The symptoms of HIV and AIDS vary from person to person. This section discusses the symptoms according to the following stages.

- When a person first gets HIV
- Early HIV stage
- Late HIV stage
- Early AIDS stage

Most people do not notice if they get HIV. Some people who get the virus may develop a brief flu-like illness 2 to 6 weeks after becoming infected. However, since these symptoms are similar to a cold or flu, they go unnoticed.

During the early stages of HIV, a battle rages between CD4 cells and HIV for 8 or 9 years without being noticed. Most people with HIV do not have symptoms in the early stages. Eventually, this stage ends with mild infections or chronic symptoms such as:

Swollen lymph nodes — often one of the first signs of HIV infection

- Diarrhea
- Weight loss
- Fever
- Cough
- Shortness of breath



During the late HIV stage, more serious symptoms may start to appear such as:

- Persistent, unexplained fatigue
- Soaking night sweats
- Shaking chills or fever higher than 100o F for several weeks
- Swelling of lymph nodes for more than 3 months
- Chronic diarrhea
- Persistent headaches



AIDS develops when an infected person starts having opportunistic infections - infections that do not usually infect people with a healthy immune system. The signs and symptoms depend on the type of infection.

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People with HIV may develop AIDS in much less than 10 years or they may never develop AIDS. Progression of HIV and AIDS varies a lot from person to person. Scientists are still trying to figure out why.

Diagnosis

If you think you may have HIV, you can easily get tested to find out if you have it.

The screening test for HIV checks for HIV antibodies in the blood. The body makes HIV antibodies to fight the virus. Since it usually takes 6 to 12 weeks for the body to make these antibodies, the test cannot be positive if done earlier than 6 weeks after an infection.



If an HIV test is positive, it is repeated. If the second test is also positive, there is another test that checks for HIV proteins in the blood. If that test is positive, a person is then diagnosed with HIV.

After diagnosing a person with HIV, the doctor uses a test to measure the amount of HIV in the blood. This is called a viral load. The higher the viral load is, the faster AIDS will probably develop. Viral load determines the suggested treatment.

If you engage in high risk behavior, such as unprotected sex or sharing needles for intravenous drug use, get tested for HIV every 3 to 6 months. Your test can be confidential or anonymous.

Most states require that you sign a consent form before having an HIV test. This guarantees that nobody can check you for HIV without you knowing.

A confidential test means that if you test positive, the results will be reported to your state health department, but will not be given to anyone else without your permission. An anonymous test is where your name is not recorded and no one besides you can ever learn the test result. Not all states have anonymous tests, but most provide confidential tests.

If you are pregnant, you may want to get tested even if you think you are not at risk. If you are HIV positive, treatment with antiretroviral drugs during your pregnancy could greatly reduce the chances of you passing the infection to your baby.

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Treatment

Right now there is no cure for AIDS. However, treatment is available to slow its progression and improve the quality of life.

The treatment for AIDS focuses on suppressing the growth of the virus and improving the patient's quality of life. This is called Highly Active Antiretroviral Therapy, or HAART. This is usually a combination of 3 or more drugs.

AIDS treatment is based on the levels of HIV in the blood, called the viral load. Viral loads are tested at the beginning of treatment and then every 3 to 4 months during treatment. In some cases viral loads are tested even more often.

Drugs used for treatment include antiretroviral drugs and fusion inhibitors. Antiretroviral drugs slow down the growth and reproduction of HIV. Fusion inhibitors stop the virus from reproducing by preventing its membrane from fusing with the membrane of the CD4 lymphocytes.

Prevention

There is no vaccine to prevent HIV infection and no cure for AIDS. However, it is possible to protect yourself and others from infection by following 4 simple rules.

Rule #1 - Do not share needles or syringes.

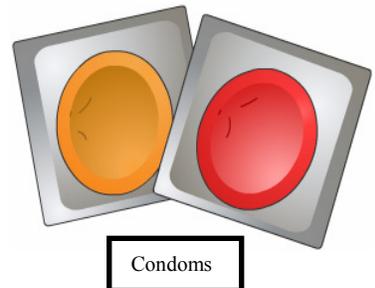
Regardless of what they are used for – injecting drugs, steroids, vitamins, for tattooing or body piercing – they should not be shared. Also, do not share equipment (or "works") used to prepare drugs for



injection.

Rule #2 - Do not have unprotected sex.

A surefire way to avoid getting sexually transmitted diseases is to be in a long term, monogamous relationship with a healthy partner. For people whose sexual behaviors put them at risk for STDs, always using a male latex condom correctly can reduce the risk. Remember: no form of protection works 100% of the time.



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Rule #3 - Do not share razors or toothbrushes.

Sharing either of these creates the possibility of contact with blood.

Rule #4 - Avoid contact with other people's blood.

If you must come in contact with someone else's blood – for instance, to help someone who has an injury – you should wear rubber gloves.

If you are pregnant or think you might be, talk to a doctor or your local health department about being tested for HIV. If you have HIV, treatments are available to help you and reduce the chances of passing HIV to your baby.



Conclusion

AIDS is a life threatening disease caused by the Human Immunodeficiency Virus, or HIV. HIV makes it difficult for the body to fight off infections.

Anyone can get HIV. HIV spreads from an infected person to another person through blood, semen, vaginal fluid and breast milk. HIV is not transmitted through saliva, sweat, spit, tears, air or insects.

The most common ways of getting HIV are through unprotected sex and sharing needles or syringes.

It can take up to 9 years after being infected with HIV before AIDS symptoms appear. There is no cure for AIDS. However, there are new treatments that can slow down the progression of the disease and improve the patient's quality of life.



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