Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS)

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PURPOSE

The purpose of this course is to provide Nurses: LPN, RN, ARNP and other the health care professionals, Occupational Therapists, Certified Nursing Assistants (CNA), Home Health Aids (HHA), students with the opportunity to complete the requirements for Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS). This course will provide the Professionals and students with knowledge relating to the modes of transmission, various infection control practices / procedures, the clinical management, and prevention of human immunodeficiency virus and acquired immune deficiency syndrome with some emphasis on appropriate behavior and attitude change. Review of HIV/AIDS PREVALENCE in Kentucky.

OBJECTIVES

After successful completion of this course the students will be able to:

1. Discuss the facts relating to Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS).
2. Describe the epidemiology / transmission modes of HIV; how it is spread
3. Identify the populations at risk for Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS).
4. Discuss means of preventing the spread of the disease
5. Detail infection control practice /procedures
6. Discuss testing recommendations for HIV
7. Discuss issues regarding the confidentiality of test results
8. Recognize health concerns in HIV patients
9. Describe clinical management /how to provide care to patients with HIV and AIDS
10. Review of HIV/AIDS PREVALENCE IN Kentucky.

INTRODUCTION

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

HIV stands for human immunodeficiency virus. It is the virus that can lead to Acquired Immunodeficiency Syndrome (AIDS). HIV is a virus that is spread through body fluids that affects specific cells of the immune system, called CD4 cells, or T cells. Over time, HIV can destroy so many of these cells that the body cannot fight off the infections and disease, then the HIV infection leads to AIDS.

EPIDEMIOLOGY AND TRANSMISSION

Human immunodeficiency virus attacks the immune system, which is the body's natural defense system. The immune system works because the body is able to recognize self and non-self. This means that the body is able to tell if an invader such as a bacteria, virus, parasite, or other such as another person's tissues has entered the body, even if the person is not aware that anything has happened. The body recognizes the invader and uses a number of different measures to destroy it. Without a strong immune system, the body has difficulty fighting off the disease.

WHITE BLOOD CELLS

White blood cells are cells which the body makes to help fight against infections / destroy pathogens. THEREFORE the White blood cells are a vital part of the immune system.

Normal values: 4,500-10,000 per microliter (mcL)

The normal number of WBCs in the blood is 4,500-10,000 white blood cells per microliter (mcL). Normal value ranges may vary slightly among different labs.

White blood cells include:

Lymphocytes.
The lymphocytes create antibodies to defend/ fight against viruses, bacteria, and other harmful invaders.
The main types of Lymphocytes are:
- B lymphocytes (B cells)
- T lymphocytes (T cells)

Neutrophils.
The Neutrophils kill and digest fungi and bacteria. They are the most numerous type of white blood cell and the first line of defense when encountered by an infection.

Eosinophils.
The Eosinophils attack and they destroy cancer cells, kill parasites, and help with allergic responses.

Basophils.
Basophils are small cells but when an infectious agent invades the blood they secrete chemicals for example, histamine; a marker of allergic disease, that help control the body's immune response.

Monocytes.

The Monocytes have a longer lifespan than many white blood cells
and help to break down bacteria.
Monocytes can develop into two types of cells:
- Dendritic cells –are antigen-presenting cells which are able to mark out cells that are antigens (foreign body) that need to be destroyed by lymphocytes.
- macrophage is formed in the tissue when monocytes leave the circulation and differentiate into macrophages.

Some white blood are Granulocytes (with cytoplasmic granules) and others are agranulocytes: (no cytoplasmic granules)

Granulocytes : are phagocytes that are able to ingest foreign cells such as: parasites, bacteria and other viruses. Types of Granulocytes are:

- Eosinophils
- Basophils
- Neutrophils

Agranulocytes:

The 3 types of agranulocytes

- Lymphocyte
- Monocytes
  the macrophage

CD4 CELLS

Human immunodeficiency virus (HIV) infects and destroys the white blood cells called CD4 cells. Whenever too many of the CD4 cells are destroyed, by the virus, the body is not able to defend itself against disease and/ or infections. CD4 (cluster of differentiation 4) is a glycoprotein that is found on the surface of the immune cells such as the T helper cells, macrophages, monocytes, and the dendritic cells. It was discovered in the late 1970s and was originally known as leu-3 and T4 (after the OKT4 monoclonal antibody that reacted with it) before being called CD4 in 1984. In humans, the CD4 protein is encoded by the CD4 gene.

CD4 cells are the white blood cells that are a very vital part of the human immune system. They are often called or referred to as CD4 cells, T-helper cells or T4 cells. They are referred to as helper cells because one of their main function is to send signals to other types of immune cells, including CD8 killer cells, which then destroy the infectious particle. If CD4 cells become depleted, such as in cases of untreated HIV infection, or after immune suppression before a transplant, the body is vulnerable to a variety of infections that it could fight if the individual was not experiencing such immune suppression.

The last stage of Human immunodeficiency virus infection is AIDS (acquired immunodeficiency syndrome). Individuals with AIDS have greatly reduced numbers of CD4 cells and they will develop disease, infections or cancers that would rarely occur in people who are healthy.

When the individual has Human immunodeficiency virus (HIV) it does not mean that he/she has AIDS. It takes a long time for HIV to progress to AIDS. This process can take up to 10 to 12 years.

When Human immunodeficiency virus is diagnosed before it progresses to AIDS, there are medications available that is able to slow or stop the damage to the immune system. When acquired immunodeficiency syndrome (AIDS) does develop, there are medications that may help the immune system return to a healthier state.

With treatment/ medications, many individuals with Human immunodeficiency virus (HIV) are able to live active lives.

THE LIFECYCLE OF HIV

As mentioned before HIV can infect many cells in the body, but its main target is the CD4 lymphocyte, also called a T-cell or CD4 cell. When the CD4 cell is infected with Human immunodeficiency virus, the virus goes through several steps to reproduce itself and make many more virus particles.

The process includes the following steps:

1. **Binding and Fusion**: This is the process by which Human immunodeficiency virus (HIV) binds to a specific type of receptor (CD4 receptor) and a co-receptor that is located on the surface of the CD4 cell. HIV then fuse with the host cell which is the CD4 cell and release genetic material into the cell.

2. **Reverse Transcription**: The enzyme called reverse transcriptase changes the genetic material of the virus therefore it can be integrated into the DNA of the host.

3. **Integration:** The virus' new genetic material enters the nucleus of the CD4 cell and uses an enzyme called integrase to integrate itself into the person own genetic material, where it may stay inactive for many years.

4. **Transcription**: When the cell of the host becomes activated, and the virus uses the individual's own enzymes to create more of its genetic material, along with a very specialized genetic material which allows it to make longer proteins.

5. **Assembly**: A special enzyme which is called protease cuts the longer HIV proteins into individual proteins. When they come together with the virus' genetic material, a new virus has been assembled.

6. **Budding**: In this final stage of the virus' life cycle, the virus pushes itself out of the host cell, and takes with it part of the membrane of the cell. This outer part covers the virus and contains all of the structures that is necessary to bind to a new CD4 cell and receptors and begin the process again.

It is very important to know the steps of the life-cycle of the Human immunodeficiency virus (HIV) because the medications that are used to control the HIV infection, work to interrupt the replication cycle.

There are two types of HIV:

HIV-1, which causes almost all the cases of AIDS worldwide

HIV-2, which causes an AIDS-like illness. HIV-2 infection is uncommon in North America.

HIV-1: There are over 60 different epidemic strains of HIV-1 within the world. But usually different regions are dominated by only one or two of them. HIV infection is caused by the human immunodeficiency virus.

