

Florida HIV – 1 Unit

1 Contact hours - \$10.00

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Course Objectives

When you finish this course, you will be able to:

- Describe the cause and mechanism of HIV infection.
- Outline the basic components of HIV antibody testing and confirmation.
- Discuss modes of transmission and infection control procedures to prevent transmission of HIV and STDs.
- Describe initial evaluation and clinical management of HIV patients.
- Discuss HIV prevention strategies, including behavioral change management and its successes throughout the world.
- Outline the main components of the Florida Omnibus AIDS Act.

Introduction

In 2007, an estimated 33.2 million people worldwide were living with human immunodeficiency virus (HIV), approximately 2.5 million people became infected, and 2.1 million people died. These estimates represent notable downward revisions of estimated global HIV prevalence and incidence. Based on the best available evidence, it now appears that the global epidemic stabilized in the late 1990s and that the annual number of new infections may have since modestly declined (Global HIV Prevention Working Group, 2008).

Yet the dimensions and pace of the epidemic remain staggering. The news is especially dire in southern Africa, where little progress in curbing the rate of new infections has occurred outside Zimbabwe. HIV infections continue to increase in a number of countries, including China, Indonesia, Mozambique, Russia, Ukraine, Vietnam, and several high-income countries (Global HIV Prevention Working Group, 2008).

In the United States, there are approximately 1.2 million people living with HIV. The majority of cases are among men, accounting for about 74% of cases. Minorities are disproportionately affected by HIV, with African-Americans accounting for 48% and Hispanics 18% of newly diagnosed HIV or acquired immunodeficiency syndrome (AIDS) cases in 2005 (UNAIDS, 2008).

Through the end of 2007 Florida ranked 3rd in the nation in the number of cumulative AIDS cases at nearly 106,000 cases. Women account for approximately 31% of these cumulative cases while men account for the remaining 69%. The Florida Bureau of HIV/AIDS estimates that there were 5,550 new cases of HIV in Florida in 2006, a rate nearly 60% higher than the national rate for newly-acquired infections. Seventy-two percent of new infections were in males, 48% in African-Americans, 33% in people aged 13 to 29, and 58% in men who have sex with men (Florida Department of Health, 2008).

In 2005, HIV was still the leading cause of death in Florida among black males and females ages 25 to 44. It is 4th and 6th leading cause of death for white males and females and 3rd and 5th for Hispanic males and females, respectively, for individuals in the same age group (Florida Department of Health, 2007).

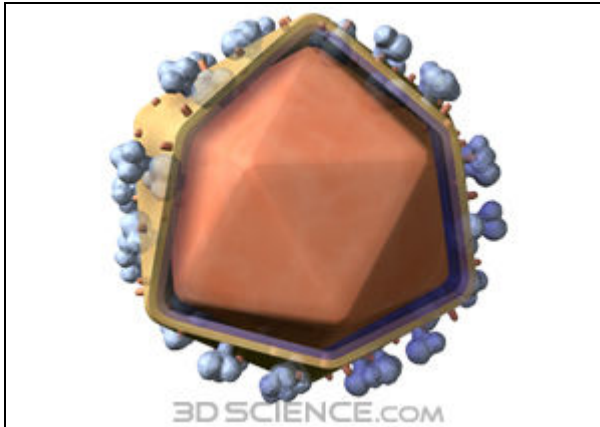
Cumulatively through December 2006, the five leading metropolitan statistical areas (MSAs) reporting the highest number of AIDS cases were (Florida DOH, 2007):

- New York City 198,083
- Los Angeles 58,246
- **Miami** **56,804**
- San Francisco 40,248
- Washington, DC 31,445

Cause of HIV/AIDS

AIDS is a complex condition caused by a retrovirus called the human immunodeficiency virus (HIV), which attacks the cells of the immune system and progressively destroys the body's ability to fight infection and disease. People with damaged immune systems are vulnerable to diseases that do not threaten people with healthy immune systems. AIDS is acquired—it is not hereditary and it is not passed casually from one person to another—and it is a “syndrome” because it causes a combination of symptoms, diseases and infections.

Figure 1: HIV Virus



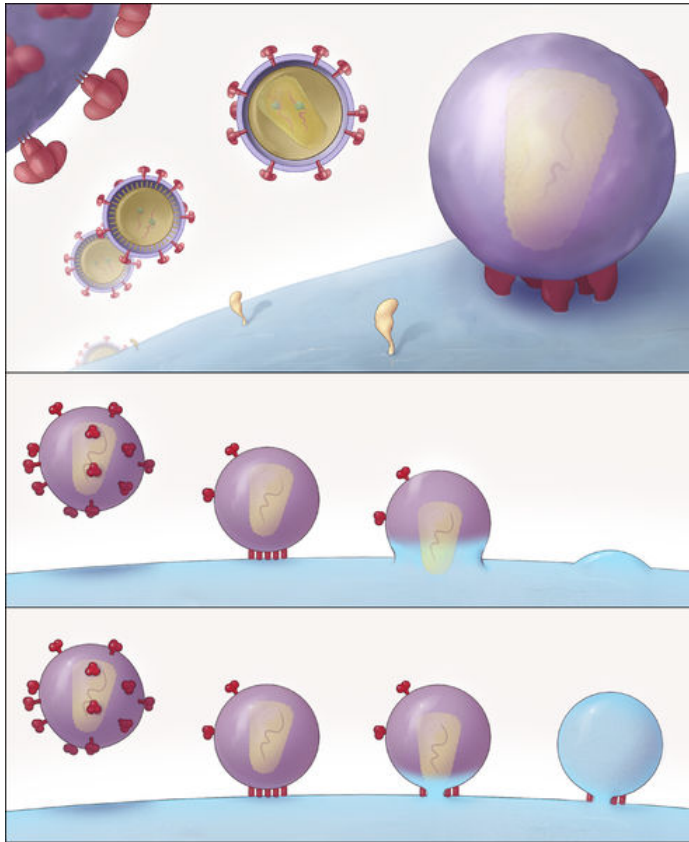
The physical structure of HIV is characterized by a protein shell that surrounds the genetic information and enzymes of the virus; a lipid membrane that circles the protein capsule; and glycoproteins that dot the surface of the virus, which aid in processes such as entry into macrophages and T-helper cells of the host. *Courtesy of Zygote Media Group, Inc.*

The term AIDS applies to the most advanced stages of infection. The diagnosis of AIDS requires a positive HIV antibody test or evidence of HIV infection and the appearance of specific conditions or diseases. Only a licensed medical provider can make an AIDS diagnosis. All people diagnosed with AIDS have HIV, but not all those with HIV have reached an AIDS diagnosis.

