FOR DIRECT CARE SERVICE PROVIDERS

STANDARD PRECAUTIONS/INFECTION PREVENTION

AND HIV/AIDS

By Cheryl Clark

2009

THIS IS A three HOUR CLASS

STANDARD PRECAUTIONS/INFECTION PREVENTION

This class is designed for direct care staff, and to be taught along with HIV/AIDS class. It follows OSHA standard precautions (29 CFR 1910-1030). It will take approximately 1 additional hour.
The purpose is to eliminate or minimize occupational exposure to bloodborne and other pathogens.

It is the responsibility of the employer to maintain training records and ensure compliance with the regulations governing required training. The employer must know state and federal guidelines.

It is the responsibility of each and every employee to follow the standard precautions taught in this class.

OBJECTIVES:

- Introduction
- Infections- how they are transmitted
    - Hepatitis A, B and C
- Introductions to other blood borne infections and OPIM
- Safety and Prevention in the Workplace
    - Exposure control plan
    - Standard precautions in the workplace
    - Workplace Controls
    - PPE (Personal Protective Equipment)
- Skill Guides
    - Hand Washing
    - Gloves both putting on and taking off
    - Cleaning up spills
    - What to do with contaminated supplies
- Incident Follow-up
- Reporting incidents
- QUIZ- who well have these objectives been learned
- Skills demonstrations to be taught and demonstrated by the student
    - Gloving
    - Hand washing
    - Spill clean up

Germs are very tough

- 21,000 germs are on each square inch of work desks, and over 1,500 are on each square centimeter of your hands!
- Each person has more bacteria on their body than there are people in the whole country
- A virus can be picked up by an individual up to 20 minutes after being left on a dry smooth surface!
- E coli, salmonella and other bacteria can live as long as 2 hours on surfaces like doorknobs, keyboards, telephones, and tables
- Bacteria double in number every 20 minutes (5 bacteria on a sandwich at noon will grow to 10,000,000 by 7pm
- Hot water does not kill bacteria- temperatures of 140 degrees or greater is needed for that
- An average of 229,000 germs per square inch are found on faucet handles

In your job and home environment:
Where the germs Hide

Work desks
Door handle
Light switches
Keyboards
Shopping cart handles
Steering wheels
Turn switches
Table tops
Chair arms
Kitchen sinks
Bathrooms

Wash your Hands

After taking off gloves
Before cooking
When visibly dirty
Before eating
Before putting in contacts
After smoking
After playing with pets
After coughing or sneezing
Before giving medications
Before opening the refrigerator
Before going to the bathroom
After going to the bathroom
Before putting on gloves

How to Wash Your Hands

There are six steps:

1. Water: thoroughly wet your hands with warm water

2. Add soap

3. Rub hands with gusto for 20 seconds

    a. Back of hands
    b. Wrists
    c. Between fingers
    d. Tips of fingers
    e. Thumbs
    f. Under fingernails

4. Rinse thoroughly with fingers pointed down

5. Dry hands with paper towel or clean cloth towel

6. Turn off water with paper towel

7. Open door with paper towel

How to Remove Your Gloves

Remember: Touch ‘dirty’ to ‘dirty’ and ‘clean’ to ‘clean’

Touch glove surface to glove surface

Touch clean skin to clean skin

1. Begin by grasping the glove near the palm with the gloved fingers of the other hand
2. Gently pull the glove off with the fingers pointed downwards removing that glove inside out
3. Hold onto that removed glove in your still gloved hand
4. Carefully slide the index finger of your ungloved hand under the wrist of the gloved hand—DONOT touch the outside of the glove with your bare fingers
5. Gently pull out and down to slide the glove off of your hand inside-out.
6. One glove should now be inside the other glove and the outer glove should be inside out
7. Throw the gloves away in a appropriate container
8. Use soap and water or an alcohol-based hand sanitizer to clean your hands

Never touch outer surfaces of ‘dirty’ gloves with your bare skin.

The Chain of Infection

In order for an infection to spread there must be all of the following elements.

The single best way to stop the spread of infection is to wash your hands—HAND HYGIENE

1. There must be the presence of live, viable infection
   - Bacteria
   - Viruses
   - Parasites

2. There must be a place (reservoir) for the infectious organism to live
   - People
   - Contaminated objects
   - Pets
   - Environment

3. There must be a way for the infectious organism to transfer
   - Blood
   - Body Fluids
   - Body waste
   - Coughing
   - Sneezing
   - Equipment
   - Hand shaking
   - Sweat

4. There must be a way method of spread:
   - Direct contact
   - indirect contact
   - Common vehicle
   - Vector borne

5. There must be an entry point in a person
   - Breathing
   - Swallowing
   - Skin (cuts)
   - Mucous membranes
   - Injecting drugs
   - Sexual activity

6. An individual must be susceptible:
   Not immune (no vaccination), Young, Elderly, Poor health

DO NOT OPEN THE DOOR TO GERMS

How do these germs infect us? Through portals of entry on our bodies these microorganisms enter and cause disease. Some portals are:

1. The mouth as we swallow
   And other mucus membranes such as the eyes and nasal tissue
2. The lungs as we inhale
3. Bloodstream through injections- needles and bites, surgeries
4. Absorb through broken skin

Blood borne pathogens, are those diseases causing organisms that survive and thrive in blood, include Hepatitis B and C, and HIV.