An individual can get HIV from:

- contact with infected blood,

- Contact with infected semen,

- Contact with infected vaginal fluids,

- The HIV virus can be passed from a mother to the baby during pregnancy and birth, or through breast feeding.

- Many individuals get the virus by having unprotected sex with a person who has HIV.

- Another common way of contracting the virus is by sharing needles with an individual who has HIV.

The HIV virus does not survive well when it is outside of the body. Therefore it is not spread by casual contact such as sharing drinking glasses or kissing an individual with the infection.

Mother-to-child transmission of HIV

Mother-to-child transmission of HIV is the spread of HIV from an HIV-infected woman to her child during pregnancy, childbirth (also called labor and delivery), or breastfeeding. Mother-to-child transmission is the most common way that children become infected with HIV.

Pregnant women with HIV receive HIV medications during pregnancy and childbirth to reduce the risk of mother-to-child transmission of HIV. In some situations, a woman with HIV may have a scheduled cesarean delivery (also called a C-section) to prevent mother-to-child transmission of HIV.

Babies born to women with HIV receive HIV medication for 6 weeks after birth. The HIV medication reduces the risk of infection from HIV that may have entered a baby's body during childbirth.

Because HIV can be transmitted in breast milk, women with HIV living in the United States should not breastfeed their babies. In the United States, baby formula is a safe and healthy alternative to breast milk.

The Centers for Disease Control and Prevention (CDC) recommends that all pregnant women get tested for HIV as early as possible in each pregnancy.

Pregnant women who test HIV positive receive HIV medications to reduce the risk of mother-to-child transmission of HIV and to protect their own health. Currently, HIV medications are recommended for everyone infected with HIV.

For 6 weeks after birth, babies born to women with HIV should receive an HIV medication called Zidovudine (brand name: Retrovir). The HIV medication protects the babies from infection with any HIV that passed from mother to child during childbirth.

HIV testing for babies born to women with HIV is recommended at 14 to 21 days after birth, at 1 to 2 months, and again at 4 to 6 months. Testing should be done using a test that looks directly for HIV in the blood (called a virologic HIV test).

Results on two virologic tests must be negative to be certain that a baby is not infected with HIV. The first negative result must be from a test done when a baby is 1 month or older and the second result from a test done when a baby is 4 months or older. Results on two HIV virologic tests must be positive to know for certain that a baby is infected with HIV.

If test results show that a baby has HIV, the baby will be switched from zidovudine to a combination of HIV medications. HIV medications help children infected with HIV live healthier lives.

Other possible modes of transmission may include:

HIV may be transmitted by receiving blood products, blood transfusions, or organ/ tissue transplants that are contaminated with the Human immunodeficiency virus (HIV). This risk is not common in the U.S. due to rigorous testing of the blood supply and testing of the donated organ/ tissue.

Human immunodeficiency virus (HIV) may be transmitted through unsanitary practices, unsanitary injections through medical or dental practices, body piercing or tattooing.

Remember that the virus will spread if there is contact with HIV infected blood or blood-contaminated body fluids. Therefore if there is contact between wounds, broken skin or broken mucous membranes with the HIV infected blood or blood contaminated body fluids there is a risk of infection.

Health Care providers may become infected with the HIV by being stuck with a HIV contaminated sharp object or needle.

HIV is often spread by individuals who do not know that they have the Human immunodeficiency virus (HIV). Therefore it is very important for individuals to protect themselves and others by taking special precautions.

Some Special precautions / preventative measures include:

Do not share personal items, for example razors or toothbrush.
Do not share needles with others.
Use of a condom during sexual activities until it is verified that you and your partner are not infected with HIV and /or other sexually transmitted disease or infection.
Find out from your partner if he or she is at risk for HIV.
Partners can get tested together and follow up with testing again at 6, 12, and 24 weeks after the first test can be done to be sure neither of you is infected.
Do not have more than one sex partner at a time.

Ways to determine whether you are infected is to be tested for HIV infection.

For information on where to find an HIV testing site:

- Visit National HIV and STD Testing Resources and enter your ZIP code.
- Text your ZIP code to KNOWIT (566948), and you will receive a text back with a testing site near you.
- Call 800-CDC-INFO (800-232-4636) to ask for free testing sites in your area.

These resources are confidential.

Pre-exposure prophylaxis (PrEP)

Pre-exposure prophylaxis, or PrEP, is a prevention option for people who are at high risk of getting HIV. It is meant to be used consistently, as a pill taken every day, and to be used with other prevention options such as condoms. The goal of PrEP is to prevent HIV infection from taking hold if you are exposed to the virus. This is done by taking one pill every day. These are some of the same medicines used to keep the virus under control in people who are already living with HIV.

The pill that was shown to be safe and to help block HIV infection is called "Truvada". Truvada is a combination of two drugs (tenofovir and emtricitabine). If the individuals take PrEP daily, the presence of the medication in the bloodstream can often stop HIV from taking hold and spreading in the body. If the medication is not taken every day, there may not be enough medicine in the bloodstream to block the virus.

In several studies of PrEP, the risk of getting HIV infection was much lower (up to 92% lower) for those who took the medications consistently than for those who did not take the medications.

PrEP is covered by most insurance programs, but if the individuals do not have insurance, the health care provider/ physician can talk to them about medication assistance programs that help pay for PrEP medication.

PrEP is only for individuals who are at ongoing substantial risk of HIV infection. For people who need to prevent HIV after a single high-risk event of potential HIV exposure for example, needle-sharing injection drug use, sexual assault or sex without a condom, there is another option called *postexposure* prophylaxis, or PEP. PEP must begin within 72 hours of exposure.

POST-EXPOSURE PROPHYLAXIS (PEP)

Post-exposure prophylaxis (PEP) is the use of antiretroviral drugs after a single high-risk event to stop the HIV from making copies of itself and spreading through the body. PEP must be started as soon as possible to be effective and always within 3 days of a possible exposure.

PEP stands for post-exposure prophylaxis. It involves taking antiretroviral medications as soon as possible, but no more than 72 hours (3 days) after the individual may have been exposed to HIV, to try to reduce the chance of becoming HIV-positive. These medications keep HIV from making copies of itself and spreading through the body. Two to three drugs are usually prescribed, and they must be taken for 28 days. PEP is not always effective; it does not guarantee that someone exposed to HIV will not become infected with HIV.

Health care workers are evaluated for PEP if they are exposed to blood or body fluids of a patient who is infected with HIV. The risk of getting HIV infection this way is less than 1 in 100 exposures (CDC 2015).

PEP can also be used to treat individuals who may have been exposed to HIV during a single event unrelated to work for unprotected sex, sexual assault or needle-sharing injection drug use.

Remember that PEP should only be used in situations right after a potential HIV exposure. It is not a substitute for regular use of other proven HIV prevention methods, such as pre-exposure prophylaxis (PrEP), correct and consistent condom use, or use of sterile injection equipment.

When PEP is prescribed, the individual will be asked to return for HIV testing at 4 to 6 weeks, 3 months, and 6 months after the potential exposure to HIV. Because PEP is not always effective, the individual should keep using condoms with sex partners while taking PEP and should not share injection equipment with others.

Some of the places to get PEP:

- Physician's office,

- emergency rooms,

- urgent care clinics, or

- a local HIV clinic.

Cost/ Payment for PEP

For the health care worker who is exposed to HIV on the job, your workplace health insurance or workers' compensation will usually pay for PEP.

If you are prescribed PEP after sexual assault, you may qualify for partial or total reimbursement for medications and clinical care costs through the Office for Victims of Crime, funded by the US Department of Justice.