Mechanism

When the HIV virus enters the bloodstream it seeks out **T-helper lymphocytes**, white blood cells essential to the functioning of the immune system. These cells regulate immune response in the event of attack from disease-causing organisms such as bacteria or viruses. When the HIV virus infects the T-helper lymphocyte, the cell sends signals to other cells, which produce antibodies. The T-helper lymphocyte cells are also called T4 or CD4 cells. HIV infects and destroys the T-helper lymphocytes and damages their ability to signal for antibody production. This results in the eventual decline of the immune system.

Figure 2: HIV Entry into T Cell



The top panel shows the HIV virion finding and attaching to a T cell. The second and third panels show HIV viruses, (dotted with red glycoproteins) attaching to the T cell and depositing the HIV virus particle into the T cell.

Image courtesy of Sougrat R, Bartesaghi A, Lifson JD, et al (May 2007). "Electron tomography of the contact between T cells and SIV/HIV-1: implications for viral entry.

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A person with untreated HIV infection experiences several stages of infection:

- **Viral transmission**
- **Primary HIV infection**—lasting 1 to 2 weeks as the virus establishes itself in the body.
- **Seroconversion**—when antibodies to the HIV virus are produced by the immune system.
- **Asymptomatic HIV infection**—a person is infectious but looks and feels healthy. The virus is active and continuing to damage the immune system.
- **Symptomatic HIV infection**—symptoms such as skin rash, night sweats, mouth ulcers, weight loss, and fungal infections appear.
- **AIDS**—the Centers for Disease Control and Prevention (CDC) defines AIDS as an HIV positive person who has a CD4 count of less 200/mm³ or a history of an "AIDS-defining illness".

These stages are sometimes called the "natural history" of disease progression. The natural history of HIV infection has been altered dramatically in developed countries because of new

medications. In countries where there is no access to these expensive medications, or in cases where people do not become aware of their HIV infection until very late, the disease progresses as described above (WSDOH, 2007).

HIV Testing

The first HIV antibody test was available in 1985. Since then, new antibody tests have been developed and approved by the Food and Drug Administration. These tests do not detect the presence of the HIV virus itself but detect the body's reaction to the virus—the presence of antibodies to HIV. Currently, these antibody tests have a two step process of a **screening test** and—when the screening test is reactive or positive—a **confirmatory test**.

Screening and Confirmation

In most cases the first test done on a specimen is a screening test called an **Enzyme Linked Immunosorbent Assay** (“EIA” or “ELISA”). This type of test screens for the presence of antibodies to HIV in blood, urine, or oral fluid. Screening tests are inexpensive tests that are highly accurate. The ELISA test can produce a result in as little as 3.5 hours but most HIV antibody screening tests are sent to a laboratory and tested in batches—a process that can take one to two weeks. The CDC recommends that laboratories retest all positive (reactive) ELISA tests.

If a screening test is negative (no antibodies detected), the results can be given to the client. If the screening test is reactive at the laboratory, a confirmatory test called the **Western Blot** is conducted on the same sample. The Western Blot is only used if the ELISA or rapid test is positive. A few labs use a faster confirmatory test called the indirect immunofluorescence assay (IFA), which also tests for the presence of antibodies in the blood.

Rapid tests are also used for screening. They are extremely accurate with an accuracy rate exceeding 99%. Rapid screening test are conducted at the test site—often with the client present—and negative results are available in under an hour. Rapid tests are most commonly performed on a sample from the oral mucosa. Because this test relies on a swab from the mouth many people erroneously think that HIV can be transmitted through saliva via kissing or sharing of utensils. A positive rapid test is considered to be **preliminary** until a confirmatory test verifies the result.

One of the most common types of rapid test is the OraQuick Advance. It takes about 20 to 40 minutes for a result—if the test is “reactive” (antibodies detected) results must be confirmed by an additional test. This is because there is a small chance that an HIV screening test may detect proteins related to other autoimmune diseases and “react” to these proteins with a “positive” result.

Figure 3: OraQuick Rapid Test Kit

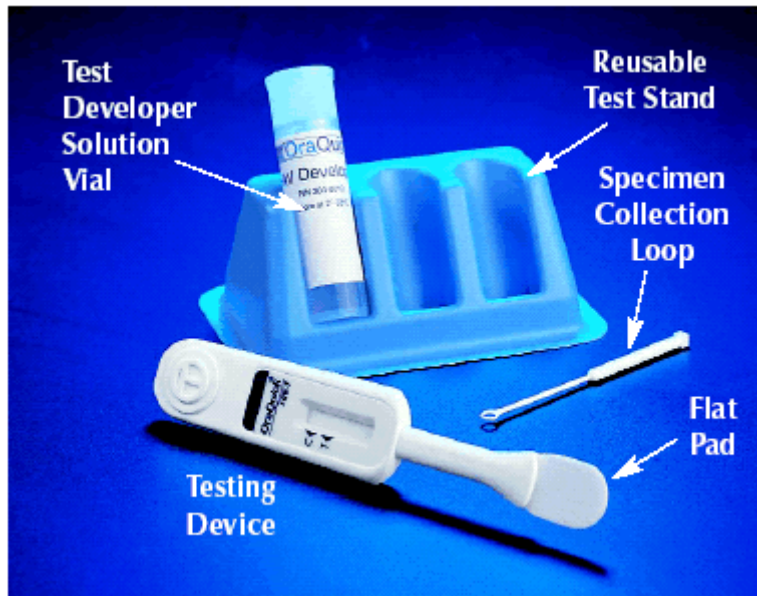


Image Courtesy of Center for Disease Control, CDC

In addition to the OraQuick, five other rapid tests are approved for commercial use in the United States by the Food and Drug Administration:

- Reveal G3 Rapid HIV-1 Antibody Test
- Uni-Gold Recombigen HIV Test
- Multispot HIV-1/HIV-2 Rapid Test
- Clearview HIV 1/2 Stat Pak
- Clearview Complete HIV 1/2 (CDC, 2007a)

A positive test result means you are HIV positive and can infect others who come in contact with your blood, semen, or vaginal fluids. A negative result means there are no antibodies to HIV in your blood at the time of the test. A negative test does not mean you are HIV negative—you may be infected but be in the “window period”—a period lasting up to 6 months in which an infected person has no detectable antibodies in their blood.

