HIV/AIDS For Florida Nurses
1 Contact Hour

Learning objectives
- Explain how HIV is transmitted.
- Discuss the incidence and prevalence of HIV infection.
- Identify groups at high-risk for HIV infection.
- Identify infections common to HIV/AIDS.
- Explain strategies to prevent HIV infection in healthcare workers and in the general public.
- Identify treatment options for HIV infection.

HIV transmission
The human immunodeficiency virus (HIV) is most commonly transmitted during anal or vaginal sex and needle or syringe use. In the United States, HIV is transmitted mainly by:
- Having anal or vaginal sex with someone infected with HIV without using condoms or taking medications to treat or prevent HIV.
- Sharing needles or syringes, rinse water, or other equipment used to prepare injectable drugs with someone who has HIV.

**EBP alert!** “HIV can live in a used needle up to 42 days depending on temperature and other factors.” This means that nurses and other healthcare professionals must educate persons who use, or who are at risk for using, injectable drugs about how long the HIV virus can live in a used syringe. They must also teach patients NOT to share syringes, needles, rinse water, etc. with any other person.

Only certain body fluids from an HIV infected person can transmit the virus. These include:
- Blood.
- Semen.
- Rectal fluids.
- Vaginal fluids.
- Breast milk.

**Nursing consideration:** Some people (including some healthcare professionals) believe that HIV is transmitted in saliva. HIV is not spread through saliva. However, deep-open mouth kissing can spread the virus if both partners have sores or bleeding gums and blood from the HIV infected person gets into the bloodstream of the non-infected person. Nurses must educate patients and other healthcare colleagues that saliva does not harbor the virus but HIV can be transmitted via blood in the mouths of partners during deep, open-mouth kissing.

**HIV alert!** HIV is not transmitted through ordinary contact such as hugging, dancing, sharing dishes, or closed mouth kissing, or shaking hands. The virus cannot be transmitted through the air, water, or insect bites. The virus is not spread via saliva, tears, or sweat that is not mixed with HIV infected blood.

**EBP alert!** Research shows that oral sex is less risky than anal or vaginal sex regarding HIV transmission. Anal sex is the most risk type of sex for HIV transmission. Thus, nurses must be sure to include this information when providing patient education.

Other less common documented ways that HIV has been spread include:
- From mother to child during pregnancy or breastfeeding.
- Being stuck with an HIV-contaminated needle or other sharp object.
- During oral sex.
- Receiving blood products that are contaminated with HIV.
- Eating food that was pre-chewed by an HIV-infected person when blood from the infected person mixes with blood in the mouth of a non-infected person.
- Being bitten by an HIV infected person if blood is transmitted into an open area on the non-infected person’s skin.
- Deep-open mouth kissing when blood is exchanged.

**EBP alert!** Research shows that if someone has another sexually transmitted disease (STD) he/she is at higher risk for becoming infected with HIV. Many STDs cause open genital sores, which can provide a pathway for the virus to enter the body. Research also shows that uncircumcised men are at greater risk for infection.

Nurses should know about all possible means of transmission and include this knowledge in their patient/family education endeavors.

Incidence and prevalence and high risk groups
According to the Centers for Disease Control and Prevention (CDC) more than 1.2 million people 13 years of age and older are living with HIV infection. Of those infected with the virus, 12.8% or 156,300 of them are not aware that they are infected.

In 2013, the most recent year for which statistics have been compiled, about 47,352 people with diagnosed with HIV infection in the United States.

The estimated incidence of infection has remained stable in recent years at about 50,000 new HIV infections occurring annually.

However, some groups continue to be unduly affected. Men who have sex with men bear the greatest burden of HIV infection, and among races, African Americans are disproportionately affected.

Data provided by the CDC show that the following groups are most affected:
- Gay, bisexual, and other men who have sex with men (MSM) of all races and ethnicities are the populations most significantly affected by HIV.
- White MSM continue to account for the largest number of HIV infections, followed closely by black MSM.
Blacks/African Americans are most severely burdened by HIV compared with other races and ethnicities.
Hispanics/Latinos are also disproportionately affected by HIV. Hispanics/Latinos accounted for 16% of the United States population in 2010 but accounted for 21% of new HIV infections.
Heterosexuals and injectable drug users continue to be affected by HIV.5
New HIV infections among women are mostly due 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.
Injection drug users account for eight percent of new HIV infections in 2010 and 15% of people living with HIV infection in 2011.