If you are prescribed PEP for another reason, and you cannot get insurance coverage for example, Medicaid, Medicare, private, or employer-based insurance, your health care provider can **apply for free antiretroviral medications** through the medication assistance programs run by the manufacturers. Online applications can be faxed to the company, or some companies have special phone lines. These can be handled urgently in many cases to avoid delay in getting the medication.

SIDE EFFECTS

PEP is safe but may cause side effects like nausea in some people. These side effects can be treated and are not life-threatening.

Some common early symptoms of HIV include:

- Sore throat
- Swollen lymph nodes
- Fever
- Headache
- Muscle aches
- joint pain
- Skin rash

DURATION OF SYMPTOMS

Symptoms may appear from a few days to several weeks after the individual is first infected. The early symptoms may go away within 2 to 3 weeks.

After the early symptoms go away, that individual with the infection may not experience symptoms again for many years. After a certain time, the symptoms reappear and then remain.

These symptoms usually include:

- Swollen lymph nodes
- Night sweats
- Extreme tiredness
- Fever
- Weight loss

When the individual has been exposed to HIV, the immune system will produce antibodies to try to get rid of/ destroy the virus. There are tests to find the antibodies in blood, urine or saliva.

If the test on saliva or urine indicates that the individual is infected with HIV, the physician will probably order a blood test to confirm the results.

TESTING /Blood tests for HIV

HIV is diagnosed when antibodies to HIV are found in the blood.
The two main blood tests are:

1. ELISA.
2. Western blot (is used to confirm the results of a positive ELISA test).

Human immunodeficiency virus (HIV) is diagnosed when a positive ELISA test is confirmed by a positive Western blot assay or other test.

There are rapid antibody tests available that can give the results right away. One rapid blood test can detect both the Human immunodeficiency virus (HIV) antibodies and the antigens, which allows an HIV infection to be found earlier than was possible in the past. Positive results of a rapid test may need to be confirmed by the ELISA or Western blot test.

HOME TEST KITS FOR HIV

OraQuick home test

The U.S. Food and Drug Administration (FDA) has approved a home test kit for HIV called OraQuick. The OraQuick is painless and no is blood required. Healthcare professionals have used oral tests for HIV since 2004. For the test, the individuals rub their gums with a swab that is within the kit. Then place the swab into a vial of liquid. The test strip on the swab indicates if the individual have HIV or not. Test result fast- within 20 minutes.

HOME BLOOD TEST KIT

Another type of test kit for HIV is a home blood test kit. This type of kit provides instructions and materials for collecting a small blood sample by sticking a finger with a small device /lancet. The blood is then placed onto a special card which is then sent to a laboratory for analysis. The individual can get the results over the phone using an

anonymous code number. All information is kept confidential. Counseling is available over the phone for individuals who use the test kit.

If the result from a home test kit indicates that the individual has an HIV infection, encourage that person to talk with a physician.

Most physicians use two blood tests, called the

- ELISA and the
- Western blot.

If the ELISA is positive (HIV antibodies are found), a Western blot or other test will be done to confirm.

It can take as long as 6 months for HIV antibodies to show up in the blood.

When the individual think he/she have been exposed to HIV but the test is negative, the individual should:

- Get tested again
- Tests can be done at 6 weeks, 12 weeks and 24 weeks to be sure that the person is not infected.
- Take steps to prevent the spread of the virus.

HIV testing can be performed in most physician offices, hospitals, public health clinics, and Planned Parenthood clinics. The home HIV test kits can be obtained at the pharmacy or by mail order. Always confirm that the test kit is approved by the Food and Drug Administration (FDA). If the home test is positive, the individual needs to follow up with a physician to have the result confirmed and to find out what to do next.

The United States Preventive Services Task Force (USPSTF) recommends Human immunodeficiency virus (HIV) testing:

- As a part of the regular medical care for people 15 to 65 years old.
- For people younger than age15 and older than 65 if they have a high risk for HIV, such as for individuals who engage in high-risk behavior.
- For all women who are pregnant.

The U.S. Centers for Disease Control and Prevention (CDC) recommends that all people should get tested for the Human immunodeficiency virus (HIV) as part of the regular medical care.

Some individuals are afraid to get tested for HIV. But if there is any chance that the individual could be infected, it is very essential to find out early. There are treatments available and getting early treatment can slow down the virus and will help the individual stay healthy. Also the individuals need to know if they are infected so they can prevent spreading the infection to others.

The physician may recommend counseling before and after HIV testing. It is usually available at the hospital or clinic where test is completed. This will give the individual an opportunity to:

- Ask question regarding HIV
- Discuss fears about being tested
- Learn how to reduce the risk of becoming infected if the test is negative.
- Learn how to keep from spreading the HIV to other individuals if the test is positive.
- Discuss issues regarding how having HIV will affect the individuals emotionally, socially, financially, physically and professionally.
- Learn what needs to be done, treatment options.

Denial, fear, anxiety and depression are common reactions when an individual test positive for HIV. However, individuals who are being treated for HIV are living longer than before with the help of medications that can often prevent acquired immunodeficiency syndrome (AIDS) from developing.

If the individual test positive for HIV

If the individual test positive for HIV:

1. The individual needs to follow up with the physician. Medical professionals recommend that individuals, who have the HIV infection, should begin treatment for HIV as soon as he/she know that they are infected.

2. The physician will complete a history and physical examination

3. Tests may be ordered including labs to check for current and past infections that can become worse because of the HIV

4. Other laboratory tests may be ordered to check the overall health of the individual, including:

     a. A complete blood count (CBC), to identify the types of the blood cells and the number of cells in the blood.

     b. A chemistry panel, to measure the blood levels of certain electrolytes etc. and tests to check how well the kidneys and liver are functioning.

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ONGOING TESTING

When the individual is diagnosed with HIV, two tests are done regularly to see how much of the virus is in the blood, this refers to the viral load.

Frequent testing is done to check how the virus is affecting the immune system, such as the CD4 cell counts provide vital information about the health of the immune system and the Viral load which measures the amount of HIV in the blood.

The results of these tests may help the individual make decisions about starting treatment or making changes with new medications if the ones they are taking are not effective.

After the individual starts the medication therapy, it is very important for that person to take the medications exactly as prescribed by the Physician.

Sometimes the medication treatment does not work, this often occurs because the HIV has become resistant to the medication. This may occur when the individual does not take the medication correctly.

Testing for drug resistance

HIV often changes or mutates in the body. Sometimes these changes make the virus resistant to certain medications. Then the medication is no longer effective.

Medical experts recommend testing the blood of everyone diagnosed with HIV to look for this drug resistance. This information helps the physician know what medications to use. Individuals may also be tested for drug resistance when they are ready to begin

treatment and when they have been receiving treatment and the viral load numbers stop going down.

STAGES OF HIV INFECTION

The three stages of HIV infection are:

(1) Acute HIV infection,

(2) Chronic HIV infection, and

(3) Acquired immunodeficiency syndrome (AIDS).

Human immunodeficiency virus (HIV) can be transmitted during any stage of infection, but the risk is greatest during acute HIV infection.

There is no cure for HIV infection, but HIV medications (called antiretroviral medications) can prevent HIV from advancing to AIDS. HIV medications help people with HIV live longer and healthier lives. HIV medications also reduce the risk of HIV transmission of HIV to other individuals.

Without treatment, HIV infection advances in stages, getting worse over time. HIV gradually destroys the immune system and eventually causes acquired immunodeficiency syndrome (AIDS).

Acute HIV Infection

Acute HIV infection is the earliest stage of Human immunodeficiency virus (HIV). Acute HIV infection generally develops within 2 to 4 weeks after the individual is infected with HIV. During acute HIV infection, many people experiences flu-like symptoms, for example, headache, fever, and rash. In the acute stage of the infection, HIV multiplies quickly and spreads throughout the body. The virus attacks and destroys the CD4, the infection fighting cells of the immune system. Human immunodeficiency virus (HIV) can be transmitted during any stage of infection, but the risk is greatest during the acute HIV infection.