Transmission

HIV is a relatively fragile virus—it is not “easy to catch”—and it is not spread by casual contact. In order for HIV to be transmitted, three conditions must occur: 1) there must be an HIV source, 2) there must be a sufficient dose of virus, and 3) the virus must have access to the bloodstream, mucous membranes, or broken skin of another person.

One of the predictors of how infectious an HIV-positive person is their **viral load**—how much HIV

is present in the bloodstream. Studies show a clear connection between higher viral load in the blood and increased transmissibility of HIV.

HIV can be transmitted through:

- Unprotected anal, vaginal, and oral intercourse.
- A mother passing the virus to her baby either before or during birth.
- An infected woman breastfeeding her infant.
- Accidental needlestick injuries, or infected body fluid coming into contact with the broken skin or mucous membranes of another person (as with healthcare workers).
- A transfusion prior to 1986 of HIV-infected blood or blood products.
- Sharing needles or other injection equipment.

HIV and HCV Co-Infection

Forty percent of HIV-infected people in the U.S. may be co-infected with hepatitis C (HCV). Most **new** hepatitis C infections are among injecting drug users. People who are co-infected with both viruses and have immune system impairment, may progress more rapidly to serious, chronic or fatal liver damage. The majority of hemophiliacs who received blood products contaminated with HIV also are infected with HCV.

In extremely rare cases, HIV can be transmitted by sharing razors or toothbrushes if infected blood from one person were deposited on the toothbrush or razor, and the blood were to enter the bloodstream of another person.

In settings such as hospital operating rooms, other fluids, like cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid and amniotic fluid may be considered infectious if the source is HIV positive. These fluids are generally not found outside the hospital setting. Sweat, tears, saliva, urine and feces are not capable of transmitting HIV unless visibly contaminated with blood.

HIV transmission can occur during practices such as tattooing, blood-sharing activities such as "blood brother" rituals, or any other type of ritualistic ceremonies where blood is exchanged or when un-sterilized equipment contaminated with blood is shared. HIV transmission may also occur in occupational settings.

Transmission among People Unaware of Their Positive Status

Approximately 25% of people in the United States who are infected with HIV do not know they are infected. For this reason, routine screening has become an increasingly important tool for reducing the spread of HIV. People who are infected with HIV but not aware of their positive status are not able to take advantage of the therapies that can keep them healthy and extend their lives, nor do they have the knowledge to protect their sex or drug-use partners from becoming infected (CDC, 2008).

Studies have shown that infected people often decrease behaviors that transmit infection to sex or needle-sharing partners once they are aware of their positive HIV status. HIV-infected persons who are unaware of their infection do not reduce risk behaviors. Persons tested for HIV who do not return for test results might even increase their risk for transmitting HIV to partners. Because medical treatment that lowers HIV viral load might also reduce risk for transmission to others, early referral to medical care could prevent HIV transmission in communities while reducing a

person's risk for HIV-related illness and death (CDC, 2008).

Figure 4: Awareness of Serostatus and Estimates of Transmission

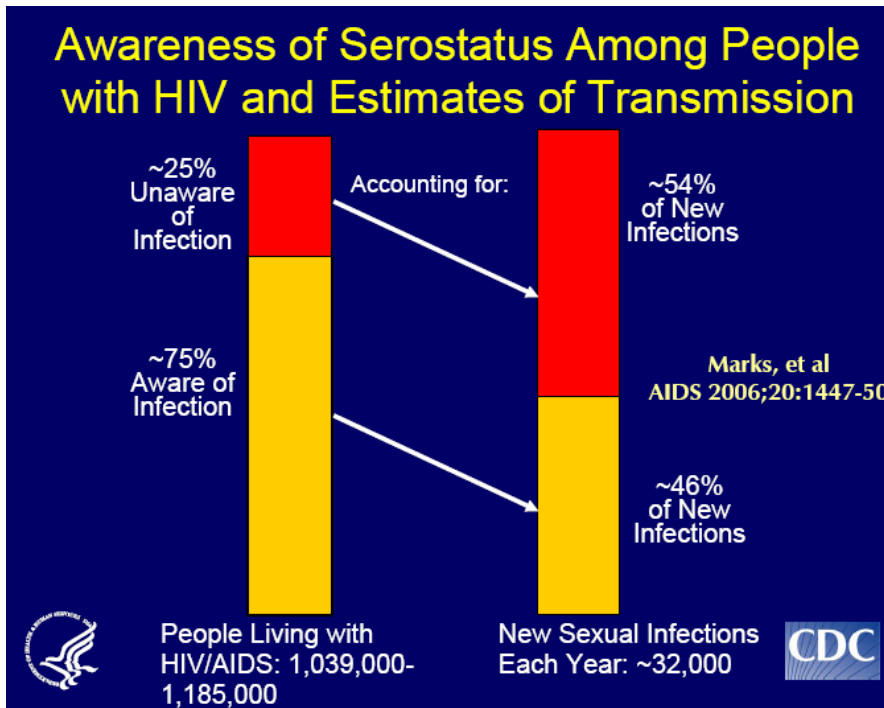


Image Courtesy Center for Disease Control, CDC

Slide 5: Revised Recommendations for HIV Testing in Healthcare Settings in the U.S.

http://www.cdc.gov/hiv/topics/testing/resources/slidesets/pdf/testing_healthcare.pdf

Glynn M, Rhodes P. 2005 HIV Prevention Conference

Transmission during Pregnancy

An HIV-infected woman can transmit HIV to her baby during pregnancy, during the birth process, or following pregnancy by breastfeeding. One of the predictors of how infectious a pregnant woman will be to her baby is her viral load. Women with new or recent infections or people in later stages of AIDS tend to have higher viral loads and may be more infectious.