Infections common to HIV/AIDS

Nursing consideration: There are a number of infections/complications that are common to HIV/AIDS. It is important that nurses are aware of these factors and be prepared to provide nursing care and counseling if they develop.

Infections/complications common to those infected by the HIV virus include2,3,5,6:

- **Candidiasis:** This inflammatory infection leads to a thick white coating on mucous membranes of the mouth, tongue, esophagus, or vagina.
- **Cervical cancer:** In HIV infected women the prevalence of human papillomavirus (HPV) infection is increased. The incidence of cervical intraepithelial dysplasia is up to 60%. However, an increase in the incidence of cervical cancer has not been proved. But if cervical cancers do occur in HIV infected women they are more extensive, harder to cure, and have higher recurrence rates after treatment.
- **Cryptococcal meningitis:** This type of meningitis is caused by a fungus found in soil.
- **Cryptosporidiosis:** Caused by an intestinal parasite commonly found in animals, it is ingested via contaminated food or water. The parasite grows in the intestines and bile ducts, causing severe chronic diarrhea in people with AIDS.

Strategies to prevent HIV infection

**Prevention strategies for the general public**

Stacey is a college freshman and is excited about going to her first fraternity party. Before leaving for college Stacey assures her mother that “I know all about safe sex and how to protect myself. And I’m not going to have sex with just anybody. You’ve talked to me and we had all those sex education classes in high school. Don’t worry! After all I’m 18!” Right before she leaves for the party her cell phone rings. It is her older sister Noreen calling. Stacey is relieved that it is not her mother. She believes that her sister is someone who really understands “how things are today.” Imagine Stacey’s surprise when Noreen tells her she is calling to warn her against alcohol and drug intake. “I know what it’s like to be away from home for the first time. You’re feeling really free and grown-up. Just remember that being under the influence of even a little alcohol or drugs can make you do things you would never dream of doing when sober. It also makes you more vulnerable to having others take advantage of you. Believe me I know. I want you to be smarter than me!”

Stacy’s sister is offering some sound advice. Alcohol and/or other drug use can make people careless about behavior, including being careful to practice safe sex.7. It is imperative that nurses take a leading role in educating the public about strategies to prevent HIV transmission. Here are prevention recommendations that everyone should follow and that nurses should be sure to tell their patients about.

- **Limit your number of sexual partners.** The more sexual partners you have the greater the risk of having a partner who is HIV positive and whose disease is not well controlled or who has another sexually transmitted disease (STD). If you have more than one sexual partner you should be tested regularly for HIV infection.

**EBP alert!** Research shows that inconsistent or nonuse of condoms can lead to STD acquisition. Studies that compare the rates of HIV infection between condom users and nonusers who have HIV infected partners show that consistent condom use is highly effective in preventing HIV transmission. Nurses must teach patients about the correct use of condoms.

- **Know your HIV status.** Know your partner(s)’ HIV status. Talk to your partner about HIV testing and get tested BEFORE you have sex.
- **Use a new condom every time you have sex.** Use only water-based lubricants because oil-based lubricants can weaken condoms making them more likely to break or tear. Women can use a female condom.

Candidiasis: It is imperative that nurses take a leading role in educating the public about strategies to prevent HIV transmission. Here are prevention recommendations that everyone should follow and that nurses should be sure to tell their patients about.

