

PRESENTS

HIV/AIDS

1 CEU

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HIV/AIDS

PURPOSE:

The purpose of this course is to prepare the healthcare provider to care for patients with HIV and AIDs, better understand prevention and transmission, and meet the requirements of the Florida Statute 381.0035.

OBJECTIVES:

- ✓ Understand the scope and seriousness of HIV and AIDs in the world
- ✓ Describe the methods of transmission and prevention
- ✓ What are the risk factors
- ✓ Describe the HIV cycle in the host
- ✓ What tests are used to detect HIV and what is the incubation period
- ✓ What treatment is available
- ✓ Summarize infection control methods when caring for those with HIV
- ✓ Counseling Opportunities

UNDERSTAND THE SCOPE AND SERIOUSNESS OF HIV IN THE WORLD

The Human Immunodeficiency Virus, or HIV, is a virus which devastated populations in the United States starting in the late 70s. The year previous to the detection of HIV in 1981, its successor was discovered; Acquired Immunodeficiency Syndrome, or AIDS.

The history of the HIV/AIDS epidemic in North America has been well documented. According to Avert (link: <https://www.avert.org/professionals/history-hiv-aids/overview>), an organization with the goal of providing information and education on AIDS and HIV, the virus is thought to have originated out of Kinshasa, located in the Democratic Republic of Congo. In the 1920s, chimpanzees spread the disease to human hunters and it began its steady spread. While it is impossible to guess how many people were infected before discovery of the virus, it is estimated that between the mid- to late 1970s and the '80s, anywhere from 100,000 to 300,000 people could have been infected with HIV in the five continents it had reached. Most of these people were

given a not-entirely-correct diagnoses, usually Pneumocystic Carinii pneumonia (PCP) or Kaposi Sarcoma (KS), a type of cancer. Today, it is known that KS is considered an “AIDS defining illness,” according to [Cancer.org](https://www.cancer.org/cancer/kaposi-sarcoma/about/what-is-kaposi-sarcoma.html) (link: <https://www.cancer.org/cancer/kaposi-sarcoma/about/what-is-kaposi-sarcoma.html>), and PCP is “the most common opportunistic infection in people with HIV,” according to [Aidsinfonet.org](http://www.aidsinfonet.org) (link: http://www.aidsinfonet.org/fact_sheets/view/515).

While it is believed that the beginning of the HIV/AIDS crisis began in the ‘70s, the first confirmed case of HIV is thought to have been that of the teenage patient known only as “[Robert R.](https://www.avert.org/professionals/history-hiv-aids/origin),” (link: <https://www.avert.org/professionals/history-hiv-aids/origin>) who died in 1969. While he died before the virus was discovered, it was later confirmed in the 80s through testing of his remains, that he had been infected with HIV.

In 1983, the CDC (Center for Disease Control) released a list of the most at-risk groups for HIV, which was colloquially called “[the 4-H club](https://www.avert.org/professionals/history-hiv-aids/origin),” (link: <https://www.avert.org/professionals/history-hiv-aids/origin>) which included homosexuals, heroin users, hemophiliacs, and Haitians. As research continued, these stereotypes were dismissed in academia and the scientific community, but have held fast in certain parts of society. Misinformation and lack of education are still prevalent in mainstream culture.

According to [HIV.gov](https://www.hiv.gov/hiv-basics/overview/data-and-trends/global-statistics) (link: <https://www.hiv.gov/hiv-basics/overview/data-and-trends/global-statistics>), 35 million people have died of HIV/AIDS-related illnesses between the start of the crisis in the 70s and 2016, globally.

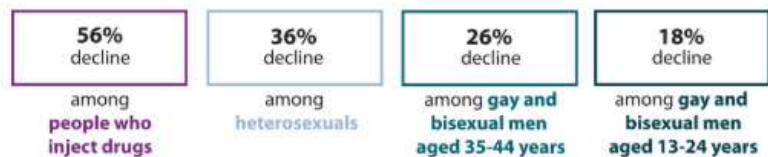
Living With HIV

- An estimated 1,122,900 adults and adolescents were living with HIV in the U.S. at the end of 2015.
- Of those, 162,500 (15% or 1 in 7) had not received a diagnosis, so were unaware of their infection.
- Young people were the most likely to be unaware of their infection. Among people aged 13-24 who were living with HIV, an estimated 44% didn't know.
- In 2014, among all adults and adolescents living with HIV (diagnosed or undiagnosed),
 - 62% received some HIV medical care,
 - 48% were retained in continuous HIV care, and
 - 49% had achieved viral suppression (having a very low level of the virus).^h