HIV is transmitted from an HIV-infected woman to her baby in about 25% of pregnancies if intervention with antiretroviral medications does not occur. The perinatal transmission rate has dropped dramatically in the U.S. due to the widespread use of AZT (zidovudine) by HIV-infected pregnant women. When a woman's health care is monitored closely and she receives a combination of antiretroviral therapies during pregnancy the risk of HIV transmission to the newborn drops below 2 percent.

In some pregnancies, caesarian section (C-section) may be recommended to reduce the risk of transmission from woman to baby. Advice about medications and C-section should be given on a case-by-case basis by a medical provider with experience in treating HIV+ pregnant women. Most states, including Florida, require pregnant women to be counseled regarding risks around HIV and offered voluntary HIV testing.

Infection Control

Universal Precautions is a system designed to prevent transmission of bloodborne pathogens in healthcare and other settings. Under universal precautions, blood and other potentially infectious materials (OPIM) of all patients should always be considered potentially infectious for HIV and other pathogens. Standard Precautions is a newer system that considers all body fluids, except sweat, should be considered to be potentially infectious.

Universal and Standard Precautions involve the use of protective barriers to reduce the risk of exposure through skin or mucous membranes to blood and OPIM. Health care workers should also take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or device.

Personal Protective Equipment

Personal protective equipment (PPE) must be provided and worn by employees in all instances where they will or may come into contact with blood or OPIM. The Occupational Safety and Health Administration (OSHA) defines PPE as “specialized clothing or equipment worn by an employee for protection against infectious materials”. Gloves, masks, protective eyewear and chin-length plastic face shields are examples of PPE.

Traditionally, latex gloves are recommended when dealing with blood or OPIM. However, there have been documented cases of people with allergies to latex. In most circumstances, nitrile, vinyl and other glove alternatives meet the definition of “appropriate” gloves and may be used in place of latex gloves. Employers are required to provide non-latex alternatives to employees with latex and other sensitivities. Reusable PPE must be cleaned and decontaminated, or laundered by the employer.

Lab coats and scrubs are generally considered to be worn as uniforms or personal clothing. When contamination is reasonably likely protective gowns should be worn. If lab coats or scrubs are worn as PPE they must be removed as soon as practical and laundered by the employer.

Hand Hygiene

Hand hygiene is the single most important procedure for preventing the spread of infections. Hand hygiene (soap and water washing or use of a waterless alcohol based hand rub) must be performed:

- After removal of gloves or other protective equipment.
- Immediately after hand contact with blood or other infectious materials.
- Upon leaving the work area.

It is also recommended that hand hygiene be performed before and after patient contact and after using restroom facilities. Soap and water hand washing must be performed whenever hands are visibly contaminated or there is a reasonable likelihood of contamination. It is advisable to keep fingernails short, and to wear a minimum of jewelry.

Sharps Disposal

Do not recap, purposely bend or break, remove or otherwise manipulate needles by hand. After they are used, disposable syringes and needles, scalpel blades and other sharp items are to be immediately placed in puncture-resistant, labeled containers for disposal.

Phlebotomy needles must not be removed from holders unless required by a medical procedure. The intact phlebotomy needle/holder must be placed directly into an appropriate sharps container.

Figure 5: Sharps Container



Image Courtesy of Joe Mabel, photographer via Wikimedia Commons. Published under the terms of GNU Free Documentation License (GFDL). "Copyleft" granted by the photographer.

Tags and Labels

Tags or labels must be used to protect employees from exposure to potentially hazardous biological agents. All required tags must have the following:

- Tags must contain a signal word or symbol and a major message. The signal word shall be "BIOHAZARD", or the biological hazard symbol. The major message must indicate the specific hazardous condition or the instruction to be communicated to the employee.
- The signal word must be readable at a minimum of five feet or such greater distance as warranted by the hazard.
- The tag's major message must be presented in either pictographs, written text, or both.
- The signal word and the major message must be understandable to all employees who may be exposed to the identified hazard.
- All employees will be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

Figure 6: Biohazard Symbol





Image in the Public Domain

Personal Activities

Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas that carry occupational exposure. Food and drink must not be stored in refrigerators, freezers or cabinets where blood or other potentially infectious materials are stored, or in other areas.

Management of Occupational Exposure to HIV/HBV/HCV and Other Bloodborne Pathogens

An occupational exposure is defined as a percutaneous injury such as a needlestick or cut with a sharp object or contact of mucous membrane or non-intact skin (such as exposed skin that is chapped, abraded, or afflicted with dermatitis) with blood, tissue, or other potentially infectious materials.

The CDC states that the risk of infection varies case by case. Factors influencing the risk of infection include: whether the exposure was from a hollow-bore needle or other sharp instrument; to non-intact skin or mucus membranes (such as the eyes, nose, and/or mouth); the amount of blood that was involved and the amount of virus present in the source's blood.

Risk of HIV Transmission

The risk of HIV infection to a health care worker through a needlestick is less than 1 percent. Approximately 1 in 300 exposures through a needle or sharp instrument result in infection. The risks of HIV infection through splashes of blood to the eyes, nose or mouth is even smaller—approximately 1 in 1,000. There have been no reports of HIV transmission from blood contact with intact skin. There is a theoretical risk of blood contact to an area of skin that is damaged, or from a large area of skin covered in blood for a long period of time. Through December 2002, the CDC reports 57 documented cases and 139 possible cases of occupational exposure to HIV since reporting started in 1985.

Risk of Hepatitis B and C Transmission

The risk of getting HBV from a needlestick is 22 to 31% if the source person tests positive for hepatitis B surface antigen (HBsAg) and hepatitis B e antigen (HBeAg). If the source person is HBsAg positive and HBeAg negative one has a 1 to 6% risk of getting HBV unless the person exposed has been vaccinated.

