HIV AND AIDS: A Module for CNAs AND HHAs

INTRODUCTION

The human immunodeficiency virus (HIV) is a virus that is transmitted through sexual contact or contact with infected blood. HIV causes an illness called acquired immune deficiency syndrome - AIDS. AIDS was first diagnosed in New York City and San Francisco in 1981. However, there is evidence that HIV has actually been infecting people for many, many years before it was recognized and isolated cases of AIDS had occurred many years before the epidemic started. The cause of AIDS, HIV, was finally isolated in 1983.

There are now over 33 million people in the world who are infected with HIV. A large number of them will develop AIDS, and AIDS is an enormous public health problem in the United States and worldwide.

Modern medications have now allowed many people infected with HIV to avoid developing AIDS. However, there is no cure for HIV infection - the virus cannot be eliminated or eradicated - and there is still no vaccine available that can prevent the spread of HIV.

Learning Break: Many people use the terms HIV and AIDS interchangeably, but it is important to remember that they are two different things. HIV is the virus that causes AIDS. AIDS is the disease - or group of diseases - that are caused by infection with HIV. Someone can be infected with HIV but not have AIDS.

OBJECTIVES

When the student has finished this module, he/she will be able to:

1. Identify a definition of HIV.
2. Identify a definition of AIDS.
3. Identify the basic defense mechanism the body uses against infections.
4. Identify why this defense mechanism fails to control HIV.
5. Identify the basic way that HIV causes harm.
6. Identify two most common ways that HIV is transmitted.
7. Identify three ways HIV is not transmitted.
8. Identify one important fact about testing for HIV.
9. Identify two basic precautions used when caring for patients with HIV or HIV/AIDS.
10. Identify the proper course of action after contact with HIV-infected fluids/secretions.
BACKGROUND: HOW HIV CAUSES INFECTIONS

HIV is a virus. Viruses are microscopic organisms that are very common: if you have ever had a cold or the flu, you have been infected with a virus. Many viruses are harmless. Also, the body has the ability to stop viruses from multiplying and causing harm. However, HIV is different. HIV can keep multiplying and in many cases it eventually causes the very serious disease of AIDS. This is how it happens.

We are constantly exposed to bacteria, viruses, and other infectious microorganisms. Bacteria and viruses that can cause disease are called pathogens. Yet despite the constant exposure to pathogens, our bodies do a remarkably good job of stopping these potentially harmful microorganisms before they can cause illnesses. The primary way we protect ourselves against infectious diseases is the immune system.

The immune system is the defense mechanism we have developed to keep us healthy, even if we have been infected with harmful bacteria and viruses. The immune system is a group of specialized cells and proteins that fights and eliminates dangerous microorganisms. The immune system has two basic mechanisms by which it operates: the non-specific response and the specific response.

- The non-specific response: The non-specific response of the immune system is the body’s basic defense against infection. It starts with simple physical barriers; for example, the intact skin prevents bacteria and viruses from reaching the bloodstream. The non-specific response also includes inflammation and the complement system. Both of these processes increase blood flow to an area that has been infected, and they also bring specialized cells such as white blood cells and macrophages to an area of infection. These cells, along with others, destroy bacteria and viruses or make them vulnerable so that other parts of the immune system are able to neutralize them.

- The specific response: The non-specific response is the body’s first line of defense against infection. However, if the infection is particularly widespread or the bacteria or the virus is particularly strong, the non-specific response may not be able to contain the infection. If that is the case, the immune system activates the specific response. The specific response to infection uses antibodies. Antibodies are proteins that recognize and destroy one particular type of bacteria or virus. Each of these microorganisms has a characteristic molecule on its surface that is recognized by the antibody: the antibody senses this molecule, it attaches to the microorganism, and the antibody destroys the bacteria or the virus it or makes them vulnerable to and attack by the non-specific response.

Unfortunately, the immune system is very rarely effective when it tries to control an infection with HIV. There are three basic reasons for this. First, HIV is a virus that multiplies very rapidly. Many times, the immune system simply cannot destroy the virus as quickly as the virus can replicate itself. Second, the virus can actually “hide” inside cells; if that occurs, the body does not sense the presence of HIV until the infection has had a chance to spread. Lastly and most importantly, HIV is a virus that mutates, and it mutates very fast. The body can form antibodies against the virus in its original form. But
these antibodies only recognize and seek out that particular form of the virus. When the HIV senses a threat from these antibodies, it mutates - changes shape - and the new form of the virus cannot be identified and destroyed by the circulating antibodies. New antibodies can be formed, but HIV manages to always stay a step or two ahead.

Learning Break: A useful way to think about antibodies, HIV, and mutations is a lock and key. The HIV is the lock and the antibody is the key that fits that lock and no other. When the HIV mutates, the key (the antibody) doesn’t fit the lock (the virus) and the virus cannot be controlled and destroyed. Mutation is the biggest reason why the immune system cannot control HIV.