Chronic HIV Infection

The second stage of HIV infection is chronic HIV infection which is also called asymptomatic HIV infection or clinical latency. During this stage of the disease, Human immunodeficiency virus (HIV) continues to multiply in the body but at very low levels. Individuals with chronic HIV infection may not have any HIV related symptoms, but they are still able to spread HIV to other individuals. Without treatment with HIV medications, chronic

HIV infection usually advances to Acquired immunodeficiency syndrome (AIDS) in 10 to 12 years.

Acquired immunodeficiency syndrome (AIDS)

AIDS is the final stage of HIV infection. Because HIV has destroyed the immune system, the body cannot fight off opportunistic infections and cancer. (Examples of opportunistic infections include pneumonia and tuberculosis.) AIDS is diagnosed when a person with HIV has a CD4 count of less than 200 cells/mm^3 and/or one or more opportunistic infections. Without treatment, individuals with AIDS typically survive about 3 years.

Opportunistic infections

When people have healthy immune systems they can be exposed to some bacteria, viruses, or parasites and have no reactions to them, however when people have HIV/AIDS they can experience severe health threats from opportunistic infections. These infections are called opportunistic infections because they take advantage of the weakened immune system, and they can cause severe illnesses.

Opportunistic infections are signs of a declining immune system. Most life threatening opportunistic infections occur when the CD4 count is below 200 cells/mm^3. Opportunistic infections are the most common cause of death for individuals with HIV/AIDS.

SEXUALLY TRANSMITTED DISEASE (STD) AND HIV

Having a sexually transmitted disease (STD) can increase the risk of getting or spreading HIV.

If an individual is HIV-negative but has a sexually transmitted disease (STD), he/ she is at least 2 to 5 times as likely to get HIV if they have unprotected sex with someone who has HIV. There are two ways that having an STD can increase the likelihood of getting HIV. If the STD causes irritation of the skin for example from herpes, syphilis, or human papillomavirus, sores or breaks in the skin may make it easier for HIV to enter the body during sexual contact. Even sexually transmitted diseases (STDs) that cause no breaks or open sores for example gonorrhea, chlamydia, trichomoniasis can increase the risk by causing inflammation that increases the number of cells that can serve as targets for HIV.

If the individuals are HIV-positive and also infected with another sexually transmitted disease (STD), they are 3 to 5 times as likely as other HIV-infected persons to spread HIV through sexual contact because there is an increased concentration of HIV in the semen and genital fluids of HIV-positive individuals who also are infected with another sexually transmitted disease (STD).

CDC recommends sexually active gay and bisexual men test for:

- HIV.
- Syphilis.
- Hepatitis B and C.
- Chlamydia and gonorrhea of the rectum if had Receptive anal sex,
- Chlamydia and gonorrhea of the penis (urethra) if had insertive anal or oral sex in the past year.
- Gonorrhea of the throat if performed oral sex (meaning the mouth on your partner's penis, vagina, or anus) in the past year.

Sometimes the health care provider/ physician may suggest a herpes test.

For more information about the connection between HIV and other STDs, see the CDC fact sheet, The Role of STD Detection and Treatment in HIV Prevention. To get tested for HIV or other STDs, find a testing site near you.

TREATMENT

The standard treatment for HIV is a combination of medications called antiretroviral therapy (ART). Antiretroviral medications slow the rate at which the virus multiplies. Taking these medications can reduce the amount of virus in the body and help the individual stay healthy.

Combination Drug Therapy

Treatment with HIV medication is called antiretroviral therapy (ART). ART is recommended for everyone who has HIV. Individuals on antiretroviral therapy (ART) take a combination of HIV medications (called an HIV regimen) every day. The individual's initial HIV regimen generally includes **three HIV medications** from at least two different drug classes.

ART cannot cure HIV, but HIV medications help individuals with HIV live longer, healthier lives. HIV medications also reduce the risk of HIV transmission.

The following table lists HIV medications approved by the U.S. Food and Drug Administration (FDA) for the treatment of HIV infection in the United States. The HIV medications are listed according to drug class and identified by generic and brand names.

Tab #1 HIV medications approved by the U.S. Food and Drug Administration (FDA)

FDA-Approved HIV Medications			
Drug Class	**Generic Name (Other names and acronyms)**	**Brand Name**	**FDA Approval Date**
Nucleoside Reverse Transcriptase Inhibitors (NRTIs)			
NRTIs block reverse transcriptase, an enzyme HIV needs to make copies of itself.	Abacavir (abacavir sulfate, ABC)	Ziagen	December 17, 1998
	Didanosine (delayed-release didanosine, dideoxyinosine, enteric-coated didanosine, ddI, ddI EC)	Videx	October 9, 1991
		Videx EC (enteric-coated)	October 31, 2000
	Emtricitabine (FTC)	Emtriva	July 2, 2003
	Lamivudine (3TC)	Epivir	November 17, 1995
	Stavudine (d4T)	Zerit	June 24, 1994
	tenofovir disoproxil fumarate (tenofovir DF, TDF)	Viread	October 26, 2001
	Zidovudine (azidothymidine, AZT, ZDV)	Retrovir	March 19, 1987
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)			

FDA-Approved HIV Medications			
Drug Class	**Generic Name (Other names and acronyms)**	**Brand Name**	**FDA Approval Date**
NNRTIs bind to and later alter reverse transcriptase, an enzyme HIV needs to make copies of itself.	Delavirdine (delavirdine mesylate, DLV)	Rescriptor	April 4, 1997
	Efavirenz (EFV)	Sustiva	September 17, 1998
	Etravirine (ETR)	Intelence	January 18, 2008
	Nevirapine (extended-release nevirapine, NVP)	Viramune	June 21, 1996
		Viramune XR (extended release)	March 25, 2011
	Rilpivirine (rilpivirine hydrochloride, RPV)	Edurant	May 20, 2011
Protease Inhibitors (PIs)			
PIs block HIV protease, an enzyme HIV needs to make copies of itself	Atazanavir (atazanavir sulfate, ATV)	Reyataz	June 20, 2003
	Darunavir (darunavir ethanolate, DRV)	Prezista	June 23, 2006
	Fosamprenavir (fosamprenavir calcium, FOS-APV, FPV)	Lexiva	October 20, 2003
	Indinavir (indinavir sulfate, IDV)	Crixivan	March 13, 1996
	Nelfinavir (nelfinavir mesylate, NFV)	Viracept	March 14, 1997
	Ritonavir (RTV)	Norvir	March 1, 1996

FDA-Approved HIV Medications			
Drug Class	**Generic Name (Other names and acronyms)**	**Brand Name**	**FDA Approval Date**
	Saquinavir (saquinavir mesylate, SQV)	Invirase	December 6, 1995
	Tipranavir (TPV)	Aptivus	June 22, 2005
Fusion Inhibitors			
Fusion inhibitors block HIV from entering theCD4 cells of the immune system.	Enfuvirtide (T-20)	Fuzeon	March 13, 2003
Entry Inhibitors			
Entry inhibitors block proteins on the CD4 cells that HIV needs to enter the cells.	Maraviroc (MVC)	Selzentry	August 6, 2007
Integrase Inhibitors			
Integrase inhibitors block HIV integrase, an enzyme HIV needs to make copies of itself.	Dolutegravir (DTG)	Tivicay	August 13, 2013
	Elvitegravir (EVG)	Vitekta	September 24, 2014
	Raltegravir (raltegravir potassium, RAL)	Isentress	October 12, 2007
Pharmacokinetic Enhancers			
Pharmacokinetic enhancers are used in HIV treatment to increase the effectiveness of an HIV medicine included in an HIV regimen.	Cobicistat (COBI)	Tybost	September 24, 2014
Combination HIV Medicines			
Combination HIV medicines contain two or more HIV medicines from one or more drug classes.	Abacavir and Lamivudine (abacavir sulfate / lamivudine, ABC / 3TC)	Epzicom	August 2, 2004
	Abacavir, Dolutegravir, and Lamivudine	Triumeq	August 22,