- **Cytomegalovirus:** This is a common herpes virus that is transmitted in body fluids such as saliva, blood, urine, semen, and breast milk. Inactivated by the body’s immune system it remains dormant until the immune system weakens, allowing the virus to resurface and damage eyes, lungs, or other organs.
- **Kaposi’s sarcoma:** This is a cancer of the blood vessel walls. Rare in people who are not HIV infected, it is common in those infected by HIV.
- **Non-Hodgkin lymphoma:** Incidence of this cancer is 50 to 200 times higher in HIV infected patients. Most cases are aggressive.
- **Primary CNS (central nervous system) lymphoma:** Incidence of this lymphoma is increased in HIV infected patients with very low CD4 counts. These lymphomas originate in CNS tissue and have a poor prognosis.
- **Squamous cell cancer of the anus and vulva:** These cancers occur more often in HIV infected patients. This increase is believed to be caused by both high-risk behaviors and immunosuppression by HIV.
- **Toxoplasmosis:** This is a possibly deadly infection caused by a parasite spread mainly by cats. Parasites are passed in the cat’s stools, and may spread to other animals or humans.
- **Tuberculosis (TB):** In poorer nations that lack medical resources TB is the most common opportunistic infection associated with HIV and is a leading cause of death among people with AIDS.

Nursing consideration: It is important to remember that HIV infection does not mean that the patient has acquired immunodeficiency syndrome (AIDS). AIDS is not officially diagnosed until the patient’s CD4+ T-cell count falls below 200 cells/ul or associated clinical conditions such as Kaposi’s sarcoma, toxoplasmosis, or cryptococcal meningitis.

How many patients infected by HIV have progressed to developing AIDS? According to the CDC about 1,194,039 people in the United States have been diagnosed with AIDS, and approximately 658,507 people with the diagnosis of AIDs have died overall. However, these deaths can be due to any cause. The deaths may or may not be related to AIDS.

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Avoid drinking alcohol and using other drugs, especially in unfamiliar surroundings. Alcohol and drug use can make you careless in your behavior as well as making you vulnerable to being taken advantage of by others. Get tested for STDs and get appropriate treatment if needed. Insist that sexual partners be tested and treated for STDs as well. Do not inject drugs. If you do use drugs use only sterile equipment and water. Never share equipment (e.g. cocaine spoons, needles, syringes, rinse water) with other people. Seek help to stop using drugs.

Avoid drinking alcohol and using other drugs, especially in unfamiliar surroundings. Alcohol and drug use can make you careless in your behavior as well as making you vulnerable to being taken advantage of by others.

Get tested for STDs and get appropriate treatment if needed. Insist that sexual partners be tested and treated for STDs as well.

Do not inject drugs. If you do use drugs use only sterile equipment and water. Never share equipment (e.g. cocaine spoons, needles, syringes, rinse water) with other people. Seek help to stop using drugs.

If you are pregnant or become pregnant seek medical help immediately. Be tested for HIV and other STDs. You can pass diseases to your baby during pregnancy. If you are treated during pregnancy you reduce your baby’s risk of infection significantly.

Another option for prevention of HIV infection is pre-exposure prophylaxis (PrEP). PrEP is NOT for everyone. The CDC recommends that PrEP be considered for people who are HIV negative but are at substantial risk for HIV infection. People who meet these criteria include anyone who:

- Is in an ongoing relationship with an HIV infected partner.
- Is not in a mutually monogamous relationship with a partner who recently tested HIV negative and is a:
  - Gay or bisexual man or woman who has had sex without a condom or been diagnosed with a sexually transmitted infection within the past six months.
  - Heterosexual man or woman who does not regularly use condoms when having sex with partners known to be at risk for HIV.
- Has, within the past six months, injected illicit drugs and shared equipment or been in a treatment program for injection drug use.

Nursing consideration: PrEP is not guaranteed to be 100% effective. So PrEP should be used in conjunction with the other previously described prevention strategies.

PrEP is a prescription pill called Truvada, which contains two medications that are also used to treat HIV. The two medications are tenofovir and emtricitabine. They work by blocking pathways that HIV uses to establish an infection. It is imperative that PrEP be taken daily to make sure that the level of medication in the bloodstream is consistent. If Truvada is not taken daily there may not be enough medication to effectively stop the virus from causing infection.

EBP alert! Research indicates that PrEP may reduce the risk of HIV infection up to 92% if taken consistently according to prescriber’s instructions compared to those people who did not take the medication. Thus, when working with people who are taking PrEP nurses must stress the importance of taking the medication daily as prescribed and of implementing other HIV prevention strategies as well.