Blood and other body fluids (OPIM) may contain pathogens:

OPIM (other potentially infectious materials include:

- Sexual fluids male and female including pre-ejection fluids
- Cerebrospinal fluids
- Fluids surrounding the joints (synovial)
- Fluids surrounding body organs such as the heart and lungs
- Amniotic fluid
- Tissue cultures, and body organs
- All body fluids when unable to determine if contains blood or OPIM

Unless visibly bloody, feces, urine, salvia, sputum, sweat, tears and vomit or not considered OPIM for bloodborne pathogens. These materials may contain infection and disease-causing microorganisms, but are not considered “bloodborne”.

Waste that should be disposed of properly to prevent accidental infection of others (Regulated Medical Waste) includes:

- Liquid or semi-liquid blood or OPIM
- Contaminated items that would release blood or OPIM when compressed
- Dressings, cleaning materials, other waste containing OPIM or Blood

How do we infect ourselves and others?

Direct contact such as touching infected areas (noses, foreheads, etc…that may/may not look infected—including infected areas on yourself

Indirect contact, just touching where germs have been left laying around

Droplet- sneezes, coughs, etc…

Airborne- Tuberculosis (TB)

Vector borne-mosquitoes, ticks, etc…

Bloodborne-unprotected sex, needle sticks (body piercing, tattoos)
IV needle sharing….

Prevention requires an approach that is comprehensive. There must be assessments of potential risks involved in your job description and development of exposure prevention planning. This planning includes engineering and work practice control programs, proper use of PPE (personal protective equipment), incident reporting, assignment of tasks and oversight.

Exposure control plan: Employer developed and maintained. Goals eliminate where possible and minimize elsewhere the potential for exposure.

1. Exposure determination
2. How to counter the threats, PPE use, cleanups, how standard precautions will be complied with, training programs and when each employee needs them, and follow up procedures
3. Documentation
4. Evaluating incidents, root cause analysis

This is reviewed and updated annually.

Model plans can be found: OSHA publication 3186-06N (2003) at http://www.osha.gov/

Hand washing-supplies and gloves must be provided by the employer and training in their use. It is the employee's responsibility to use them properly

Decontamination is the use of physical or chemical means to remove, inactivate,
Or destroy bloodborne pathogens or a surface or item to the point they can no longer be transmitted to others and the surface or item is rendered safe for handling.

- PPE (personal protective equipment)
- Appropriate clean-up supplies
- Method of cleaning
- Disposal of contaminates

Cleaning guidelines include use of products selected for effectiveness, used according to manufactures' instructions and stored appropriately. Do not mix cleaning products inappropriately (chlorine and toilet bowel cleaner = poison gas!

Keep cleaning supplies such as mops, sponges, cleaning rags, clean and store appropriately.

Clean then disinfect; Surface must be clean of all visible soil before they may be sanitized.

- ¼ cup household bleach to 1 gallon of cool water (made fresh daily). Let air dry, or soak for 20-30 minutes
- Hospital grade disinfectants (FDA approved)
- Clean from least to most soiled surfaces.
- Change cleaning solutions when they appear dirty and after cleani9ng up spills.

- Technique, technique, technique ---Broken glass, body fluid spills etc…

- Have cleaning schedules and stick to them

DO NOT REUSE DISPOSSABLE ITEMS

Laundry

- Wet laundry in leak proof bag and labeled and stored properly till washed. Rinse and then use normal laundry cycles.
- Clean the washer and dryer tops and knobs when laundry is complete for that time.
- Clean all donated clothing before wearing
- Clean laundry baskets (do not put clean laundry in soiled baskets)
- Wash soiled items before they become odorous
- Hot water may help control germs
- Bleach may help control germs but may not be compatible with some fabrics

Some of these precautions include but are not limited to:

Wear Gloves when:

- Working with any potentially contaminated body fluids containing blood, blood products, semen, vaginal secretions, cerebrospinal fluid, amniotic fluid and saliva, as well as any items or surfaces that come into contact with these fluids.
- There is a need to touch mucous membranes or breaks in the skin.
- It is necessary to either perform or assist with any invasive procedure such as accu checks.
- You have any scratches or other breaks in your skin.

Promptly dispose of sharps in puncture-resistant containers and promptly and properly dispose of all other contaminated items.

If a caregiver has weeping dermatitis or lesions, they should not be coming into direct contact with patients, equipment or supplies, without proper precautions.