FDA-Approved HIV Medications			
Drug Class	**Generic Name** **(Other names and acronyms)**	**Brand Name**	**FDA Approval Date**
	(abacavir sulfate / dolutegravir sodium / lamivudine, ABC / DTG / 3TC)		2014
	Abacavir, lamivudine, and zidovudine (abacavir sulfate / lamivudine / zidovudine, ABC / 3TC / ZDV)	Trizivir	November 14, 2000
	Atazanavir and cobicistat (atazanavir sulfate / cobicistat, ATV / COBI)	Evotaz	January 29, 2015
	Darunavir and cobicistat (darunavir ethanolate / cobicistat, DRV / COBI)	Prezcobix	January 29, 2015
	Efavirenz, Emtricitabine, and Tenofovir disoproxil fumarate (efavirenz / emtricitabine / tenofovir, efavirenz / emtricitabine / tenofovir DF, EFV / FTC / TDF)	Atripla	July 12, 2006
	Elvitegravir, cobicistat, Emtricitabine, and tenofovir disoproxil fumarate (QUAD, EVG / COBI / FTC / TDF)	Stribild	August 27, 2012
	Emtricitabine, Rilpivirine, and Tenofovir Disoproxil fumarate (emtricitabine / rilpivirine hydrochloride / tenofovir disoproxil fumarate, emtricitabine / rilpivirine / tenofovir, FTC / RPV / TDF)	Complera	August 10, 2011
	Emtricitabine and Tenofovir Disoproxil fumarate (emtricitabine / tenofovir, FTC / TDF)	Truvada	August 2, 2004
	Lamivudine and zidovudine (3TC / ZDV)	Combivir	September 27, 1997
	Lopinavir and Ritonavir (ritonavir-boosted lopinavir, LPV/r, LPV / RTV)	Kaletra	September 15, 2000

HIV MEDICATION REGIMEN

Adherence to an HIV regimen gives HIV medications the chance to function effectively and work to prevent the HIV from multiplying and destroying the immune system. HIV mediations help people with HIV live longer and healthier lives. HIV medications also reduce the risk of HIV transmission.

Poor adherence to an HIV regimen allows HIV to destroy the immune system. A damaged immune system makes it hard for the body to fight off infections and certain cancers. Poor adherence also increases the risk of drug resistance and HIV treatment failure.

HIV DRUG RESISTANCE

When the individual becomes infected with HIV, the virus begins to multiply; making copies of itself within the body. As HIV multiplies, it sometimes mutates /changes form and produces variations of itself. Variations of HIV that develop while a person is taking HIV medicines can lead to drug-resistant strains of HIV.

HIV medications that previously controlled the individual's HIV are not effective against the new, drug-resistant HIV. In other words, the HIV medications cannot prevent the drug-resistant HIV from multiplying. Drug resistance can cause HIV treatment to fail.

POOR MEDICATION ADHERENCE INCREASE THE RISK OF DRUG RESISTANCE

Medication adherence means taking HIV medications every day and exactly as ordered. HIV medications prevent HIV from multiplying. Forgetting to take or skipping HIV medications allows HIV to multiply, which increases the risk that the virus will mutate and produce drug-resistant HIV. As a result of drug resistance, one or more HIV medications in a person's HIV regimen may no longer be effective.

Cross resistance

Cross resistance is when resistance to one HIV medication causes resistance to other medications in the same HIV drug class. The HIV medications are grouped into drug classes according to how they fight HIV. As a result of cross resistance, a person's HIV may be resistant even to HIV medications that the individual has never taken. Cross resistance limits the number of HIV medications available to include in an HIV regimen.

Drug-resistance testing

Drug-resistance testing is done to identify which, if any, HIV medicines won't be effective against a person's strain of HIV. Drug-resistance testing is done using a sample of blood.

Drug-resistance testing is done when a person first begins receiving care for HIV infection. Resistance testing should be done whether the person decides to start taking HIV medicines immediately or to delay treatment. If treatment is delayed, resistance testing should be repeated when HIV medicines are started.

Drug-resistance testing done before a person starts taking HIV medicines for the first time can show whether the person was initially infected with a drug-resistant strain of HIV. Drug-resistance testing results are used to decide which HIV medicines to include in a person's first HIV regimen.

After treatment is started, drug-resistance testing is also done if viral load testing indicates that a person's HIV regimen is not controlling the virus. If drug-resistance testing shows that the HIV regimen is not effective because of drug resistance, the test results can be used to select a new HIV regimen.

Reducing the risk of drug resistance

Adherence to an effective HIV treatment regimen reduces the risk of drug resistance. Here are some helpful tips on medication adherence for individuals living with HIV:

When the individuals decide to start treatment, encourage them to work closely with their Physician / health care provider to choose an HIV regimen that will suit their needs. A regimen that meets their needs will make adherence easier.

The individual should update the physician/ health care provider about any issues that can make adherence difficult; such as, lack health insurance to cover the cost of HIV medications or busy schedule that makes it hard to take the medications on time.

The health care provider/ physician can recommend resources to help address any issues before they start taking the HIV medications.

When the individual start treatment, provide teaching regarding closely following the HIV regimen; such as: Take the HIV medications every day and exactly as prescribed. Use medication aids such as a daily pill diary (write down the medications and the time to take them then check off when taken or use a 7-day pill box to stay on track. Set daily pill reminders.

Keep the medical appointments so that the physician/ health care provider can monitor the HIV treatment. Also the appointments provide an excellent opportunity to ask questions and ask for assistance to manage problems that make it hard to follow an HIV regimen.

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

AIDS - the last and most severe stage of HIV infection. It is diagnosed if the results of the test show that the individuals have a CD4 cell count of less than 200 cells per microliter (mcL) of blood.

TREATMENT FOR AIDS

When HIV progresses to the late stage, treatment will be continued to keep the immune system as healthy as possible.

If the individual get any diseases that point to AIDS, such as Kaposi's sarcoma or Pneumocystis pneumonia the physician will treat them.

Kaposi's sarcoma

Kaposi's sarcoma is a cancer that causes patches of abnormal tissue to grow under the skin, in the lining of the nose, mouth, and throat or in other organs. The patches are usually red or purple in color and are made of blood cells and cancer cells. The red or purple patches often cause no symptoms, though they may be painful. If the cancer spreads to the digestive tract or lungs, bleeding can result. Lung tumors can make breathing hard. Prior to the HIV/AIDS epidemic, Kaposi's sarcoma usually developed slowly. In individuals with HIV/AIDS, the disease moves quickly. Treatment depends on the location of the lesions and how bad they are. Treatment for HIV itself can shrink the lesions. However, treating Kaposi's sarcoma does not improve survival from HIV/AIDS itself.

Pneumocystis pneumonia (PCP)

Pneumocystis pneumonia (PCP) is a serious illness caused by the fungus Pneumocystis jirovecii. Pneumocystis pneumonia is one of the most frequent and severe opportunistic infections in individuals with weakened immune systems, particularly people with HIV/AIDS. Although individuals with HIV/AIDS are less likely to get Pneumocystis pneumonia today than in recent years, PCP is still a significant public health problem.