Janet is a registered nurse who is just completing a double shift totaling 16 hours. She volunteered for the over-time work because of a bad snowstorm that prevented many of her colleagues from getting to work. Janet must give one more injection for pain before she goes off duty. Tired and in a hurry Janet hastily pulls on a pair of latex gloves without noticing that one of the gloves has a small tear. She administers the injection and before she can dispose of the needle and syringe the glove rips. Startled Janet’s hand trembles and she accidentally sticks herself with the dirty needle.

A sharp injury is a matter of concern for any healthcare worker. Fortunately occupational transmission of HIV to healthcare workers is very rare. According to CDC data, only 58 cases of confirmed occupational transmission of HIV to healthcare workers have occurred in the United States. Of these cases, only one confirmed case has been reported since 1999. This number may be higher, however, because case reporting to the CDC is voluntary.

Of the 58 infected healthcare workers:
- 49 were exposed to HIV infected blood.
- Four were exposed to concentrated virus in a laboratory.
- One was exposed to visibly blood fluid.
- Four were exposed to unspecified body fluids.
- 24 were nurses.
- 20 were non-clinical laboratory technicians.
- Six were nonsurgical physicians.

Prevention strategies for healthcare workers

- Be sure to use condoms correctly. Here are some guidelines developed by the Centers for Disease Control and Prevention (CDC) for correct male condom use.
  - Use a latex condom.
  - Use a new condom for every act of vaginal, anal, and oral sex. The condom should be applied before any genital contact and worn throughout the entire sex act.
  - If the condom lacks a reservoir tip, pinch the tip, leaving about a half-inch space to collect semen.
  - After ejaculation and before the penis becomes soft, grip the rim of the condom and withdraw. Then pull the condom off the penis, being careful that the semen does not spout out.
  - Wrap the condom in a tissue and dispose of it in the trash where other people will not handle it.
  - If the condom breaks at any time during sexual activity stop immediately, withdraw, remove the broken condom, and put on a new condom.
  - Ensure that there is adequate lubrication during vaginal and anal sex. Use water-based not oil-based lubricants.

- Avoid drinking alcohol and using other drugs, especially in unfamiliar surroundings. Alcohol and drug use can make you careless in your behavior as well as making you vulnerable to being taken advantage of by others.

- Get tested for STDs and get appropriate treatment if needed. Insist that sexual partners be tested and treated for STDs as well.

- Do not inject drugs. If you do use drugs use only sterile equipment and water. Never share equipment (e.g. cocaine spoons, needles, syringes, rinse water) with other people. Seek help to stop using drugs.

- If you are pregnant or become pregnant seek medical help immediately. Be tested for HIV and other STDs. You can pass diseases to your baby during pregnancy. If you are treated during pregnancy you reduce your baby’s risk of infection significantly.

The United States Public Health Service recommendations for management of healthcare personnel who are exposed to blood and/or other body fluids at work that might contain HIV stress the need for:

- Primary prevention strategies.
- Prompt reporting and management of occupational exposures.
- Adherence to recommended HIV post-exposure prophylaxis (PEP).
- Expert consultation regarding exposure management.
- Follow-up and monitoring of exposed healthcare workers.
- Psychological counseling.

PEP involves taking anti-HIV medications post-exposure and is implemented according to the following guidelines:

- Anti-HIV medications must be taken as soon as possible (within three days/72 hours) of exposure before the virus has a chance to significantly replicate.
- PEP consists of two to three antiretroviral medications taken for 28 days. PEP may cause nausea, fatigue, and diarrhea.
Treatment of HIV infection

There is currently no cure for HIV infection or any vaccine for prevention. Treatment is based on a medication regimen called ART. Antiretroviral therapy (ART) involves the administration of HIV medications referred to as an HIV regimen. ART does not cure HIV infection but helps infected people to live longer and healthier lives and reduces the risk of HIV transmission17,18.

Nursing consideration: It is absolutely essential that patients adhere to their ART regimen as prescribed. Expense of the drugs and side effects may affect adherence. Adverse drug interactions with other HIV, prescription, and/or over-the-counter medications are possible. Nurses should refer patients to financial assistance resources as needed. They should also advise patients about potential side effects (e.g. headache, dizziness, liver damage) and drug interactions and what to do if they occur18.