The risk of getting HCV from a needlestick is 1.8%. The risk of getting HBV or HCV from a blood splash to the eyes, nose or mouth is possible but believed to be very small. As of 1999, about 800 health care workers a year are reported to be infected with HBV following occupational exposure. There are no exact estimates on how many health care workers contract HCV from an occupational exposure, but the risk is considered low.

Treatment after a Potential Exposure

Follow the protocol of your employer. As soon as safely possible, wash the affected area(s) with soap and water. Application of antiseptics should not be a substitute for washing. It is recommended that any potentially contaminated clothing be removed as soon as possible. It is also recommended that you familiarize yourself with existing protocols and the location of emergency eyewash or showers and other stations within your facility.

Mucous Membrane Exposure

If there is exposure to the eyes, nose or mouth, flush thoroughly with water, saline, or sterile irrigants. The risk of contracting HIV through this type of exposure is estimated to be 0.09%.

Sharps Injuries

Wash the exposed area with soap and water. Do not "milk" or squeeze the wound. There is no evidence that shows using antiseptics (like hydrogen peroxide) will reduce the risk of transmission for any bloodborne pathogens; however, the use of antiseptics is not contraindicated. In the event that the wound needs suturing, emergency treatment should be obtained. The risk of contracting HIV from this type of exposure is estimated to be 0.3%.

Bite or Scratch Wounds

Exposure to saliva is not considered substantial unless there is visible contamination with blood or the saliva emanates from a dental procedure. Wash the area with soap and water, and cover with a sterile dressing as appropriate. All bites should be evaluated by a health care professional.

Note: For human bites, the clinical evaluation must include the possibility that both the person bitten and the person who inflicted the bite were exposed to bloodborne pathogens.

Exposure to Urine, Vomit, or Feces

Exposure to urine, feces, vomit or sputum is not considered a potential bloodborne pathogens exposure unless the fluid is visibly contaminated with blood. Follow your employer's procedures for cleaning these fluids.

Reporting the Exposure

Follow the protocol of your employer. After cleaning the exposed area as recommended above, report the exposure to the department or individual at your workplace that is responsible for managing exposure.

Obtain medical evaluation as soon as possible. Discuss with a healthcare professional the extent of the exposure, treatment, follow-up care, personal prevention measures, the need for a tetanus shot and other care.

Your employer is required to provide an appropriate post exposure management referral at no cost to you. In addition, your employer must provide the following information to the evaluating health care professional:

- A description of the job duties the exposed employee was performing when exposed.
- Documentation of the routes of exposure and circumstances under which exposure occurred.
- Results of the source person's blood testing, if available.
- All medical records that you are responsible to maintain, including vaccination status, relevant to the appropriate treatment of the employee.

Evaluation and Clinical Management

Before 1996, there were three medications that were available to treat HIV. These drugs were used singly and were of limited benefit. In 1996 researchers discovered that taking combinations of these medications with new medications—either protease inhibitors or non-nucleoside reverse transcriptase inhibitors—dramatically reduced the amount of HIV, or viral load, in the bloodstream of a person infected with HIV.

When used in combination each drug targets a separate part of the HIV virus and its replication. The reduction of deaths from AIDS in the United States has been primarily attributed to this combination therapy, called "highly active antiretroviral therapy" (HAART).

Each HIV-infected patient initially entering into care should have a complete medical history, physical examination, laboratory evaluation, and counseling. The purpose is to confirm the presence of HIV infection, obtain appropriate baseline historical and laboratory data, assure patient understanding about HIV infection, and initiate care as recommended by the HIV primary care guidelines and by the opportunistic treatment and prevention guidelines. Baseline information then is used to define management goals and plans (DHHS, 2008).

The following laboratory tests should be performed for a new patient during initial patient visits:

- HIV antibody testing (if prior documentation not available) or if HIV RNA is undetectable;
- CD4 T-cell count;
- Plasma HIV RNA (viral load);
- Complete blood count, chemistry profile, transaminase levels, BUN and creatinine, urinalysis, screening test for syphilis (e.g., RPR, VDRL, or treponema EIA), tuberculin skin test (TST) or interferon- γ release assay (IGRA) (unless there is a history of prior tuberculosis or positive TST or IGRA), anti-Toxoplasma gondii IgG, hepatitis A, B, and C serologies, and Pap smear in women;
- Fasting blood glucose and serum lipids if the patient is considered at risk for cardiovascular disease and for baseline evaluation prior to initiation of combination antiretroviral therapy; and
- For patients who have pretreatment HIV RNA $>1,000$ copies/mL, genotypic resistance testing when the patient enters into care, regardless of whether therapy will be initiated immediately. For patients who have HIV RNA levels of 500–1,000 copies/mL, resistance testing also may be considered, even though amplification may not always be successful (BII). If therapy is deferred, repeat testing at the time of antiretroviral initiation should be considered (DHHS, 2008).

In addition:

- Testing for Chlamydia trachomatis and Neisseria gonorrhoeae is encouraged to identify both recent high-risk sexual behavior and the need for sexually transmitted disease (STD) therapy; and
- Chest x-ray in the presence of pulmonary symptoms or with a positive TST or IGRA test (DHHS, 2008).

The CD4+ T-cell count (or CD4 count) serves as the major clinical indicator of immunodeficiency in patients who have HIV infection. It is the most important factor in deciding whether to initiate antiretroviral therapy and opportunistic infection prophylaxis, and it is the strongest predictor of subsequent disease progression and survival according to clinical trials and cohort studies (DHHS, 2008).

Many studies have demonstrated that better outcomes are achieved in HIV-infected outpatients cared for by a clinician with HIV expertise. Appropriate training and experience, as well as ongoing continuing education, are important components for optimal care. Primary care providers without HIV experience, such as those who provide service in rural or underserved areas, should identify experts in the region who will provide consultation when needed (DHHS, 2008).