The symptoms of PCP are:

- fever,

- shortness of breath,

- dry cough and

- fatigue.

In HIV-infected patients, Pneumocystis pneumonia (PCP) usually presents sub-acutely, and symptoms include a low-grade fever. In HIV-uninfected patients, symptoms of PCP tend to develop more quickly and patients typically experience a high fever.

The CDC has developed a list of more than 20 opportunistic infections (OIs) that are considered AIDS-defining conditions; if the individual has HIV and one or more of these opportunistic infections, he/she will be diagnosed with AIDS, no matter what the CD4 count happens to be:

- Candidiasis of bronchi, trachea, esophagus, or lungs
- Invasive cervical cancer
- Coccidioidomycosis
- Cryptococcosis
- Cryptosporidiosis, chronic intestinal (greater than 1 month's duration)
- Cytomegalovirus disease (particularly CMV retinitis)
- Encephalopathy, HIV-related
- Herpes simplex: chronic ulcer(s) (greater than 1 month's duration); or bronchitis, pneumonitis, or esophagitis
- Histoplasmosis
- Isosporiasis, chronic intestinal (greater than 1 month's duration)
- Kaposi's sarcomav
- Lymphoma, multiple forms
- Mycobacterium avium complex

- Tuberculosis
- Pneumocystis carinii pneumonia
- Pneumonia, recurrent
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia, recurrent
- Toxoplasmosis of brain
- Wasting syndrome due to HIV

Because the opportunistic infections can be so dangerous and devastating to the individual's health, it is essential that everyone understand the signs, symptoms, prevention, and management of opportunistic infections.

HELP FROM THE CAREGIVERS

A caregiver can provide the physical, emotional, and medical care that will improve the quality of life for the individual who has HIV. Provide emotional support, listen to and encourage the individual. Learn how to provide home care, to assist with medication management and seek help in an emergency.

MAINTAINING INFECTION CONTROL STANDARDS

Infection control refers to guidelines / regulations that are designed for educating, reporting, monitoring, managing and isolating healthcare related and/or community acquired infections. Therefore, infection control measures are important to control, eliminate or minimize employee exposure to bloodborne pathogens and communicable diseases.

Regulations

Infection control standards and policies published by Occupational Safety and Health Administration (OSHA), the Centers for Disease Control and Prevention (CDC) the Association for Professionals in Infection Control and Epidemiology (APIC) and National Institute of Occupational Safety and Health (NIOSH) have made recommendations. These guidelines are designed to reduce the transmission of bloodborne and other

pathogens and apply to every patient regardless of their diagnosis. These guidelines reinforce the idea that body substances such as oral and body secretions; blood, breast milk, urine, feces, airborne spray from coughing or droplet, vomits, tissue, wound, or any other drainage; can be a source of infection. These guidelines also explain that the environment can also be a source of infection.

Employers

It is mandatory for employers to implement an Exposure Control Plan that makes Universal Precautions mandatory and treats all body fluids and blood as infectious with the exception of sweat. This plan focuses on hand hygiene and the use of Personal Protective Equipment (PPE) as protection against blood and body fluid infection. PPE includes gowns, gloves, masks, goggles and resuscitation bags. These materials must be available to the employee at no charge.

Universal Precaution

Universal Precaution is an infection control principle that treats all human blood and other potentially infectious materials (OPIM) as infectious (29 CFR1910.1030(d)(1). OSHA regulation for preventing any exposure to HBV, HIV, and HCV in the workplace and requires the proper use of Personal protective equipment (PPE).

Standard Precautions

Standard Precautions: recommendations from the Centers for Disease Control and Prevention (CDC) which focuses on all body fluids; whether or not blood is present. Body fluids from excretion, secretion (except sweat), and contact with non-intact skin or mucus membranes.

Hand washing

The hands must be washed before and after patient contact. Wash the hands with liquid soap and water immediately after removing gloves.

The components of good hand washing include:

Using adequate amount of soap
Rubbing the hands together to create some friction and
Rinsing under running water

The mechanical action of washing and drying removes most of the transient bacteria that is present. Washing hands thoroughly between patient contacts and after contact with body fluids, blood, excretion, secretion, articles or equipment contaminated by them is an important component of infection control and isolation precautions.

Some institutions recommend use adequate soap, make lather and continue rubbing for *15-20 seconds*. To wash for the correct time, sing "Happy Birthday to You " twice.
If soap and water are not available, you can use an alcohol based hand rub to clean your hands. These foam gels significantly reduce the number of germs on the skin and are fast acting. Follow your institutions' policy and procedure.

Personal protective equipment (**PPE)**

Personal protective equipment or PPE are protective wear/ materials used to protect you from any splashes or body exposures to blood, and or other contaminates. PPE are equipments such as gloves, scrubs, lab coat, goggles, gowns, surgical shoe covers, aprons, caps etc. Disposable face masks are to be worn whenever there is a reasonable expectation that droplet transmission may occur. Dispose of masks after each use.

Appropriate use of PPE is required by the Bloodborne Pathogens standard, if exposure to blood is anticipated (29 CFR 1910.1030(d)(2)(i)

Gloves

Wear gloves when the possibility of contact transmission may occur, for example during the venipuncture procedure where hand contact with blood is anticipated, or when handling items that are contaminated. Change gloves between each patient procedure. (29 CFR 1910.1030(d)(3)(ix)

Dispose of Personal protective equipment:

Personal protective equipment must be removed prior to leaving the work area and should be disposed in the appropriate designated container or area for storage / disposal. (29 CFR 1910.1030(d)(3)(vii) .

Needles and other Sharp Objects

The Needlestick Safety and Prevention Act

The Needlestick Safety and Prevention Act (the Act) (Pub. L. 106-430) was signed into law on November 6, 2000. Because occupational exposure to bloodborne pathogens from accidental sharps injuries in healthcare and other occupational settings continues to be a serious problem, Congress felt that a modification to OSHA's Bloodborne Pathogens Standard was appropriate (29 CFR 1910.1030) to set forth in greater detail (and make more specific) OSHA's requirement for employers to identify, evaluate, and implement safer medical devices. The Act also mandated additional requirements for maintaining a sharps injury log and for the involvement of non-managerial healthcare workers in evaluating and choosing devices.

Most of the needlestick or sharp related incidents/ injuries occur when healthcare workers dispose of needles, perform venipuncture while obtaining blood, give injections, recap needles, handle the trash and dirty linens.

There are many different safety needles on the market. Make sure you understand your Institution's policy regarding sharp related/ needle stick injury and prevention. Needlesticks and other sharps-related injuries expose the worker to bloodborne pathogens.

Bloodborne pathogens are pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and others.

At the end of 2012, an estimated 1.2 million persons aged 13 and older were living with HIV infection in the United States, including 156,300 (12.8%) persons whose infections had not been diagnosed. The estimated incidence of HIV has remained stable overall in recent years, at about 50,000 new HIV infections per year.

The Centers for Disease Control and Prevention (CDC) states that, the average risk for HIV infection after a needlestick or cut exposure to HIV-infected blood is 0.3% (about 1 in 300). 99.7% of needlestick /cut exposures to HIV-contaminated blood do not lead to infection.

The risk after exposure of the eye, nose, or mouth to HIV-infected blood is estimated to be, on average, 0.1% (1 in 1,000).

The risk after exposure of the skin to HIV-infected blood is estimated to be less than 0.1%. A small amount of blood on intact skin probably poses no risk at all. There have been no documented cases of HIV transmission due to an exposure involving a small

amount of blood on intact skin (a few drops of blood on skin for a short period of time). The risk may be higher if the skin is damaged (for example, by a recent cut), if the contact involves a large area of skin, or if the contact is prolonged.