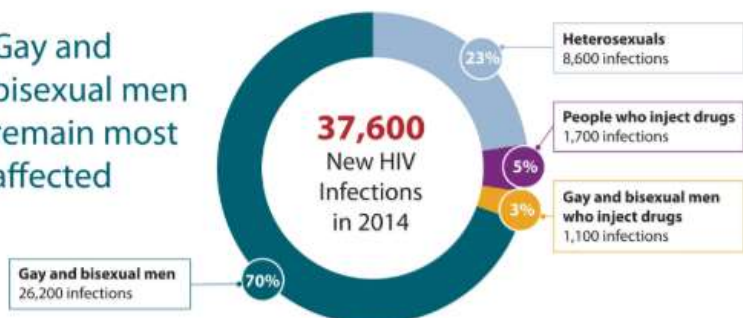
A person living with HIV who takes HIV medicine as prescribed and gets and stays virally suppressed can stay healthy and has effectively no risk of sexually transmitting HIV to HIV-negative partners.

Estimated annual HIV infections in the U.S. declined **18%**

Between 2008 - 2014 infections fell from 45,700 to 37,600



Gay and bisexual men remain most affected



DESCRIBE THE METHODS OF TRANSMISSION & PREVENTION

Transmission

According to AIDSinfo (link: <https://aidsinfo.nih.gov/understanding-hiv-aids/factsheets/20/48/the-basics-of-hiv-prevention>), a site run by the Department of Health and Human Services, HIV can only be spread through specific types of contact with:

- Blood
- Semen
- Pre-seminal fluids
- Vaginal Fluids
- Rectal Fluids
- Breast milk

It is not spread through, according to the previous Avert article:

- Saliva
- Casual physical contact (handshake, hug, sharing space)
- Food
- Water
- Air
- Surfaces

The passing of the infection is only possible if the fluids which carry infection come into contact with a mucous membrane, such as those found inside the rectum or vagina, the opening of the penis, or the mouth, or damaged tissue. Direct injection into the bloodstream, such as through sharing needles, also carries a high risk of transferring infection. There is a chance that a mother can infect her unborn child with HIV during the pregnancy or birth.

Prevention

AIDSinfo (link: <https://www.avert.org/about-hiv-aids/how-infected-body>) also gives a list of ways to reduce risk of becoming infected and of protecting your partner if you are already infected:

- Get tested and know your partner's HIV status.
- Have less risky sex.
 - Use condoms (for vaginal, oral, and anal sex)
 - Limit your number of sexual partners.
- Get tested and treated for STDs.
- Talk to your health care provider about pre-exposure prophylaxis (PrEP).
 - “PrEP is an HIV prevention option for people who don't have HIV but who are at high risk of becoming infected with HIV.

PrEP involves taking a specific HIV medicine every day,” –

AIDSinfo.nih.gov

- Don't inject drugs (or, if you do, do not share drug equipment).

WHAT ARE THE RISK FACTORS

Some people have a higher chance of contracting the infection than others in the United States, according to HIV.gov (link: <https://www.hiv.gov/hiv-basics/overview/about-hiv-and-aids/who-is-at-risk-for-hiv>).

Those who live in communities with a high number of infected individuals, where chances of having sex or sharing needles with an HIV-positive person is higher, are at more risk than those who are in an area with less prevalence. Gay and bisexual men and transgender women who have sex with men, minorities (specifically Black and Hispanic/Latino), and injection drug users are all at a higher risk of contracting HIV than other groups.

Risky sex, such as not using condoms during anal or vaginal sex, or not taking preventative/treatment medicines for HIV when appropriate, and sharing needles, are also risk factors that dramatically increase chances of becoming infected.

DESCRIBE THE HIV CYCLE IN THE HOST

An infected person may have the virus but feel good and healthy enough to go undiagnosed for a long time. The virus itself attacks the white cells, CD-4 or “T-helper” cells, which are essential to the immune system for fighting infection.

Once inside, the HIV replicates, takes control of the nucleus, and produces more HIV proteins to be released into the bloodstream. These proteins attack more cells and begin the process anew. There are four parts to the HIV life cycle

(<https://www.avert.org/about-hiv-aids/how-infects-body>), as described by Avert:

1. Binding and Fusion
2. Conversion and Integration
3. Replication
4. Assembly, budding and maturation

WHAT TESTS ARE USED TO DETECT HIV & WHAT IS THE INCUBATION

Tests

The CDC (link: <https://www.cdc.gov/hiv/basics/testing.html>) lists three types of available HIV tests, for which blood or oral fluid is tested, though urine is also accepted:

1. A NAT (nucleic acid test)

A NAT test looks for the virus itself in the blood. It is very expensive and not routinely used for screening unless there are early symptoms of the infection after exposure.