Always follow your facilities protocols for disposal of infectious waste.

HIV/AIDS

OBJECTIVES

At the completion of this program, the learner will be able to:

- Define briefly the history of Human Immunodeficiency Virus (HIV), the virus that causes Acquired Immune Deficiency Syndrome (AIDS)
- Define HIV and AIDS, how it is transmitted, how it progresses
- Describe testing, informed consent, and disclosure requirements for healthcare providers and the super confidentiality of these
- Identify opportunistic diseases associated with HIV/AIDS
- Describe current methods of diagnosing HIV/AIDS
- Treatment guidelines, HAART
- How HIV is not transmitted
- Identify the law that affects health care workers (HCW) with regards to HIV patients
- Identify changes recommended by the Center for Disease Control (CDC) for post-exposure protocol

DEFINITIONS

ADHERENCE: Taking **all** prescribed medication, exactly as it is prescribed and not taking any medication or supplements not prescribed or doctor directed

AIDS (Acquired Immune Deficiency Syndrome): A group of diseases caused by the effect the HIV virus has on a body's immune system.

ANTIBODIES: Protein molecules made in the blood that protect the body against infection.

BLOODBORNE PATHOGENS: Pathogenic microorganisms that live in human blood and, if present, can cause disease in humans. They include, but are not limited to, hepatitis B (HBV) and human immunodeficiency virus (HIV).

CD4+ COUNTS: (T helper cells): a white blood cell that recognizes and warns the body that a virus has entered it and puts the immune defenses to work. The normal count is between 600 and 1500 but usually falls as HIV progresses.

CONTAMINATED SHARPS: Any contaminated object that can penetrate the skin, including but not limited to needles, scalpels, broken glass, broken capillary tubes and exposed ends of dental wire.

DNA (DEOXYRIBONUCLEIC ACID): A double-stranded molecule that is made up of chromosomes in the center (nucleus) of a cell and contains the genetic information in genes.

EXPOSURE INCIDENT: A specific eye, mouth, or other mucous membrane, non-intact skin or parenteral contact with blood or other potentially infectious materials that results from performance of an employees duties.

HIGH RISK BEHAVIOR: Behavior that allows the HIV virus to pass from one person to another, especially during sexual intercourse or IV drug use.

HIV (HUMAN IMMUNODEFICIENCY VIRUS): The virus that damages the immune system and leads to AIDS.

IMMUNE SYSTEM: The body's defense against disease and infection.

MUTATION: a change (mistake) made during the copying process that changes the virus slightly, but does not kill it, but does alter the way the virus responds to drugs.

OCCUPATIONAL EXPOSURE: Reasonably anticipated skin, eye, mucous membranes, or parenteral contact with blood, or other potentially infectious materials that may result from performance of an employee's duties.

OPPORTUNISTIC INFECTION: An illness that develops when a person's immune system is weakened.

OTHER POTENTIALLY INFECTIOUS MATERIALS: Semen, vaginal secretions, cerebrospinal, synovial, pleural, pericardial and amniotic, saliva in dental procedures, or any body fluid that may be visibly contaminated with blood, any unfixed human organ from a human (living or dead)

DRUG RESISTANCE: Bacteria or viruses may develop the ability, usually through mutation, to no longer be killed or inhibited by the drugs usually effective against them.

RNA (RIBONUCLEIC ADID) is an information encoded strand of nucleotides, similar to DNA, but with a slightly different chemical structure.

REGULATED WASTE: Liquid or semi-liquid or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed are capable of releasing these materials.

SAFER SEX: Any sexual activity that protects a person from infection with HIV, which includes condoms or other protection.

SOURCE INDIVIDUAL: Any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee.

STD – (SEXUALLY TRANSMITTED DISEASE): A disease that is spread through intimate sexual contact. Examples: syphilis, gonorrhea, herpes, human papillomavirus (HPV), trichomoniasis, chlamydia and HIV.

SYNDROME: A group of signs or symptoms indicating that a person has a certain disease.

STANDARD PRECAUTIONS: At one time known as Universal Precautions, it is a method of infection control by which all human blood and certain body fluids are treated as though they are known to be infectious.

VIRUS: The smallest known disease-causing microorganism. In order to multiply in a human, the person becomes a host and the virus must use certain body cells in special ways.

VIRAL LOAD: The measurement of HIV 'virons' (cells) in the blood.

WINDOW PERIOD: The time after infection with HIV when antibodies are not detectable by currently used tests. This period varies dependent on the amount of the virus in the host as well as the virulence of the strain and host immune system. It can range from 2 weeks to 6 months.

OVERVIEW – HISTORY

In 1981, this disease struck with a vengeance as healthy young homosexual men began seeking care for unusual infections and cancers. However this disease probably began before the 1950's, when humans became infected with SIV infected chimpanzee blood. SIV did not make the monkeys ill, but as it adapted or mutated to survive in humans it became known as HIV.