Health care workers who are at risk for HIV because of an accidental needlestick or other exposure to body fluids should get medication to prevent infection.

Also, medications may prevent HIV infection in an individual who has been raped or was accidentally exposed to the body fluids of a person who has HIV.

FACTS

- According to the CDC, more than 1.2 million individuals in the United States are living with HIV infection, and almost 1 in 8 (12.8%) are not aware that they have the infection.
- Gay, bisexual, and other men who have sex with men (MSM), particularly young black/African American, are most seriously affected by HIV.
- By race, blacks/African Americans face the most severe burden of HIV.

CDC estimates that 1,218,400 persons aged 13 years and older are living with HIV infection, including 156,300 (12.8%) who are unaware of their infection. Over the past decade, the number of individuals living with HIV has increased, while the annual number of new HIV infections has remained relatively stable. However, the pace of new infections continues at far too high a level.

HIV Incidence (new infections): The estimated incidence of HIV has remained stable overall in recent years, at about 50,000 new HIV infections per year. Within the overall estimates, however, some groups are affected more than others. MSM continue to bear the greatest burden of HIV infection, and among races/ethnicities, African Americans continue to be disproportionately affected.

HIV Diagnoses (new diagnoses, regardless of when infection occurred or stage of disease at diagnosis):

In 2013, an estimated 47,352 individuals were diagnosed with HIV infection in the United States. In that same year, an estimated 26,688 people were diagnosed with AIDS. Overall, an estimated 1,194,039 individuals in the United States of America have been diagnosed with AIDS.

Deaths: An estimated 13,712 individuals with an AIDS diagnosis died in 2012, and approximately 658,507 people in the United States of America with an AIDS diagnosis have died overall.

By Risk Group

Gay, bisexual, and other men who have sex with men (MSM) of all races and ethnicities remain the population most profoundly affected by HIV.

In 2010, the estimated number of new HIV infections among MSM was 29,800, a significant 12% increase from the 26,700 new infections among MSM in 2008.

Although MSM represent about 4% of the male population in the United States, in 2010, MSM accounted for 78% of new HIV infections among males and 63% of all new infections. MSM accounted for 54% of all individuals living with HIV infection in 2011, the most recent year these data are available.

In 2010, white MSM continued to account for the largest number of new HIV infections (11,200), by transmission category, followed closely by black MSM (10,600).

The estimated number of new HIV infections was greatest among MSM in the youngest age group. In 2010, the greatest number of new HIV infections (4,800) among MSM occurred in young black/African American MSM aged 13–24. Young black MSM accounted for 45% of new HIV infections among black MSM and 55% of new HIV infections among young MSM overall.

Since the epidemic began, an estimated 311,087 MSM with an AIDS diagnosis have died, including an estimated 5,380 in 2012.

Heterosexuals and injection drug users also continue to be affected by HIV.

Since the epidemic began, almost 92,613 persons with AIDS that were infected through heterosexual sex, have died, including an estimated 4,550 in 2012.

New HIV infections among women are primarily attributed to heterosexual contact (84% in 2010) or injection drug use (16% in 2010). Women accounted for 20% of estimated new HIV infections in 2010 and 23% of those living with HIV infection in 2011. The 9,500 new infections among women in 2010 reflect a significant 21% decrease from the 12,000 new infections that occurred among this group in 2008.

Injection drug users represented 8% of new HIV infections in 2010 and 15% of those living with HIV in 2011.

Since the epidemic began, nearly 186,728 people with (AIDS) who inject drugs have died, including an estimated 3,514 in 2012.

By Race/Ethnicity

Blacks/African Americans continue to experience the most severe burden of HIV, compared with other races and ethnicities.

Blacks represent approximately 12% of the U.S. population, but accounted for an estimated 44% of new HIV infections in 2010. They also accounted for 41% of people living with HIV infection in 2011.

Since the epidemic began, an estimated 270,726 blacks with AIDS have died, including an estimated 6,540 in 2012.

Hispanics/Latinos are also disproportionately affected by HIV.

Hispanics/Latinos represented 16% of the population but accounted for 21% of new HIV infections in 2010. Hispanics/Latinos accounted for 20% of individuals living with HIV infection in 2011.

Disparities persist in the estimated rate of new HIV infections in Hispanics/Latinos. In 2010, the rate of new HIV infections for Latino males was 2.9 times that for white males, and the rate of new infections for Latinas was 4.2 times that for white females.

Since the epidemic began, more than 100,888 Hispanics/Latinos with an AIDS diagnosis have died, including 2,155 in 2012.

Diagnoses of HIV Infection in the United States and Dependent Areas, 2013

Age group:
From 2009 through 2013, the rates for persons aged 13–14, 20–24, 25–29, 60–64, and 65 years and older increased. The rates for persons aged 15–19, 35–39, and 40–44 years decreased. The rates remained stable for children (aged less than 13 years) and persons aged 30–34, 45–49, 50–54, and 55–59 years. In 2013, the highest rate was for persons aged 25–29 years (36.3), followed by the rate for persons aged 20– 24 years (35.3).

Race/ethnicity:
From 2009 through 2013, the rates for American Indians/Alaska Natives and Asians increased. The rates for Hispanics/Latinos, Native Hawaiians/other Pacific Islanders, and persons of multiple races decreased. The rates for blacks/African Americans and whites remained stable. In 2013, the rates were 55.9 for blacks/ African Americans, 18.7 for Hispanics/Latinos, 16.8 for persons of multiple races, 12.7 for Native Hawaiians/other Pacific Islanders, 9.4 for American Indians/Alaska Natives, 6.6 for whites, and 6.0 for Asians. Please use caution when interpreting data for Native Hawaiians/other Pacific Islanders: the numbers are small.

Sex:
From 2009 through 2013, the rates for female adults and adolescents decreased; the rates for males remained stable. In 2013, males accounted for 80% of all diagnoses of HIV infection among adults and adolescents. The rate for adult and adolescent males was 29.4, and the rate for females was 6.9.

Transmission category:
From 2009 through 2013, among adult and adolescent males, the annual number of diagnosed HIV infections attributed to maleto-male sexual contact increased. The

numbers of infections attributed to injection drug use, maleto-male sexual contact and injection drug use, or heterosexual contact decreased. Among adult and adolescent females, the numbers of infections attributed to injection drug use or heterosexual contact decreased. In 2013, among adult and adolescent males and females, the diagnosed infections attributed to male-to-male sexual contact (68%, including male-to-male sexual contact and injection drug use) and those attributed to heterosexual contact (25%) accounted for approximately 93% of diagnosed HIV infections in the United States.

Region: From 2009 through 2013, the rates of diagnoses of HIV infection in the West decreased, and the rates in the Northeast, Midwest, and South remained stable. In 2013, rates were 20.5 in the South, 15.9 in the Northeast, 10.8 in the West, and 9.0 in the Midwest.

Stage 3 (AIDS) From 2009 through 2013

From 2009 through 2013, the annual estimated number and the estimated rate of infections classified as stage 3 (AIDS) in the United States decreased. In 2013, the estimated rate of infections classified as stage 3 (AIDS) was 8.4.

Age group

From 2009 through 2013, the rates of stage 3 (AIDS) classifications for persons aged 20– 24 and 60–64 years increased. The rates for persons aged 13–14, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, and 65 years and older decreased. The rates remained stable for children (aged less than 13 years) and persons aged 15–19 and 25–29 years. In 2013, the highest rate was for persons aged 45–49 years (17.8), followed by the rate for persons aged 40–44 years (16.8).