2. Antigen/antibody test,

Antigen/antibody tests look for both HIV antibodies and antigens. The p24 antigen is produced before antibodies developed if an individual is infected with HIV. There are rapid tests available and these are recommended for testing labs.

3. Antibody tests.

Antibody tests are the fastest tests and the home tests. They look for antibodies for the infection in the blood or oral fluid. Blood from a vein will detect sooner than from a finger or oral fluid. Laboratory-based antibody screening tests are available.

Incubation

There are three stages to the incubation period of HIV (link:

<https://www.avert.org/about-hiv-aids/symptoms-stages>).

The First Stage: Acute Primary Infection

The first stage of incubation begins around one to four weeks after infection and not every person will experience this stage. Symptoms are comparable to a simple flu and may pass in one or two weeks as the virus spreads and the body attempts to produce HIV antibodies to combat it before it is overcome. Even as the symptoms pass, the process of cells being attacked and infected can last up to a few months before the process is complete. Tests can be done at this stage, but may come back as a false negative due to how early in the process the infection is.

While there is no way to know for sure that one has contracted HIV without proper testing, Heartline (<https://www.healthline.com/health/hiv-aids/early-signs-hiv-infection#early-hiv-symptoms>) gives a list of symptoms which may appear around two weeks after being infected:

- Headache
- Fever
- Tiredness
- Swollen lymph nodes
- Sore throat
- Thrush
- Rash

- Muscle and joint pain
- Ulcers in the mouth and/or on the genitals
- Night sweats
- Diarrhea

As these are all symptoms similar to other sicknesses, it is important that those who have been exposed to infection be tested if any appear. Do not wave symptoms away as something less serious if a patient is or was at risk of exposure.

The Second Stage: The Asymptomatic Stage

This stage can last ten to fifteen years, depending on the health and lifestyle of the individual. As the name suggests, there are little to no symptoms during this stage. Below the surface, the virus is attacking and destroying the immune system of the host. Eventually, the immune system will be totally decimated.

The Third Stage: Symptomatic HIV infection

By this stage, the immune system has been ruined and previous infections, diseases, or illnesses that the body would previously have been able to fight off can easily take hold. These are “opportunistic infections,” as Avert describes them. Symptoms of any sickness or infection could appear at this stage.

HIV.gov (<https://www.hiv.gov/hiv-basics/overview/about-hiv-and-aids/symptoms-of-hiv>) agrees that, while the only way to know for sure if a patient

has contracted HIV/AIDS is to test for it, patients with Stage 3 HIV (which is the stage in which the disease progresses to AIDS) may exhibit these symptoms:

- Rapid weight loss
- Recurring fever or profuse night sweats
- Extreme and unexplained tiredness
- Prolonged swelling of the lymph glands in the armpits, groin, or neck
- Diarrhea that lasts for more than a week
- Sores of the mouth, anus, or genitals
- Pneumonia
- Red, brown, pink, or purplish blotches on or under the skin or inside the mouth, nose, or eyelids
- Memory loss, depression, and other neurologic disorders

WHAT TREATMENTS ARE AVAILABLE

Pre-exposure: PreEP (Pre-exposure prophylaxis) (link: <https://www.cdc.gov/hiv/baics/prep.html>) is a mix of *tenofovir* and *emtricitabine*, which, when combined with other HIV treatment medicine, has been shown to reduce HIV infection risk in high-risk individuals by up to 92%. The CDC recommends that it be taken consistently to be effective. The brand name is *Truvada*.

Post-exposure: PEP (Post-exposure prophylaxis) (link: <https://www.cdc.gov/hiv/basics/pep.html>) means taking antiretroviral medicines (ART) within 72 hours of being exposed to HIV. Must be taken twice daily for 28 days and is effective in prevention if administered correctly, though not 100%.

Post-infection: There is no cure for HIV/AIDS. After preventative measures fail, treatment is the only option. This treatment is called an antiretroviral treatment (ART) (link: <https://www.avert.org/about-hiv-aids/how-infects-body>) and uses different drugs to interrupt or stop the different steps of the HIV life cycle. Fusion or entry inhibitors are used during the Binding and Fusion step (step 1); NRTIs (nucleoside reverse transcriptase inhibitors), NNRTIs (non-nucleoside reverse transcriptase inhibitors), and integrase inhibitors are used for the Conversion and Integration step (step 2); Protease inhibitors are used during the Assembly, Budding and Maturation step (step 4).