The historical timeline for HIV:

- 1981 First AIDS cases diagnosed among young homosexual males. Some researchers suspected the disease transmission to be similar to Hepatitis B
- 1982 – First heterosexual/female cases documented among individuals who had received blood or blood products, with no other risk factors.
- 1983 – International convention changes name to Human Immunodeficiency Virus or HIV.
- 1984 – A classification system was developed allowing management of patients based on progression of HIV to AIDS. Research into the use of antiviral agents as possible therapy begins.
- 1985 – "African Connection" established with discovery of SIV or simian immunodeficiency virus in Senegal, West Africa.
- Scientists understand that blood and body fluids transmit HIV
- 1993 – CDC (Center for Disease Control) changes classification system to one based on CD4 levels and development of opportunistic diseases. **A CD4 level of 200 or less is classified as AIDS**.
- 1994 – Clinical trials showed that the drug AZT reduced transmission of HIV in pregnant women to fetus from 24% to 8%. With advance care today the rate can be reduced to approx. 3%.
- 1995- HAART (Highly Aggressive Antiretroviral Therapy) initiated.
- 1997 – Breastfeeding identified to triple transmission from infected mom to baby.

- 1999 – Multiple Drug Therapy.
- 2001 – Scientist are working to produce a vaccine, new drugs and drug combination treatment.

According to the CDC's Bloodborne Pathogen Standard, using Standard Precautions is sufficient protection. Standard precautions outline which protective devices should be used and their proper use depending on the task they will perform.

You do not get HIV by:

- Hugging, or dry kissing (can spread other STDs such as herpes)
- Sitting next to someone
- Shaking hands
- Eating in a restaurant or Cafeteria
- Being bitten by mosquitoes or other insects
- Using restrooms, water coolers or telephones
- Donating Blood
- Swimming Pools or using hot tubs

An easy way to kill this virus is using 10% bleach 90% water made fresh daily this is an ideal viral disinfectant.

TREAT ALL BODY FLUIDS AS THOUGH THEY ARE INFECTIOUS!

IF IT'S WET AND IT AIN'T YOURS – DON'T TOUCH IT

TYPES/DEFINITION/PROPERTIES

AIDS is caused by the Human Immunodeficiency Virus. This virus mutates and changes rapidly. There is HIV type 1 and type 2 and many subtypes. When HIV is transmitted the recipient receives the same type and possibly the same resistances to medications as the host. By the way, anyone can become infected with more than one type and strain, and they will get sicker quicker. Multiple types and subgroups present in one person complicate treatment.

HIV' genetic code is not made of DNA as are normal human cells, but of RNA that is changed into viral DNA within the host cells. This change infects the host cell and creates a "virus-making" factory. The cell targeted by HIV is the CD4+ (helper) cell, a T lymphocyte cell (the very cell whose job is to identify and destroy pathogens. Other T cells with similar molecular makeup may also become infected.
.

Demographic/Epidemiology

Worldwide, the Joint United Nations Program on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) state that in 2007 approximately 40 million people are known to be living with HIV/AIDS. Worldwide, in 2005, 4.9 million people were newly infected with HIV/AIDS. There were 3.1 million AIDS deaths in 2005. In North America there are more than 1.2 million people living with HIV/AIDS.

All states report cases of AIDS but not all report confirmed HIV statistics. Florida is 3rd in case reports of AIDS and 2nd in HIV cases and in the number of pediatric cases. Miami ranks second in AIDS cases behind New York City. (Florida Dept of Health)

The leading modes of transmission are men who have sex with men, intravenous drug users (needle sharing) and heterosexual contact. There are still more male than female cases.

HIV/AIDS is ranked as follows for the causes of death in people ages 30-39:

All Floridians	Fourth
All males or females	Third
All black males and females	First

Current statistics show that African Americans progress to AIDS at a faster rate than other ethnic groups. While African Americans represent 13% of the American population, they represent 49% of AIDS deaths. In Florida through December 2004 African Americans represent 14% of Florida's adult (13+) population but nearly 50% of AIDS cases and 53.8% of HIV cases. This is alerting all states to action.

Recent studies show that multiple drug therapy has increased survival time for those with opportunistic diseases from 49% to an 80% chance of surviving 24 months.

Death due to AIDS, in the US, has declined due to advances in current treatments. Yet, people with HIV still have an abnormally high death rate. Some factors in this are the frequent co-infections many have, and adverse effects of long-term drug therapy as well as continuance of risky behavior. Some adverse affects of medications can lead to heart, liver, and kidney disease.

Cumulatively through June 30, 2005, the top five leading states reporting the highest number of AIDS cases are:

New York	167,579	California	136,442	Florida	97,929

As of July 31, 2005, the Florida Health Department released the following interesting statistics of people currently or presumed living with HIV/AIDS for these Florida counties.