Once the infection with HIV has begun, the viruses cause harm by destroying a certain type of white blood cell, the CD4 cell. White blood cells in general, and the CD4 cells in particular, are a vital part of the immune system. Without CD4 cells the ability to fight infections is severely compromised. When the level of CD4 cells gets very low, the person with an HIV infection will develop AIDS.

AIDS itself is actually not one specific disease, and HIV, in a sense, does not cause damage to major organs and tissues by itself. But because HIV so seriously damages the immune system, the infected person is very susceptible to diseases and cancers that normally would not occur in a healthy person; these are called opportunistic infections and diseases. These infections and diseases are very serious and very difficult to treat. The most common are certain types of pneumonia, a type of cancer called Kaposi’s sarcoma, and certain blood cancers called lymphomas. People with AIDs are also susceptible to brain lesions and brain infections.

AIDS is an infection with HIV, and the infection damages the immune system to the point that certain opportunistic infections or diseases occur.

Someone who is infected with HIV will initially not be aware of the infection. Shortly after being infected some people have some mild, temporary flu-like signs and symptoms. But these pass quickly, they are easily ignored and then the infection enters what is called the latent period. The infection is present, but it is dormant and not particularly strong. However, after a period of years - on average about 10 - the virus begins to rapidly multiply and destroy the CD4 cells. At that point, the patient has developed AIDS. Once the disease of AIDS has begun, it is fatal for literally everyone within two years unless they are treated.

WHO HAS HIV AND AIDS?

An HIV infection and AIDS can happen to anyone. Worldwide, the predominant way that HIV is spread is by heterosexual contact. However, in the United States the transmission and infection pattern are somewhat different. As of 2010, there were approximately 1.1 million people in the United States infected with HIV. There is also an estimated 208,000 people who are infected but do not know they are infected. Male-to-male sexual contact accounts for approximately 48% of all cases of AIDS; heterosexual contact accounts for approximately 31% of all cases of AIDS; and IV drug use accounts
for approximately 15% of all cases of AIDS. HIV and AIDS disproportionately affect African Americans. This ethnic group is 12% of the population of the United States, but 52% of people who have HIV are African American.

SIGN AND SYMPTOMS OF THE PATIENT WITH HIV/AIDS

In the early stages, the person who has HIV/AIDS will not have any signs or symptoms. As mentioned before, some people who are infected may have temporary flu-like signs and symptoms. But in those situations, it is easy for someone to decide that these may all be due to a cold, the flu, or some other simple illness. Once AIDS begins, patients typically experience fever, weakness, weight loss, fatigue, and nausea. In the advanced stages of AIDS, patients may develop dementia and confusion and be unable to care for themselves. Eventually, the patient with HIV/AIDS will develop one of the opportunistic infections or cancers for which there is no cure and the patient will die.

TREATMENT OF PATIENTS WITH HIV/AIDS

A diagnosis of HIV/AIDS was once considered to be the equivalent of a death sentence as there were no effective treatments. The average time of survival after HIV infection was 9-11 years, and after AIDS started the average survival time was 6-19 months.

There is still no vaccine that can prevent an infection with HIV, but highly active antiretroviral therapy (HAART) has proven to be very successful. HAART is a treatment regimen of drugs that prevent HIV from multiplying. If HAART is used properly and conscientiously, the life expectancy from the time of diagnosis is now approximately 20-50 years. HAART is very effective, but it is a difficult treatment to tolerate. The patient must take many medications, the medications must be taken correctly, and the therapy is a lifelong commitment. There are also numerous unpleasant side effects.

HIV TRANSMISSION

HIV and AIDS are very frightening, and rightly so. However, this fear, along with a lack of information, has caused some people to become irrationally afraid of becoming infected with HIV. There has been a lot of research about HIV transmission, and experts in the field are confident that they know exactly how HIV is transmitted and how it is not transmitted. The transmission of HIV depends on many factors: the number of exposures, the level of HIV in the blood or body fluid, and the presence of other sexually transmitted diseases.

HIV is transmitted in these ways:

- Unprotected sex: Some sexual activity is much riskier than others, but any form of very intimate sexual activity that is unprotected can result in transmission of HIV. The virus is transmitted through the semen. It can also be transmitted through vaginal secretions. The risk of HIV transmission during unprotected vaginal intercourse has been estimated to be approximately 0.08% per act male-to-female, and 0.04% per act female-to-male. The risk of HIV transmission during anal
intercourse is much higher, and the risk of HIV transmission from oral sex is essentially zero.

- A blood transfusion with HIV infected blood: Transmission of HIV during a blood transfusion is very rare. The risk of being infected with HIV from a blood transfusion is about 1 in 2,135,000.

