



Medical Education Training Centers

HIV / AIDS Home Study

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Clinical Solutions

- CEU: 2.00

Developed by:

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HIV and AIDS

The purpose of this self-study packet and test is:

To provide students with the opportunity for completing their requirements of the Florida Status Requirements 381.0035: the requirements for Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome. This self- study will enhance the learner's knowledge about HIV and AIDS by:

1. Teach the learner the facts of HIV and AIDS
2. Prevent the spread of the disease
3. Provide care to those with HIV and AIDS

Program Objectives

1. Discuss the epidemiology and transmission modes of HIV
2. Describe population at risk and how it is spread
3. Describe prevention methods and behavioral changes
4. Pass the written test with a score of at least 80%

EPIDEMIOLOGY AND TRANSMISSION

HIV is the human Immunodeficiency virus. It is the virus that can lead to acquired immune deficiency syndrome, or AIDS. CDC estimates that approximately 56,000 people in the United States contracted HIV in 2006. One in five living with HIV are unaware of their infection. Regardless of the increase in the total number of people living with HIV in the United States, the annual number today is stable. There is an estimated 1.1 million Americans becoming infected and living with HIV in the United States. This number is anticipated to increase since the antiretroviral treatments are prolonging the lives of those people living with the infection, as well as, there are more infected with HIV than die from the disease each year. As the number of people living with HIV grows, so does the opportunity for the virus to be transmitted.

TRANSMISSION

HIV is a blood borne pathogen and is spread by direct and unprotected contact with HIV infected blood or lymphocyte containing body fluids. HIV can be found in blood, semen, cervical secretions, lymphocytes, cerebrospinal fluid, and breast milk. Although tears, urine, and saliva may contain low concentrations of HIV, transmission through these fluids is extremely rare, if it occurs at all. Casual contact, such as touching, hugging, or a dry kiss with an infected person does not spread HIV. There is no support that sharing a drinking cup, toilet or swimming in a pool with someone spreads HIV... it is a virus that does not live outside of the body. There are no cases of HIV transmission linked to coughing, sneezing of an infected person or from a mosquito bite.

According to Merck & Co (2009), HIV is transmitted in the following ways:

1. Sexual contact with an infected person, when the mucous membrane lining the mouth, vagina, penis, or rectum is exposed to contaminated body fluids (as occurs during unprotected sexual intercourse)
2. Injection or infusion of contaminated blood, as can occur with blood transfusions, the sharing of needles, or an accidental prick with an HIV-contaminated needle
3. Transfer from an infected mother to a child before birth, during birth, or after birth through the mother's milk

Vulnerability to HIV infection increases when the skin or a mucous membrane is torn or damaged slightly during vigorous vaginal or anal sexual intercourse. Sexual transmission of HIV is more likely if either partner has herpes, syphilis, or another sexually transmitted disease (STD) that causes breaks in the skin or inflammation of the genitals. However, HIV can be transmitted even if neither partner has another STD or obvious breaks in the skin. HIV transmission can also occur during oral sex, although it is less common than during vaginal or anal intercourse.

HIV has mainly been transmitted through male homosexual contact and the sharing of needles among injecting drug users in the United States, Europe, and Australia, but transmission through heterosexual contact has been rapidly increasing. HIV transmission in Africa, the Caribbean, and Asia occurs between heterosexuals, and HIV infection occurs equally among men and women. In the United States, about 30% of adults who have HIV infection are women. Before 1992, most American women who were IV drug users and used contaminated needles were infected with AIDS, but now most are infected through sexual contact.

A health care worker who is accidentally pricked with an HIV-contaminated needle has about a 1 in 300 chance of contracting HIV. The risk increases if the needle penetrates deeply or if the needle contains HIV-contaminated blood (as with a needle used to draw blood) rather than simply being coated with blood (as with a needle used to inject a drug or stitch a cut). Infected fluid splashing into the mouth or eyes has less than a 1 in 1,000 chance of causing infection. Being treated with a combination of antiretroviral drugs as soon after the exposure seemingly reduces the risk, but does not eliminate the risk of becoming infected.

HIV is spread primarily by:

- Not using a condom when having sex with a person who has HIV. All unprotected sex with someone who has HIV contains some risk.
- Having multiple sex partners or the presence of other sexually transmitted diseases (STDs) can increase the risk of infection during sex. Unprotected oral sex can also be a risk for HIV transmission, but much lower risk than anal or vaginal sex.
- Sharing needles syringes or other equipment used to prepare illicit drugs for injection.
- Being born to an infected mother where the HIV can be passed from mother to child during pregnancy, birth, or breast-feeding

Less common modes of transmission include:

- Being “stuck” with an HIV contaminated needle or to her sharp object. This risk is mainly for the healthcare provider
- Receiving blood transfusions, blood products, or organ/tissue transplants that are contaminated with HIV. This risk is extremely remote due to rigorous testing of the US blood supply and donated organ/tissue. (MMWR, 2009)
- HIV may also be transmitted through unsafe or unsanitary injections or other medical dental practices.
- Being bitten by a person with HIV. Each of the cases have included sever trauma with extensive tissue damage and the presence of blood. There is no risk if the skin remains intact.
- Contact between broken skin, wounds, or mucous membranes and HIV-infected blood or blood-contaminated body fluids.
- There is a remote chance that HIV could be transmitted during “French” or deep, open-mouth kissing with an HIV-infected person’s mouth or gums are bleeding.
- Tattooing or body piercing present a potential risk of HIV transmission.