Prevention

The CDC's Advancing HIV Prevention (AHP) program aims to reduce barriers to early diagnosis of HIV infection and increase access to quality medical care, treatment, and ongoing prevention services for HIV-positive persons and their partners using a 4-point strategy:

1. Incorporate HIV testing as a routine part of care in traditional medical settings.
2. Implement new models for diagnosing HIV infections outside medical settings.
3. Prevent new infections by working with people diagnosed with HIV and their partners.
4. Further decrease mother-to-child HIV transmission (CDC, 2007b).

Clinicians can greatly affect patients' risks for transmission of HIV to others by performing a brief screening for HIV transmission risk behaviors; communicating prevention messages; discussing sexual and drug-use behavior; positively reinforcing changes to safer behavior; referring patients for such services as substance abuse treatment; facilitating partner notification, counseling, and testing; and identifying and treating other STDs. These measures may also decrease patients' risks of acquiring other STDs and bloodborne infections (MMWR, 2003).

Behavior Change for HIV Prevention

In instances where national epidemics have been reversed a number of evidence-based studies have shown that broad-based behavioral changes were central to success. A comprehensive review of the evidence documents both the efficacy (the impact seen in a clinical trial setting) and the effectiveness (the impact seen in real-world settings) of behavioral HIV prevention efforts. Hundreds of randomized controlled trials have demonstrated that individual, small group, and community-level interventions can generate safer behaviors (Global HIV Prevention Working Group, 2008).

Studies in low- and middle-income countries among young people, sex workers, and other populations have demonstrated that prevention programs have the ability to change sexual and drug-use behaviors in resource-limited settings to prevent HIV transmission. The prevention programs have used the following evidence-based approaches to prevent HIV infection:

- Programs target individual behavior.
- Emphasis is on broad-based efforts to alter social norms and address the underlying drivers of the epidemic.

In addition, there is effective use of available tools such as:

- Treatment of sexually transmitted infections (STIs).
- Medical male circumcision.
- Substitution therapy for chemical dependence.
- Programs that provide access to clean injecting equipment (Global HIV Prevention Working Group, 2008).

Using these and other interventions aimed at behavioral change, several countries have had dramatic successes in curbing the spread of HIV within their borders:

- In **Brazil**, public health campaigns have encouraged open discussion of HIV, frank public-awareness campaigns, condom promotion, focused behavioral interventions, syringe and needle exchange, school-based HIV education, prevention services in prisons, and voluntary HIV counseling and testing. Especially noteworthy is Brazil's success in reversing a serious epidemic among injection drug users. Condom use increased by almost 50 percent among sexually active adults between 1998 and 2005, and focused behavior change prevention programs also maintained HIV prevalence at low levels among sex workers. Although the World Bank had predicted in 1990 that 1.2 million Brazilians would be infected by 2000, fewer than 600,000 were living with HIV in 2002.
- In **Australia**, broad public awareness campaigns have focused on behavioral interventions among gay men, syringe exchange programs, and voluntary counseling and testing for HIV. As a result of Australia's early, comprehensive response, focused largely on behavior change, annual HIV incidence peaked in 1985 and declined through the end of the 1990s. Between 1990 and 2000, the annual number of new HIV diagnoses fell by half.
- In what is perhaps the world's best-documented national prevention success, **Uganda** moved in the mid-1980s to address the rapid spread of HIV, implementing public-awareness campaigns that encouraged young people to delay initiation of sex and urged sexually active adults to reduce the number of sex partners. In the 1990s, the country supplemented these early measures with condom promotion and investment in voluntary counseling and testing. From the earliest years, community-generated programs played a major role in the country's AIDS response. The results of these efforts were remarkable. The percentage of young people who were sexually active fell by more than half between 1989 and 1995, and Ugandans were significantly less likely to have multiple sex partners than people living in neighboring countries. Increases in condom use in the 1990s helped preserve and accelerate early prevention gains. By the late 1990s, infection levels in capital city Kampala had fallen by two-thirds, and national HIV prevalence had been cut in half.
- In **Thailand** the annual incidence of HIV has declined from 143,000 in 1991 to 19,000 in 2003 through the country's innovative 100% condom program, which promoted the use of condoms in brothels. The government also promoted public education about HIV and fair treatment of those infected with the virus. Had Thailand not brought comprehensive HIV prevention to scale, it would now have 7.7 million HIV infections, rather than the estimated 580,000 residents currently living with HIV.

- In **Senegal**, early investment in awareness-raising, condom promotion, intensive prevention services for populations at greatest risk, and engagement of community leaders and faith-based organizations, combined with high rates of medical male circumcision, succeeded in keeping national HIV prevalence below 1 percent, when neighboring countries experienced significant increases in infections (Global HIV Prevention Working Group, 2008).

Together, these examples suggest that countries in a wide variety of settings have contributed to changes in HIV risk behaviors and, in doing so, have saved countless lives by averting HIV transmission. Based on the totality of epidemiological evidence, it appears that national implementation of evidence-informed combination HIV prevention efforts in the 1990s was associated with a 50 to 90 percent decline in HIV incidence and prevalence in key populations (Global HIV Prevention Working Group, 2008).

HIV and AIDS in Florida

In 1988 Florida became one of the first states to enact legislation to address the AIDS epidemic. The Florida Omnibus AIDS Act stipulates that all licensed health care providers must take a course on HIV/AIDS and health care facilities must educate their workforce on HIV infection. It also sets standards for testing, confidentiality, informed consent, reporting requirements, and discrimination. For more information see: http://www.doh.state.fl.us/DISEASE_CTRL/aids/legal/hartog.pdf.

Testing, Informed Consent, and Confirmation

The Florida Omnibus AIDS Act stipulates that HIV testing must be “informed, voluntary, and confidential” and “shall be preceded by an explanation of the right to confidential treatment of information identifying the subject of the test and the results of the test to the extent provided by law” (The Florida Senate, 2008).

Consent does not have to be in writing but an explanation of the test and an indication that consent was obtained must be recorded in the medical chart. In addition, the person tested must be informed that a positive test will be reported to the county health department with sufficient information to identify the test subject. “All reasonable efforts” must be made to inform the subject of a positive test result. In addition, healthcare providers are required to confirm positive test results through corroborating tests before informing the test subject of the result.