Miami-Dade	28,276	Hillsborough	5,819
Pasco	666	Pinellas	3,876
Institutions/Prisons	3,659	Polk	1,657

HIV/AIDS is increasing in the over 50 population. Nationally, 15% of reported AIDS cases are in this age group. In states like Florida with its large retirement community where more than 14% are over age 50, the rates are higher.

HIV/AIDS is primarily a behavior-specific disease, it does not matter what age, race or sex you are, or how rich or poor you are.

THE AIDS EPIDEMIC IN THE 21st CENTURY – A WIDENING GAP

The number of those infected keeps increasing. The male to female ratio among newly infected HIV cases has narrowed. The percentages of HIV infected women are increasing especially in young women. As of November 2005, women accounted for nearly 46% of all people living with HIV/AIDS worldwide and for 57% in sub-Saharan Africa. Young adults ranging from 15 to 24 years of age, account for nearly half of all new HIV infections worldwide.

About half of all people who acquire HIV become infected before they turn 25 and typically die of the life-threatening illness called "AIDS" before their 45th birthday.

Complacency generated by longer healthier living for those with HIV has de-emphasized safe sexual behavior. This has negatively influenced the rate of HIV infection. **This disease always contributes heavily to an early death.**

The Caribbean region is a major area of HIV growth in the Americas primarily due to heterosexual transmission.

HIV incidence in Eastern Europe and Central Asia is rising faster than anywhere else in the world. The main driving force behind the epidemic in this region is injection drug use

Sub-Saharan Africa continues to bear the brunt of HIV and AIDS. Africa is home to just over 10% of the world's population – and almost two-thirds of all people living with HIV

In short, the huge gap in HIV infection rates and AIDS deaths between rich and poor countries, and more particularly between Africa and the rest of the world, is likely to grow even larger.

IGNORANCE ALARMING IN HIV PATIENTS

According to findings reported at the 14th International AIDS conference held in Barcelona Spain on Sunday, July 7, 2002, a new study showed that a vast majority of young homosexual and bisexual men in the United States that were found to have the AIDS virus and were unaware of their infection. The unawareness rates among minority homosexual men age 15 to 29 in this study were extremely high. Among those studied, 90% of African Americans, 70% of Hispanics and 60% of Caucasians admitted they did not know they were infected with HIV.

The CDC reported that most of those infected in the study did not consider themselves to be at high risk even though they had unprotected sex.

One reason for the continued spread of HIV is that about 450,000 of these 900,000 infected Americans have not been tested or collected the results and are unknowingly spreading the virus to their sex partners and/or needle sharers.

WHAT CAUSES AIDS?

HIV and AIDS are different.

1. HIV infection leads to immune system failure. Immune system is so busy fighting the HIV infection and having their T cells destroyed that they have difficulty fighting off other infections.

2. HIV may be only a part of the 'package deal'. There may be more than one infectious agent present such as STDs, HPV, Hepatitis B or C, and other germs that live in body fluids.

3. A compromised immune system then leads to high vulnerability to infectious agents that are present in our environment normally.

4. When co-infected the body must fight the HIV and the other diseases (HIV and pneumonia) at the same time

5. If an HIV positive person may also have chronic medical conditions such as diabetes, COPD, asthma etc;

6. The immune system must cope with all an individuals health issues at the same time.

7. Acquiring these "immune deficiency related" illnesses (opportunistic infections) indicates disease progression to AIDS

8. AIDS is treated vigorously and life can continue on for years with careful ongoing treatment and lifestyle changes (avoid sick people, optimize their general health etc…)

HIV has been found in blood, semen, saliva, tears, breast-milk, and vaginal and cervical secretions. However, it has been proven that only blood, semen, vaginal and cervical secretions and breast-milk can transmit the HIV.

COMMON CO-EXISTING INFECTIONS

In recent years the incidence of TB (Tuberculosis), a respiratory acquired disease, has increased in part due to the spread of HIV. It is recommended by the CDC that all people infected with HIV be tested for TB.

HIV positive individuals may also infected with Hepatitis B and C. Hepatitis C is one of the leading causes of chronic liver disease in the United States. Anyone infected with HIV should also be tested for Hepatitis.

OPPORTUNISTIC DISEASES

Diseases and infections usually not seen in otherwise healthy individuals, signals the possibility of **AIDS**. These infections and diseases, normally all around us, now have an increased opportunity to invade and spread in the immune compromised individual.