HIV attacks and destroys infection fighting cells (CD4 cells) of the immune system. Destruction of such cells makes it difficult to combat/ resist infections and certain cancers that are related to HIV infection. ART works by preventing HIV from multiplying and reduces the amount of HIV in the body18.

Nursing consideration: HIV has the potential to mutate into variations that can become resistant to current HIV medications. Failure to adhere to ART as prescribed increases the risk of resistance. Resistant strains of the virus continue to multiply despite ART and increase the chances of treatment failure18.

Initiation of ART for HIV infection depends on several factors18:
- The overall state of health of the infected person.
- The presence of any co-existing conditions including HIV-related illnesses.
- The patient’s CD4 count. A falling CD4 count indicates that the HIV is progressing and destroying more of the immune system’s infection-fighting cells.
- The readiness and willingness of the patient to adhere to a course of life-long therapy. The idea of taking medications for the rest of one’s life is a deterrent to some people.
- The ability of the patient to cope with side effects and drug interactions.

The decision to begin treatment involves appropriate education and counseling provided by healthcare professionals. Persons infected with HIV need extensive counseling and emotional support.

There are more than 25 medications currently approved to treat HIV infections. Some of these medications are available in combination in one pill. The United States Department of Health and Human Services recommends starting ART with a regimen of three HIV medications from at least two different drug classifications17.

There are six drug classes of HIV medications. They are grouped according to how the combat the virus and include17:
- Non-nucleoside reverse transcriptase inhibitors (NNRTIs).
- Nucleoside reverse transcriptase inhibitors (NRTIs).
- Fusion inhibitors.
- Integration strand transfer inhibitors (INSTIs).
- CCRS antagonists (also referred to as entry inhibitors).
- Protease inhibitors (PIs).

A patient’s first HIV regimen generally includes two NRTIs in combination with an INSTI, an NNRTI, or a PI boosted with cobicistat (Tybost) or ritonavir (Norvir)17.

A frequently asked question is “How long will it take for the medication (ART) to work?” Treatment effectiveness is measured according to viral load. Viral load is the measure of HIV in the blood. The goal of ART is to reduce the viral load to a level that is undetectable. In other words, the goal is to decrease the level of HIV in the patient’s blood to a level that is too low to be detected by a viral load test. If this happens, it means that the ART is effective17.

Nursing consideration: It is possible to achieve an undetectable viral load within three to six months. However, this does not mean that the person is cured of HIV. Effective ART helps patients with HIV to live longer, healthier lives and lowers the risk of HIV transmission17. It is very important that nurses explain how the effectiveness of ART is evaluated. It is also essential for nurses to explain that ART does not cure HIV infection.

HIV regimens are determined based on individual patient assessment. Important factors to consider include17:
- Are there other co-existing diseases or conditions in addition to the HIV infection?
- What are the side effects associated with ART? How well can patients cope with possible side effects? Do the patients have support systems (e.g. family, friends) that will help them deal with treatment adherence?
- What are the results of drug-resistance testing? Do the results of such testing indicate that the patients are resistant to certain HIV medications?
● How convenient are the proposed HIV regimens?
● What issues in the patients’ lives have the potential to make it hard for them to adhere to an HIV regimen?
● Is cost a factor? Do the patients have insurance that will cover the cost of the medications? Do they need financial assistance?

In summary, it is imperative that nurses maintain up-to-date knowledge of the status of HIV treatment as well as transmission modes and incidence and prevalence of infection. They are essential providers of patient/family education and emotional support for persons coping with a non-curable, life-long (and life-threatening) disease.

References

### HIV/AIDS FOR FLORIDA NURSES

**Final Examination Questions**

Select the best answer for questions 1 through 10 and mark your answers online at [CNA.EliteCME.com](http://CNA.EliteCME.com).