There are some exceptions in Florida law to the requirement to obtain informed consent prior to conducting a test for HIV (The Florida Senate, 2008):

- When a person is convicted of prostitution or procuring another to commit prostitution.
- When an inmate is released from prison.
- When deemed necessary by a medical examiner.
- During bona fide medical emergencies.
- When obtaining informed consent is detrimental to the patient.
- Following commission of a sexual offense.
- For epidemiological research.
- When a child is deemed too young to give informed consent.
- When a healthcare worker has had significant exposure to a patient’s blood.
- When donating blood, tissue, or sperm to specialty banks.

- From a juvenile during the intake process at a juvenile assessment center or juvenile detention facility.

The Florida Omnibus AIDS Act also directs the Florida Department of Health to conduct epidemiologic studies and provide testing and patient care services throughout the state. In 2007, there were 323,028 HIV tests performed in Florida by county public health departments, with 1.6% of the tests being positive (Florida Department of Health, 2007).

Confidentiality

In Florida, all patient medical records are confidential but to encourage voluntary testing the Omnibus AIDS Act makes HIV test results “superconfidential”. The superconfidentiality applies only to the results of laboratory reports and does not extend to clinical observations regarding symptoms associated with AIDS. Breach of confidentiality of sexually transmitted disease information is a third degree felony.

Pregnancy

During pregnancy every person—including physicians and midwives—attending a pregnant woman for conditions relating to pregnancy during the period of gestation and delivery must offer the woman tests for sexually transmissible diseases, including HIV. The woman must be informed of the tests and has the right to refuse testing. If a woman objects to testing, the healthcare provider must make a “reasonable attempt” to obtain a written statement of objection, signed by the woman, which must be placed in the woman's medical record (The Florida Senate, 2008).

Minors

Minors under the age of 18 do not need parental consent for HIV and STD testing. Florida law specifically forbids informing the parents of the minor's HIV test or results.

Discrimination

The Florida Omnibus AIDS Act prohibits discrimination against those who are HIV positive in employment, housing, public services, health and life insurance, and public accommodations.

Notifiable Disease

HIV and AIDS are notifiable diseases in Florida. Licensed practitioners who diagnose, treat, or suspect a case of HIV or AIDS should make a report to their local health department within two weeks of examining a patient. In 1996 the Act was amended to require physicians and laboratories to report positive test results to state health authorities.

Conclusion

There have been many well-documented and successful strategies employed in the United States and throughout the world to curb the devastating expansion of the AIDS epidemic. Nevertheless, the cost in lives and lost productivity remains a staggering problem. In the United States there are 40,000 new infections each year and worldwide there are about 2.5 million new infections annually.

AIDS remains the 4th leading cause of death among Floridians between the age of 25 and 44 and it is the leading cause of death for African-American Floridians in this age group. Although more men are infected with HIV, women are equally at risk for the disease.

As healthcare workers, we have the ability to encourage practices that are known to reduce the spread of AIDS including behavioral change, prompt treatment of sexually transmitted disease, encouraging use of clean injection drug equipment, routine HIV testing, patient education and counseling, and consistent condom use. The goal is to eliminate new HIV infections entirely in Florida and throughout the United States and the world—we all play a vital and important role in accomplishing this goal.

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Post Test

1. According to the best available data, it now appears that the global HIV epidemic:
 - a) Has increased markedly since the 1990s.
 - b) Is no longer a threat to life because of new AIDS drugs.
 - c) Stabilized in the late 1990s.
 - d) Has been nearly eradicated in the United States.
2. The majority of HIV cases in the United States:
 - a) Are in African-American women.
 - b) Occur in men, accounting for about 74% of cases.
 - c) Occur in women of European ancestry.
 - d) Are seen in teenage boys.
3. Through the end of 2007, Florida ranked 3rd in the nation in the number of cumulative AIDS cases. In 2005, HIV was the leading cause of death in Florida among:
 - a) Black males and females ages 25 to 44.
 - b) White males and females ages 25 to 44.
 - c) Hispanic males and females ages 25 to 44.
 - d) Russian-born males and females ages 25 to 44.
4. AIDS is caused by a:
 - a) Retrovirus that attacks the heart and eventually causes heart failure.
 - b) Variant of the hepatitis virus that attacks the liver and brain.
 - c) Retrovirus that attacks the immune system destroying the body's ability to fight infection and disease.
 - d) Genetic abnormality passed from father to son.
5. The term AIDS can be used interchangeably with the term HIV.
 - a) True
 - b) False
6. The "natural history" of HIV infection:
 - a) Begins with viral transmission of the disease and ends with AIDS.
 - b) Refers to the history of the spread of AIDS from Africa to the rest of the world, and how the disease has affected humans.
 - c) Tells how the HIV virus has changed since it first infected humans.
 - d) Begins with symptomatic HIV infection and ends with AIDS.
7. There are several tests available to test for HIV infection. A positive test means you:
 - a) Do not have HIV.
 - b) Are infected with HIV, but cannot infect another person for at least 6 months.
 - c) Are infected with HIV and can infect others who come into contact with your blood, semen or vaginal fluids.
 - d) Do not have HIV, but may be in the "window period" with no detectable antibodies for up to 6 months.