Some of the opportunistic diseases associated with HIV/AIDS are as follows:

Disease	Type	Symptoms
Karposi Sarcoma (KS)	Cancer	Pink, purple, brown spots
Lymphomas (both Hodgkin's and Non-Hodgkin's)	Multiple types	Painful swelling in the lymph nodes in the neck, underarm or groin; fever, night sweats, Fatigue, weight loss, itchy skin
Pneumocystis Carinii Pneumonia (PCP)	Protozoan	Dry cough, shortness of breath
Toxoplasmosis	Protozoan	Encephalitis, Fever, weakness, confusion
Cryptosporidiosis	Protozoan	Severe watery diarrhea
Candidiasis	Fungus	White coating on throat or lungs, difficulty swallowing, Vaginal itching, burning, discharge
Herpes Simplex/Shingles	Virus	Sores that don't heal or on non-mucous skin
Cytomegalovirus	Virus	Variety of symptoms
Mycobacterium Avium	Bacteria	Wasting, weakness, constitutional symptoms
Intracellular Cryptococcal Meningitis	Fungus	Headaches, confusion, nausea, seizure, memory loss
M. Tuberculosis (TB)	Bacteria	Cough, shortness of breath, can be pulmonary or systemic
Histoplasmosis	Fungus	Cough, shortness of breath
Salmonella Septicemia	Bacteria	Diarrhea

Patients with AIDS die from the infections and the debilitation they cause rather than the virus itself. Anyone with a virus or bacterial infection could easily infect an AIDS patient endangering their life. Your common cold could kill them.

HIV infection is at first largely unnoticed and undiagnosed by many people, yet it may be transmitted to others. You do not have to look sick to be infectious!

1. Most people who have contracted the virus do not show any recognizable symptoms for up to 5 to 10 years, some go longer.
2. Without testing, and in ignorance of their infectiousness, they spread this disease.
3. The average period of time between initial infection and possible detection of HIV antibodies can be from 2 weeks to 6 months. However a small percentage does not develop enough antibodies for detection for up to a year.
4. A CD4 count less than 200cells mm, a presence of AIDS defining illness, and/or a viral load above 10,00 ppm indicates a progression of HIV to AIDS.

Research has created new drugs and drug combinations for treating HIV/AIDS but there is still no known cure at this time. This disease occurs in three stages:

1. **Infection**- Immediately the virus begins to multiply rapidly and within a few days to weeks of this primary infection 90% develop "flu like" symptoms (called Acute retroviral syndrome) (symptoms include fever, headache, sore throat, extreme fatigue, muscle and joint aches, swollen lymph nodes, and a raised rash) that disappear in about 2 weeks**.**
2. **'Healthy" stage. This individual is a disease 'carrier' and can spread this disease without experiencing any further symptoms themselves for a long time (up to 10-15 years).**
3. **Stage 2**. Signs of a compromised immune system –CD4 count below 350/mm3, swollen lymph glands, diarrhea, cold sores that don't go away within a few days, or prolonged recovery from simple infections. Can continue a fairly normal life.
4. **AIDS**. Immune System Failure – CD4 count goes below 200/mm3, and opportunistic infections are acquired (new drugs may be available that fight the HIV and allow the immune system to recover to a degree, and newer antibiotics may then fight off the acquired diseases—allowing for a longer life.

The signs and symptoms of AIDS are:

1. Periods of severe fatigue, and rapid weight loss
2. Night sweats and/or fever
3. Diarrhea that persists for more than a week
4. Bruising and/or bleeding
5. Coughing and shortness of breath, oral thrush
6. Skin rashes and spots, swollen glands
7. Oral thrush , and Neurological problems

INFECTION AND DRUG THERAPIES

1. When someone is infected with HIV, the virus identifies and attaches itself to the CD4+ cell surface. (A perfect fit for the receptors on its surface)
2. It fuses with the cell releasing its genetic material (RNA) into the cell.
3. The RNA uses the cells own proteins and enzymes to change the CD4 cells DNA (genetic code).
4. The altered DNA will now cause the CD4 cell to produce new viral cells instead of new CD4 cells. This cell is now a virus making machine. This happens right away. The person is now infectious to others.
5. Newly produced virus cells now travel throughout the lymph and blood systems ready to infect other CD4 cells
6. The body responds by increasing the number of white cells (including the CD4 cells) to fight the infection. There is now a war going on.
7. As long as the immune system kills most of the virus (cannot kill it all, it hides in lymph glands etc…) the individual feels and is healthy.
8. When the viral load increases and the CD4 count goes down it is now time for drug therapy to assist the body in fighting this disease as well as other acquired infections.

Current therapy guidelines are based on what we now know about how the virus multiplies. These guidelines, recommend medical intervention based on the viral load, the type of HIV and CD4+ lymphocyte count in adults. This principle is known by the acronym "**HAART"** (highly active or highly aggressive antiretroviral therapy).

The HAART guidelines also contain some conservative recommendations:

a. Viral load > 10,000 copies/ml indicates risk of disease progression-recommend combination antiretroviral therapy.
b. CD4+ <500 copies, combinations of antiretroviral therapy depends on the viral load. Routine immunizations such as flu and pneumovax are recommended. While new research recommends the CD4 count be under 350/mm3 before antiretroviral therapy is begun
c. CD4+<200 copies, Pneumocystis pneumonia prophylaxis is given and the case is reported to the CDC.
d. CD4+ <100 copies prophylaxis against other opportunistic diseases is given.