HIV cannot be spread or reproduced once outside the body. It cannot be spread by:

- Air or water
- Insects, including mosquitoes. CDC researchers have shown no evidence of HIV transmission from insects.
- Saliva, tears, or sweat.
- Casual contact like shaking hands or sharing dishes.
- Closed-mouth or “social” kissing.

PREVENTION

The goal is to take steps to reduce the risks associated with the transmission of HIV is important. Understanding the most common way HIV is transmitted is through anal or vaginal sex or sharing needles from persons infected with HIV will help you prevent the transmission. Abstinence; not participating in sexual activities 100% of the time, is the only sure way to not contact HIV. Communication between partners about their previous sexual history and of other risky behaviors is important. The use of latex or polyurethane condoms provides an effective barrier during sexual intercourse or oral sex. To be assured that condoms are effective, they use must be every time and used correctly. Water based lubricants; such as K-Y jelly may provide skin irritation prevention, but does not protect against the HIV virus.

Prenatal testing and antiretroviral therapy for HIV infected mothers has reduced the risk in transmission to the unborn child.

The following steps can be taken to avoid transmission and they include:

- Know your HIV status. Anyone between the ages of 13 to 64 should be tested for HIV at least once.
- If you have HIV, you can get medical care and treatment, as well as, supportive care to assist you in staying healthy and reduce your ability to transmit the virus to others.

HIV Testing

The most common diagnosis of HIV infection is made by ELISA testing which screens for the HIV antibody. If the ELISA is positive for the HIV antibodies then a repeat is done. If it is confirmed after a second positive screening then the Western Blot or an IFA (indirect immunofluorescence assay) testing method is done. A positive Western blot confirms that the person has been infected with the HIV virus. These tests are geared toward detecting HIV antibodies; the substances the body creates in response to becoming infected with HIV. These are test that look for HIV genetic factors or proteins. This may also be used to determine id someone has been infected with HIV.

It takes time for the immune system to produce enough antibodies for the antibody test to detect the presence. The “window time” to determine the infection with HIV and the detection of antibodies may vary fro person to person. Most people will develop detectable antibodies within two to eight weeks (average 25 days) of their infection. Ninety-seven percent of people will develop the antibodies in the first three months (CDC.gov, 2009). Some people may take longer, therefore it is suggested a person should consider a follow-up test more than three months after their last potential exposure to HIV.

Once the virus enters the blood stream it attacks the T-cells and destroys them. The T-cells are white blood cells or lymphocytes and the T-4 lymphocytes, “helper cells” are the HIV’s favorite site. The virus enters the T-4 lymphocytes and begins to reproduce into new viruses. When the body loses its defense system, the body becomes immunosuppressed or immunocompromised.

The CD4 count is a diagnostic measurement of viral progression in the laboratory which measures the number of T-lymphocytes. If the CD4 count is low, drugs to prevent opportunistic infections are prescribed. Drug treatment is beneficial only if the drugs are taken on schedule. Missed doses allow the virus to replicate and develop resistance. No treatments can eliminate the virus from the body, although the HIV level often decreases so it is undetectable. However, people with a low CD4 count (below 200) or a high viral load should be treated, even if without symptoms. People take a combination of more than one drug to stop the virus from multiplying. The therapy protects the immune system for sometime. Highly active antiretroviral therapy (**HARTT**) is the term used for combination drug therapy that reduces HIV RNA levels to low limits. There are four types of drugs used: nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), and nucleotide analogues. The most recent recommendations employ AZT (3’azido-3’deoxythymidine) (Retrovir) ZDV. When **HARTT** is successful, it can cause the immune reconstitution inflammatory syndrome. This syndrome, symptoms of various infections worsen because the immune responses improve, increasing inflammation, or because parts of the dead viruses persist, triggering immune responses. The progression from exposure to full-blown AIDS may be lengthy and often undetectable or attributes to other symptoms such as:

- Headache for no apparent reason
- Rapid weight loss
- Dry cough
- Recurring fever or profuse night sweats
- Profound and unexplained fatigue
- Swollen lymph glands in the armpits, groin or neck
- Diarrhea that lasts for more than a week
- White spots or unusual blemishes on the tongue, in the mouth or the throat
- Pneumonia
- Red, brown, pink or purplish blotches on or under the skin or inside the mouth, nose or eyelids
- Memory loss, depression and other neurological disorders

Exposure to HIV does not always lead to infection and many infected people remain well for more than a decade. Why some people become ill more than others is not understood, but a number of genetic factors appear to influence both susceptibility to infection and progression to AIDS after infection. Early detection of AIDS diagnosis can live for years after their diagnosis and lead productive lives. Nevertheless, illness due to infections and the expense and side effects of drugs may reduce the quality of life. Despite the successes, we must remember the cure is not yet possible, although intensive research for a cure continues. HIV continues to take a severe toll on multiple communities in the US, with gay and bisexual men of all races, African Americans, and Latinos bearing the heaviest burden.

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