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8. Transmission of HIV can occur through:
 - a) Sitting in the same room with an infected person.
 - b) An infected woman breastfeeding her infant.
 - c) Shaking the hand of an infected person.
 - d) Sharing food with an infected person.
9. Approximately 25 % of people in the United States who are infected with HIV do not know they are infected. All of the following is true about HIV testing except:
 - a) Routine HIV testing can lead to early medical treatment that lowers HIV viral load and reduces risk of transmission to others.
 - b) Infected people who are aware of their HIV status often decrease behaviors that can spread HIV.
 - c) People who learn they have HIV are more likely to engage in high-risk behaviors that can spread the virus.
 - d) Rapid HIV tests are more than 99% accurate.
10. During pregnancy:
 - a) An HIV infected woman rarely passes the infection to the baby.
 - b) C-sections actually increase the risk of infecting the baby with HIV.
 - c) The HIV transmission rate to the baby drops with the use of AZT.
 - d) HIV counseling is voluntary in most states.
11. Universal and Standard Precautions:
 - a) Are not implemented unless a patient has been diagnosed with AIDS or hepatitis C.
 - b) Must include the use of latex gloves.
 - c) Include PPEs such as masks, gloves, protective eyewear and face shields.
 - d) Consider all body fluids, including sweat, to be potentially infectious.
12. Hand hygiene:
 - a) Is required only after contact with blood or other infectious materials.
 - b) Is not required after removing gloves.
 - c) Includes the use of lotion to prevent dry skin.
 - d) Is required after removal of gloves or other PPEs and upon leaving the work area.
13. Biohazard labels:
 - a) Must be written in the three major languages of the workers employed in that area.
 - b) Can only be presented in pictographs.
 - c) Are used to protect employees from hazardous biological exposure.
 - d) Need not be understood by housekeeping staff.
14. An example of an occupational exposure is:
 - a) Carrying a red-bagged urine specimen to the lab.
 - b) Taking the temperature of an HIV infected patient using Universal Precautions.
 - c) A needlestick from a patient who does not have HIV.
 - d) Assisting an HIV infected patient to walk in the hallway using Universal Precautions.

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15. HIV transmission to health care workers:
- Is most likely through a blood splash to the eyes, nose or mouth.
 - Is approximately 22 to 31% from a needlestick from an infected patient.
 - Has never been caused by blood contact with intact skin.
 - Does not depend on the amount of blood or virus present in the exposure.
16. Treatment after a potential exposure includes all of the following except:
- Washing the affected area with soap and water.
 - Flushing exposed eyes, nose or mouth with water, saline or sterile irrigants.
 - Removal of potentially contaminated clothing.
 - Application of antiseptics in place of washing.
17. Sharps injuries:
- Should be "milked" or squeezed.
 - Must not be treated with antiseptics.
 - Should be washed with soap and water.
 - Are not considered an occupational exposure.
18. When an occupational exposure occurs:
- You only need to obtain a medical evaluation if the source is known to have HIV.
 - Your employer is required to provide an appropriate post exposure management referral at no cost to you.
 - Bites should be cleaned with hydrogen peroxide.
 - You are responsible for the cost of any treatment deemed necessary by your employer.
19. The combination drug therapy currently used to treat HIV is called:
- Toxoplasma gondii*.
 - IGRA.
 - HAART.
 - CD4 count.
20. Programs aimed at interventions to change behavior:
- Are rarely successful.
 - Have changed sexual and drug-use behavior in resource-limited settings.
 - Have shown that providing access to clean injecting equipment actually encourages drug addiction.
 - Have shown that use of condoms is not effective in preventing spread of HIV.
21. According to the Florida Omnibus AIDS Act HIV testing must be "informed, voluntary, and confidential".
- True
 - False
22. To encourage voluntary testing, Florida law makes HIV test results "superconfidential" and breach of this confidentiality is:
- A misdemeanor.
 - Cause for dismissal.
 - Punishable by a \$10,000 fine.
 - A third degree felony.

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Answer Sheet

Florida HIV – 1 Unit

Name (Please print your name): _____

Date: _____

Passing score is 80%

1. _____
2. _____
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21. _____
22. _____

Course Evaluation

Please answer each of the following questions. Questions with asterisks (*) are required.

* 1. This course met the goals and learning objectives.

Yes No

* 2. The author was well prepared to write about the content in a way that facilitated my learning.

Yes No

* 3. This course was free from commercial bias.

Yes No

* 4. The learning activity met my continuing education needs.

Yes No

* 5. The learning activity took me 60 minutes per contact hour. (If you answer “No”, please enter the total time it took to finish the course, test, and evaluation.)

Yes

No**

** If your answer was “No”, how long did it take to finish the course, test, and evaluation?

6. My professional educational level is (check one):

Nursing

Nurse Aide LVN/LPN RN (diploma) RN (AD)

BSN MSN Nurse Practitioner / Advanced Practice Nurse

PhD / DNSc

Therapy

OT Aide COTA OT MOT OTD

PT Aide PTA PT MPT MSPT DPT PhD

Other (please specify): _____

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7. I heard about ATrain Education from:

- | | |
|------------------------------------------------------|-------------------------------------------------------|
| <input type="checkbox"/> Search engine | <input type="checkbox"/> Advertisement |
| <input type="checkbox"/> Government or Board website | <input type="checkbox"/> Returning customer |
| <input type="checkbox"/> Friend | <input type="checkbox"/> Publication (Magazine, etc.) |
| <input type="checkbox"/> Other _____ | |

8. I found the ATrainCEU.com website easy to use:

- Yes No_____

9. Comments or suggestions (optional): _____

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Registration Information

Please answer all of the following questions (*required).

*Name: _____

*Address: _____ City _____ State ____ Zip _____

*Phone: _____

*Professional Designation: _____

*License Number and State: _____

*Please e-mail my certificate: Yes No

*Email: _____

(Note: If you request an email certificate we will not send a copy of your certificate by US Mail.)

Payment Options

You may pay by credit card or by check.

Fill out this section only if you are **paying by credit card**.

1 contact hour - \$10.00

Fill out this section if paying by credit card

Name _____

Address: (if different) _____ City _____ State ____ Zip _____

Card type: Visa MC American Express Discover

Card number _____

Expiration date _____

Test Completion and Mailing Instructions

1. Complete all forms:

- Answer Sheet
- Evaluation Learning Activity
- Registration Form (this page)

2. If you are **paying by check**, prepare a check for \$10 made out to ATrain Education, Inc.

3. Mail the completed forms and your payment to:

ATrain Education, Inc
5171 Ridgewood Rd
Willits, CA 95490

Once we receive your forms and payment, we will mail (or email, if you request it) your certificate of completion. If you have any questions or concerns, please call or contact us at info@ATrainCEU.com. And thanks for taking the ATrain!