The goal of treatment is to have a ten-fold (10 times) reduction in the viral load by one month and eventually undetectable levels by six months (test cannot yet measure zero). The "undetectable level" doesn't change antibody detection for screening blood supply or HIV testing. We still use the CD4+ level as the major indicator of disease progression.

Treatment must involve a drug cocktail, multiple drugs to prevent resistance to the medications from developing. New technology allows for a combination of medications to be put in one pill or capsule and to allow them to be long acting.

To be effective the medications must be given as directed without missed doses. Missed doses allow resistance to medications to occur.

Know that if you put more of a virus into your system, keep doing what ever behavior that resulted in the initial infection, you will get sicker quicker. Do not forget that HIV can be only one part of that 'package deal'.

For **pregnant women**, federal guidelines recommend treatment to begin between 14 and 34 weeks, if not sooner, and to continue through delivery and postpartum, and for 6 weeks in the newborn. Breast-feeding is not recommended for the HIV+ mother because it can triple the rate of transmission to the newborn (UN study, 1997). Often C-section is chosen to further reduce risk which is increased with prolonged labor.

Some states have passed a law making offering HIV testing mandatory to all pregnant women.

Have I been exposed? What Should I do? What Happens Now?

1. Determine if exposure has occurred.
2. If blood, sexual secretions or OPIM (other potentially infectious material) has found entry proceed, if not, no treatment for HIV is needed.
    a. Intact skin is a good barrier, must swallow bloody tears or saliva, did you get splashed in the eye, or other mucus membranes?
    b. Blood to blood (sharing needles or puncture wounds) is highly infectious
    c. Sexual and pre-sexual fluids are infectious
    d. Urine and feces are rarely infectious
3. Determine if the source is HIV +, or if the recipient is already HIV +
4. What is the sources viral load (the more virus present the more infectious)
5. Drug resistances present?
6. If you need preventative treatment you will receive a drug cocktail of 2 medications if the risk is low and three if the risk is high. You will need to take these medications for 28 days
7. Follow up includes retesting at intervals for up to six months and rarely for a year.

Immediately stop what you are doing, wash the area with soap and water or flush splashes to the nose, mouth, or skin with water, irrigate eyes with clean water, saline or sterile water.

REPORT THE INCIDENT IMMEDIATELY TO YOUR SUPERVISOR.

Treatment should be started as soon as possible, optimally within 2 to 4 hours. Delays in treatment of 24 to 36 hours significantly reduce the effectiveness of post exposure treatment.

Your first drug regimen is your very best shot at controlling the disease.

One study of healthcare workers with exposure to HIV infected blood indicate a positive HIV infection rate of 1 in 300.

SITUATIONS THAT REQUIRE SPECIAL CONSIDERATION

Known or Suspected Pregnancy in the HCW

Pregnancy should not preclude the use of optimal PEP regimens, and PEP should not be denied to an HCW solely on the basis of pregnancy. To make an informed decision regarding PEP, an occupationally exposed pregnant HCW must be provided with detailed information. This should include potential risks as well as benefits of antiretroviral drugs to her and to her fetus

HIV TESTS

- The ELISA (Enzyme Linked Immunosorbent Assay blood test.
- Western Blot test or an Indirect Immunoflorescence Assay (IFA) test.
- A Single Use Diagnostic System (SUDS) test can give HIV test results in 5 to 30 minutes.
- Ora Quick. A drop of blood/saliva is tested and the results take as little as 20 minutes and are 99.6% accurate.
- There are several others now on the market

As with any other tests, results must be confirmed by a second test.

Remember HIV antibodies may not develop for up to six months after an individual is exposed.

TESTING AND INFORMED CONSENT

The CDC states that it is necessary to protect confidentiality of clients who are recommended to receive HIV testing, counseling or treatment services. Personal information should not be divulged to others in ways inconsistent with the client's original consent.

Pursuant to the Florida Omnibus AIDS Act of 1988 and amended in 1998, a person must consent to the test. It is essential to have informed consent before testing; this may be oral or written but written is preferred.

Anonymous testing (consented voluntary testing conducted without a client's identifying information being linked to testing or medical records, including the request for testing or test results) has been used widely and effectively

TESTING AND REPORTING REQUIREMENTS

- All healthcare workers should familiarize themselves with the laws pertaining to testing and informed consent in the state where they reside and work.
- In September of '06 the CDC recommended that diagnostic HIV testing and opt-out (patient is notified that HIV testing will be part of the routine blood work and the patient can then decline) screening be a part of routine clinical care in all-healthcare settings.
- The healthcare provider must explain the HIV test in a manner appropriate to the age, mental capacity and language skill of the subject. They must also inform the subject about the virus, transmission what the results will mean and about anonymous testing. The healthcare provider must sign a legal document not to divulge this information except on a need-to-know basis.