- Contact with HIV infected blood: This means that the HIV infected blood must be introduced into the bloodstream. This most commonly occurs when IV drug users share needles, and sharing needles is a very effective way of transmitting HIV. Contact with infected blood can also happen when a healthcare worker gets stuck with a needle. And contact with infected blood can also happen if a healthcare worker has HIV infected blood splashed into the eyes, nose, or mouth, or HIV infected blood is splashed onto an open cut. However, transmission of HIV and subsequent infection is very rare. There are thousands of needle stick injuries every year and from 1981 to 2007 there have been 57 confirmed cases of infection with HIV sustained by healthcare workers.

- Contact with body fluids: This has occurred, but it is very rare. It is not the body fluids themselves that are infected, but the body fluids are contaminated with blood.

- Through breastfeeding.

- During childbirth: If the mother’s HIV infection is recognized early, she is treated with medications, and the child is delivered by Cesarean section rather than a vaginal delivery, the risk of the child being infected with HIV is < 1%.

- During pregnancy to the unborn child.

**Learning Break:** As a healthcare worker, what are the chances of contracting an infection with HIV? The risk of transmission of and infection with HIV is zero if you follow standard precautions and needle safety practices. The risk of becoming infected if you are stuck with a needle that is contaminated with HIV is approximately 1 in 300. If you are splashed in the eyes, in the nose, in the mouth, or on an area of your skin that has an open cut, the risk of infection is approximately 1 in 1000. These figures are approximate, and they don’t take into account the proper use of post-exposure prophylaxis (Note: This will be discussed later).

Latex condoms do a very good job at preventing the transmission of HIV during sexual activity, but they are not foolproof; they can break, spill, or be misused. The only way to completely prevent HIV transmission during sexual activity is to make sure the individuals involved do not have an HIV infection. Needles should never be shared, and proper use of needles and sharp instruments in the healthcare setting is essential. The only way to be sure of not contracting HIV is by abstinence and avoiding all contact with blood and body fluids.
HIV is not transmitted by:

- Mosquito bites.
- Contact with the saliva, tears, or urine from someone with an HIV infection.
- Touching/hugging someone with an HIV infection.
- Using public restrooms, public telephones, public drinking fountains, public health clubs/gymnasiums, or public swimming pools.
- Sharing food with someone with an HIV infection, or sharing eating utensils that have been used by someone with an HIV infection.
- Being in the same room with someone with an HIV infection - HIV is not transmitted through the air.

**HIV TESTING**

The only way to be sure that someone is infected with HIV is to perform a blood test. A small amount of blood is taken from a vein and examined. If there are anti-HIV antibodies, a second, confirmatory test is done. If both are positive, that person has an HIV infection. Infection with HIV cannot always be detected right away. It can take up to 6 months after exposure and infection to detect HIV in a blood test. That length of time is unusual and most infections can be detected within weeks of an exposure.

**HIV/AIDS: KEEPING YOURSELF AND OTHERS SAFE**

You may be uncomfortable or afraid of having close physical contact with someone who has HIV or HIV/AIDS. Those feelings, at first, are certainly natural; HIV and AIDS can be deadly. But it is important to remember that HIV cannot be transmitted through casual contact. Sexual activity and blood transmission are essentially the only ways the virus is passed from person to person. As a CNA you might possibly be in contact with blood that is infected with HIV, but that would be unusual. There is no reason to be frightened for your health and safety when you are caring for a patient with an HIV infection or AIDS. Remember: *If you use standard precautions and common sense, you will not and cannot become infected with HIV.* Also, as a health care professional, it is your duty to care for all patients, and when it comes to people with HIV infection there is no exception.

**Learning Break:** Under the Americans with Disabilities Act of 1990, people with an HIV infection cannot be refused health care. When you are a CNA, you are a health care professional and you cannot refuse to care for someone who has an HIV infection or who has AIDS.

The precautions you must take when you are caring are really no different from the precautions you would use when caring for any patient.
• Consider all body fluids as possibly contaminated. HIV cannot be transmitted by contact with urine, stool or other body fluids/secrections from someone who has HIV. However, patients with HIV/AIDS may have infections that can be transmitted by body fluids other than semen or blood. Although it is possible for body fluids other than blood and semen to be contaminated with HIV, you should always be using standard precautions so you are always protected.

• Always wash you hands before caring for the patient (to protect the patient) and always wear disposable latex gloves when delivering personal care or when handling any body fluids or secretions. Wearing gloves protects you, protects the patient, and prevents the spread of any infectious agent that could be in body fluids.

• Always wash your hands after caring for the patient -even if you were wearing gloves

• There is no need to wear a mask when caring for the patient with HIV or HIV/AIDS unless that patient has a disease that is spread by inhalation.