Race/ethnicity

From 2009 through 2013, rates remained stable for American Indians/Alaska Natives and decreased for all other race/ethnicity groups: Asians, blacks/African Americans, Hispanics/Latinos, Native Hawaiians/other Pacific Islanders, whites, and persons of multiple races.

In 2013, the rates were:
- 33.7 for blacks/African Americans,
- 14.0 for persons of multiple races,
- 9.9 for Hispanics/Latinos,
- 6.9 for Native Hawaiians/ other Pacific Islanders,

- 4.5 for American Indians/ Alaska Natives,
- 3.4 for whites, and
- 2.6 for Asians.

Sex:

From 2009 through 2013, the rates for adult and adolescent males and females decreased.
In 2013, adult and adolescent males accounted for 76% of all infections classified as stage 3 (AIDS) among adults and adolescents.

The 2013 rate for males was 15.7; the 2013 rate for females was 4.8.

Transmission category:

From 2009 through 2013, the annual number of infections classified as stage 3 (AIDS) among adult and adolescent males with HIV infection attributed to male-to male sexual contact, injection drug use, male to-male sexual contact and injection drug use, or heterosexual contact decreased.

The number of infections classified as stage 3 (AIDS) among adult and adolescent females with HIV infection attributed to perinatal transmission remained stable. The numbers of deaths of females with infection attributed to injection drug use or heterosexual contact decreased.

Region:

From 2009 through 2012, the rates of deaths in the South, the Northeast, and the Midwest decreased. The rates in the West remained stable. In 2012, the rate was 7.8 in the Northeast, 7.0 in the South, 3.7 in the West, and 2.8 in the Midwest.

Deaths of persons with infection ever classified as stage 3 (AIDS) From 2009 through 2012 in the United States, the annual estimated number and rate of deaths of persons with infection ever classified as stage 3 (AIDS) decreased. In 2012, the estimated rate of deaths of persons with stage 3 (AIDS) was 4.4. Deaths of persons with stage 3 (AIDS) may be due to any cause.

Age group:

From 2009 through 2012, the rates of deaths among persons aged 60–64 and 65 years and older increased. Rates of deaths among persons aged 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, and 55–59 years decreased. Rates remained stable among children (aged less than 13 years) and among persons aged 13–14 and 15–19 years.

Race/ethnicity:

From 2009 through 2012, the annual rate of deaths for whites remained stable. The rates of deaths for all other race/ethnicity groups; American Indians/Alaska Natives, Asians, blacks/African Americans, Hispanics/ Latinos, Native Hawaiians/other Pacific Islanders, and persons of multiple races decreased.
The highest death rate was for blacks/African Americans: 16.9. (use caution when interpreting data for Native Hawaiians/other Pacific Islanders: the numbers are small).
Sex and transmission category:

From 2009 through 2012, the overall rates for adult and adolescent males and females decreased. The numbers of deaths of males with stage 3 (AIDS) whose HIV infection was attributed to perinatal transmission increased. The numbers of deaths of males with infection attributed to male-to- male sexual contact, injection drug use, male -to-male sexual contact and injection drug use, or adult and adolescent males and females with infection attributed to injection drug use.

Region:

Survival was greatest among persons residing in the Midwest and the West, followed by those in the Northeast and the South.

Year of diagnosis:

In general, survival increased with the year of diagnosis for diagnoses made during 2004–2009, although year-to-year differences were small.

• Age group: In general, survival decreased as age at diagnosis increased, particularly among persons aged 30 years and older. Survival was greatest for persons aged 13–14 and 15–19 years at the time of stage 3 (AIDS) classification.

• Race/ethnicity: Survival was greatest among Asians, followed by Hispanics/Latinos, Native Hawaiians/other Pacific Islanders, persons of multiple races, whites, blacks/African Americans, and American Indians/Alaska Natives.

• Transmission category: Survival was greatest among children with infection attributed to perinatal transmission, followed by adult and adolescent males with infection attributed to male-tomale sexual contact. Survival was intermediate among adult and adolescent males with infection attributed to male-to-male sexual contact and injection drug use and among adult and adolescent males and females with infection attributed to heterosexual contact. Survival was lowest among males and females with infection attributed to injection drug use.

• Region: Survival was greatest among persons residing in the West, followed by those in the Northeast and the Midwest. Survival was lowest in the South.

Use caution when interpreting data on diagnoses of HIV infection. HIV surveillance reports may not be representative of all individuals with HIV because:

- Not all infected persons have been tested or
- Not all infected persons have been tested at a time when the infection could be detected and diagnosed.
- Some states offer anonymous HIV testing; the results of anonymous tests are not reported to the confidential name-based HIV registries of state and local health departments.
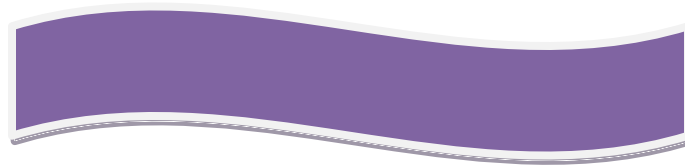
HIV/AIDS Prevalence in Kentucky

REPORTING HIV/AIDS

Reporting Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) cases is very important to efforts to characterize the epidemic in Kentucky, gathering resources for the fight against HIV/AIDS and maximizing limited resources by directing assets to the areas where they are likely to have the greatest impact.

Funding for HIV-related medical services and treatment is directly related to the number of cases reported.

The federal Centers for Disease Control and Prevention (CDC) Case Report Guidelines requires use of these forms to report HIV or AIDS cases as described in 902 KAR 2:020, Section 7 (Click on links below);

Pediatric Confidential Case Form
(for patients younger than 13 at time of diagnosis)

Adult Confidential Form
(for patients 13 or older at time of diagnosis)

For assistance in determining a client's risk factor, please read
CDC Technical Guidance for Risk Factor Ascertainment.

REPORTING FROM NORTH CENTRAL KENTUCKY

For reports from Jefferson, Henry, Oldham, Bullitt, Spencer, Shelby and Trimble counties contact:
Nichelle Anderson at (502) 574-6574
Case reports can be mailed to:

Louisville Metro Health Department
400 E. Gray St., Room 317
Louisville, KY 40202
Attn: Nichelle Anderson
Please place case forms inside two sealed envelopes, both marked "Confidential".

For all other county reports contact:

Julie Nakayima, Epidemiologist
(866) 510-0008
Case reports can be mailed to:
Kentucky Department for Public Health
275 E. Main St., HS2E-C
Frankfort, KY 40621
Attn: Julie Nakayima
Please place case forms inside two sealed envelopes, both marked "Confidential".

Each county health department in Kentucky now offers rapid screening for HIV with results available in 15-20 minutes.

Several community-based organizations and health centers also offer rapid HIV testing.
Complete list of rapid HIV testing sites in Kentucky.

CONDOM DISTRIBUTION

The Kentucky Department for Public Health contracts with several agencies to provide condom distribution:

AVOL (AIDS Volunteers, Inc.)
225 Walton Ave., Suite 110.
Lexington, KY 40502
(859) 225-3000

Lexington-Fayette County Health Department
650 Newtown Pike

Lexington, KY 40508
(859) 288-2437

Louisville Metro Public Health and Wellness
7201 Outer Loop
Louisville, KY 40228
(502) 574-6699

North Central Area Health Education Center
498 Georgetown St. Suite 106
Lexington, Kentucky 40508
(859) 281-6086

Northern Kentucky Independent District Health Department
2388 Grandview Drive, Building A
Fort Mitchell, KY 41047
(859) 578-7660

Volunteers of America Mid-States
1436 South Shelby Street
Louisville, KY 40217
(502) 635-4511

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