SUMMARIZE INFECTION CONTROL METHODS WHEN CARING FOR THOSE WITH HIV

CDC-recommended (link: <https://www.cdc.gov/hai/organisms/hiv/hiv.html>)

Standard Precautions for All Patient Care in regards to infection control:

- Perform hand hygiene

- Use personal protective equipment (PPR) whenever there is an expectation of possible exposure to infectious materials
- Follow respiratory hygiene/cough etiquette principles,
- Ensure appropriate patient placement
- Properly handle and properly clean and disinfect patient care equipment and instruments/devices + clean and disinfect environment appropriately
- Handle textiles and laundry carefully
- Follow safe injection practices + wear a surgical mask when performing lumbar punctures
- Ensure healthcare worker safety, including proper handling of needles and other sharps

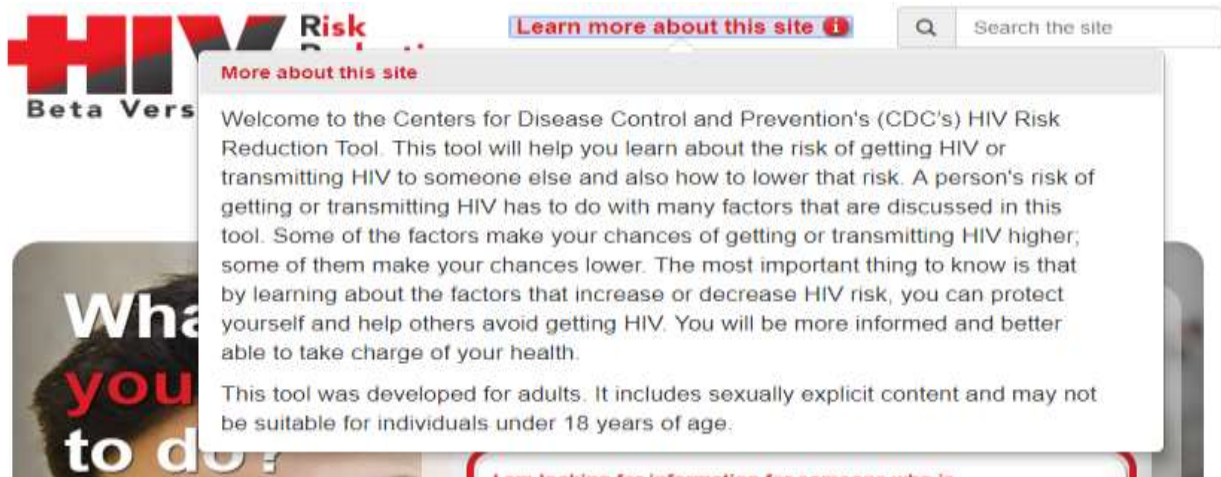
Additionally, follow safe practices in regards to handle and disposing of blood samples to avoid blood borne pathogens in medical settings. While it is not common for HIV and other blood borne pathogens to infect medical professionals in a health care environment, it has been reported before.

COUNSELING OPPORTUNITIES

The role of a health care professional does not end after the tests are done and proscriptions are given. Counseling for both prevention and post-infection is a helpful tool to all involved.

<https://effectiveinterventions.cdc.gov/> is a website run by the CDC which offers up a variety of resources for both HIV-Positive and -Negative people, as well as medical providers looking for training or information.

<https://wwwn.cdc.gov/hivrisk/index.html> is a HIV Risk Reduction Tool website still in beta. The site holds a plethora of information on HIV/AIDS risk education, though it seems to lack in tools for those who have already been exposed or diagnosed.



<https://wwwn.cdc.gov/hivrisk/index.html> : screenshot of homepage of website, after selecting “learn more about this site”

[Pre-Test and Post-Test Counselling For STD's and HIV by Dr. Bitra George, Safdarganj Hospital, New Delhi \(http://cnls.lanl.gov/~rajan/AIDS-india/BGeorge.html\)](http://cnls.lanl.gov/~rajan/AIDS-india/BGeorge.html) is an article by Dr. Bitra George on the necessarily characteristics of an counsellor. It includes advice on techniques and/or goals for counsellors and patients to work together with and toward – both for those who have tested negative and positive.

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