• Properly handle all body fluids; properly dispose of all body fluids

• Properly use and discard needles and sharp objects

• Never reuse single-use medical items

Learning Break: It is important to observe these precautions to protect yourself and to protect the patient. Remember, the patient with an HIV infection or HIV/AIDS cannot fight infections as well as a healthy individual. Also, these precautions, standard precautions, are used whenever you are providing patient care.

What do you do if you suspect or are worried that someone you are caring for has an HIV infection or has AIDS? Can you simply ask that person? That is a complicated question, it can’t be easily answered, and whether or not you can ask depends on the situation. In certain circumstances, asking someone about his/her HIV status could be considered an invasion of privacy. If you have doubts, it is best to simply use basic precautions - which you should always do - and ask your immediate supervisor how to handle the issue. That will keep you safe, avoid problems, and protect the patient’s privacy.

BASIC CARE OF THE PATIENT WITH HIV/AIDS

People with HIV/AIDS can develop one - or several - of many different infections or cancers, so it is difficult to provide a list of signs and symptoms that you may see. But the basic care of a patient with HIV/AIDS is not difficult. Here are the areas of care you will need to focus on.
Infection control: HIV transmission *can* occur if you are careless or do not follow proper infection control procedures. Make sure you wear disposable latex gloves if and when you may have contact with the patient’s blood. Because people with HIV/AIDS may have another infection that can be spread through body fluids like sputum or stool, always wear disposable latex gloves when handling any body fluids/secretions. Wash your hands before and after caring for the patient. This protects you, protects the patient, and protects other people. If you have to handle any sharp object such as a needle that has punctured the skin or has been in contact with blood from someone who is infected with HIV, you must be very careful. The facility where you work should have policies in place for the handling and disposing of contaminated needles, sharp objects, etc. These policies are usually discussed during orientation. Remember: the basis of standard precaution is that all blood and body fluids should be considered to be potentially infected.

Infection control for the patient: If you currently have a communicable disease - even if it is a simple case of the flu - check with your immediate supervisor before caring for a patient with HIV/AIDS. These patients cannot fight off infection the way a healthy person can. You can also help the patient with HIV or HIV/AIDS to learn to live safely and sensibly. Become knowledgeable about the ways HIV can and cannot be spread so you can answer questions and educate your patients.

Nutrition: Good nutrition is one way to keep the immune system healthy. Encourage your patient to eat well, and explain the reason to him or her. Let your supervisor know if the patient cannot or will not eat.

Medications: People with HIV must take a large number of tablets/capsules each day to prevent HIV from causing AIDS. Taking large amounts of medications can be difficult. Also, many of these drugs have serious side effects. Although the success rate of the latest drug therapy for treating/preventing AIDS is very good, it can be easy for these patients to become discouraged. They may reason that they have a fatal illness and the complicated therapy and nasty reactions are not worth the possible benefit. However, these drugs *have* made a big difference, and you can certainly help your patients by reminding them of this. Encourage them to talk about their feelings, and encourage them to try and follow the treatment plan.

Emotional and psychological support: Having an HIV infection or AIDS can be emotionally and psychologically devastating. The amount of emotional and psychological assistance you give to these patients will depend on their needs, their resources, and your comfort level. But regardless of how much support you can provide, you must remember *not* to be judgmental about these patients. Every sick patient, regardless of what type of illness he/she has, deserves a basic level of courtesy and compassion.

**WHAT IF YOU ARE EXPOSED TO HIV INFECTED BLOOD?**
If you have had an unprotected exposure to blood or body fluids notify your supervisor immediately. Any needle stick injury or any splash to an unprotected area of skin is potentially a risk for transmission of HIV and other bloodborne diseases such as hepatitis B and/or hepatitis C. Do not try and determine the level of risk by yourself. Not all unprotected exposures are dangerous, and treatment may not be needed. But determining the level of risk and deciding if treatment is needed are the responsibilities of a physician or another specially trained healthcare professional. This is to protect your health but it is also a workplace requirement.

The steps that must be taken after an unprotected exposure are:

- Immediately wash the area with soap and water, or simply rinse with water if the contact was oral or ocular.
- If you have sustained a needle stick or a puncture injury, do not squeeze the wound to make it bleed.
- Do not use disinfectants on a wound or an area that has had splash contact.
- Notify your supervisor immediately.
- When time is available, document the circumstances of the exposure.
- If the exposure is considered to pose a risk for transmission of HIV, hepatitis B, or hepatitis C, blood samples will be obtained at the time, and you may be advised to start treatment with medications. If you decide to accept treatment, the medication regimen will be started right away.

You have probably noticed that the word immediately was used several times, and it was strongly emphasized. If someone has had an unprotected exposure to HIV infected blood and the exposure is considered to be significant, treatment should be started within hours of the exposure - most sources recommend treatment within two hours. So the message is clear: if you have had an unprotected exposure to blood or body fluids, do not delay in seeking help.