There will also be discussion on notifying sexual partners of the subject so that they can also be tested. You can't force the subject to divulge any information.

WHEN CAN YOU TEST WITHOUT INFORMED CONSENT?

HIV testing without informed consent may occur in a few court ordered circumstances, including:

1. Significant exposure to a person's blood
2. In a bona-fide medical emergency in which treatment is indicated by HIV status
3. Court charged sexual offender
4. When donating blood and organs
5. Infants whose parents cannot be located after reasonable attempts
6. In many states prostitutes can be tested without informed consent
7. If a child is deemed too young to give informed consent. If this occurs, parental consent is required

CONFIDENTIALITY

All medical information is confidential. Most states have acts such as the Florida Omnibus Aids Act that makes HIV test results "super confidential", review your state's guidelines. The "super confidentiality" pertains only to the HIV test result and the fact that an HIV test was conducted.
.

Disclosure of HIV test results is limited to the following:

1. The person tested and his or her legal representative.
2. Health care providers consulting among themselves regarding diagnosis and treatment of AIDS.
3. The Department of Health.
4. A healthcare provider if they have been exposed to the subject's body fluids.
5. Hospital staff, administrators and health care workers who provide aid and care to the subject, on a need to know basis
6. If a worker becomes exposed, they have the right to subpoena the medical records of the subject and demand that his or her HIV status be determined.

LEGAL NOTIFICATION RESPONSIBILITIES

In most states, local county health departments and registered HIV testing sites require pre- and post test counseling. The results of the consented tests must be discussed with the individual in a private setting during a prescheduled return visit to the testing site

They should also be encouraged to notify partners who may have been exposed.

Effective July 1, 2002 inmates in Florida are required to be tested for HIV before they are released, and if the tests are positive the local health department must be notified.

PREVENTION

You can protect yourself from contracting the HIV/AIDS virus. As a health care provider you must follow universal precautions and treat everyone's body fluids as if they were infected with the HIV virus.

Safe sex includes use of condoms: Latex is safest, novelty condoms are not recommended, and does not use oil base lubricant because it will cause condoms to tear.

The transmission of HIV/AIDS by healthcare workers can be prevented by following the Occupational Safety and Health Administration's (OSHA) mandated standard precautions found in OSHA 29CFR 1910.1030.

Remember our Infection Prevention course we just took.

- HIV can always be passed onto others
- Who is at risk? Everyone who practices unsafe sex, has a pre-existing STD, or uses IV drugs is at high risk
- Drug use, including alcohol, decreases an individuals ability to plan ahead and make wise choices
- Early testing adds an average of 1 ½ years of life to the HIV +

As a health care provider, it is necessary for you to help identify people at high risk, and offer education and counseling. Encourage them to get tested and advise HIV positive subjects where to go for treatment and social services.

HIV/AIDS affects us all

People who have HIV/AIDS are living longer due to the new drug therapies and regimens, but this increases complacency regarding adhering to drug regimens and safe life styles. Some think "If I live a long life why should I be afraid, it's treatable!" Since effective drugs are now available, we are seeing an increase in risky behaviors in people of all ages.

DISCRIMINATION

Are you afraid to work or associate with someone with HIV or AIDS?
Chances are that someone you know, work with, and/or associate with has HIV, and they may not even know they have this virus. In Florida, if you are in a group of 20 -100 people, chances are at least one person has HIV. Treat others as you would want to be treated. We have all heard reports of mistreatment including lost jobs, broken homes, ostracizing of individuals who have HIV. Do not be afraid be informed.

REFERENCES

Positively Aware, www.tpan.com, The Annual Drug Guide.

Aidmap, http://aidsmap.com/en/default.asp

CDC HIV/AIDS, www.cdc.gov/hiv/

CDC HIV Fact Sheets, for statistics, www.cdc.gov/resources/factsheets/index.htm

Florida Dept of Health Bureau of HIV/AIDS, www.doh.state.fl.us/disease_ctrl/aids/index.html

Perlmutter, B.L., Harris, B.R. (February 1, 1997**) *New Recommendations for Prophylaxis after HIV Exposure***. American Family Physician, vol. 55, number 2, *pp. 507-512.*

The Source, (March-April 1994). *Ryan White law in force April 20.*

O'Brien, S.J. and Dean, M. (September 1997). In Search of AIDS-Resistance Genes. Scientific American.

U.S. Dept. of Labor OSHA Standards 29 CFR1910.1030..

CDC www.cdc.org look under postexposure prophylasis.

UNAIDS ,uniting the world against AIDS, www.unaids.org/en/

The Florida Omnibus AIDS Act, 1988, amended 1998

Florida Statutes XXIX, CH 381.004.

CDC Surveillance Report 2002.

Cascade Collaboration. Determinants of survival following HIV-1 seroconversion after the introduction of HAART.

10th Conference on Retroviruses and Opportunistic Infections, Boston, February 13, 2003.