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tr>
<td>1. A nurse is preparing to teach a group of teen-agers about modes of HIV transmission. The nurse should explain that:</td>
<td>a. In the United States HIV is most commonly transmitted by oral sex.</td>
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<td>b. The virus can be transmitted via deep-open mouth kissing if blood is exchanged.</td>
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<td>c. The virus has been reportedly transmitted via insect bites.</td>
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<td>d. HIV infected mothers cannot pass the virus to their babies in breast milk.</td>
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<td>2. Which of the following scenarios is an accurate description of how HIV infection can be spread?</td>
<td>a. A drug user has left a used syringe in a warm room for 20 days. Another person avoids using this syringe because the virus can still be alive in the used syringe.</td>
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<td>b. A husband who is HIV positive attempts to kiss his wife good-by when he leaves from work. She turns her head away because she knows HIV can be transmitted in saliva.</td>
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<td>c. An elderly patient with severe dementia bites one of his caregivers. The caregiver’s skin remains intact. The caregiver is started on ART because this type of bite can transmit HIV.</td>
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<td>d. A college student confides in her roommate that she is HIV positive. The roommate goes to the college housing department and demands another roommate because she knows that HIV can be transmitted through casual contact.</td>
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<td>3. According to transmission and incidence and prevalence data, which of these patients are at greatest risk for becoming infected by HIV?</td>
<td>a. James who is married to a woman and also has sex with other men.</td>
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<td>b. An Asian-American woman who is single.</td>
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<td>c. A teen-ager who only participates in oral sexual activity.</td>
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<td>d. An injection drug user who abuses oral prescription pain medication.</td>
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<td>4. Which of the following statements regarding HIV incidence and prevalence is accurate?</td>
<td>a. Nearly 50% of persons infected with HIV do not know they are infected.</td>
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<td>b. The race most severely burdened by HIV is Hispanic.</td>
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<td>c. New HIV infections among women are mostly due to heterosexual contact.</td>
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<td>d. Injection drug users account for nearly 20% of new HIV infections.</td>
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<td>5. A number of diseases are associated with HIV infection including:</td>
<td>a. Development of prostate cancer</td>
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<td>b. Decreased intestinal motility leading to constipation.</td>
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<td>c. Rapid heart rate and elevated blood pressure.</td>
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<td>d. Malignancies of the blood vessel walls.</td>
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<td>6. Which of the following statements regarding HIV infection is accurate?</td>
<td>a. AIDS is diagnosed when the patient’s CD4+ count is elevated above 400 cells/ul</td>
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<td>b. The greatest burden of HIV infection is born by men who have sex with men. (Correct. Page 3)</td>
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<td>c. Oral sex is the riskiest sexual behavior for transmission of HIV</td>
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<td>d. Transmission of HIV during heterosexual contact is uncommon.</td>
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<td>7. Safe sex behaviors include:</td>
<td>a. Use oil-based lubricants with condoms.</td>
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<td>b. Condoms should be used for any genital contact but are not necessary for oral sex.</td>
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<td>c. Insist that sexual partners be tested for HIV infection prior to having sex.</td>
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<td>d. If a condom does not have a reservoir tip, expand the tip, leaving about 2 inches of space for semen collection.</td>
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<td>b. Appropriate for someone who, within the past two years, has shared illicit drug use equipment.</td>
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<td>c. Known to be 100% effective if administered correctly.</td>
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<td>d. Considered to be given to someone who is an ongoing relationship with an HIV infected partner.</td>
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<td>9. A nurse is explaining PrEP to a patient. The nurse tells the patient that:</td>
<td>a. PrEP may reduce the risk of HIV infection up to 50%.</td>
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<td>b. PrEP should be taken by anyone who injects illicit drugs.</td>
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<td>c. PrEP eliminates the need to use other HIV prevention strategies.</td>
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<td>d. PrEP is a prescription pill that contains two medications used to treat HIV.</td>
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<td>10. Healthcare workers may be exposed to HIV injection at work. According to research data:</td>
<td>a. Occupational transmission of HIV to healthcare workers is increasing.</td>
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<td>b. The CDC reports that of the healthcare workers who were infected to date 49 were exposed to HIV infected blood.</td>
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<td>c. The majority of the infected healthcare workers were non-clinical laboratory technicians.</td>
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<td>d. Healthcare workers who are exposed to a needlestick involving HIV infected blood have a 2% risk of becoming infected.</td>
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