

HIV/AIDS Training for the Dental Health Worker Unit One

Developed by Theresa Allyn

Based on Washington State HIV AIDS Curriculum

Sponsored by the WSDA



Etiology and Epidemiology of HIV

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I congratulate you on taking the steps necessary to become a registered dental assistant. I have spent over 20 years in the field as both dental assistant, dental front office administrator and teacher.

I have taught at a private proprietary technical college, an ADA accredited assisting program and now teach at Edmond's Community College.

I began dental assisting before masks and gloves were required and before AIDS and HIV were discovered. I remember reusing syringes after autoclaving them, using glyderaldahyde as the main method of sterilization and sticking my ungloved hands in the midst of dirty instruments to grab out a needed instrument.

Thankfully times have changed and we are much more aware of health concerns to the dental health worker as well as to the patient.

As we study HIV and AIDS together let us use this as a time to refresh our knowledge, analyze our current infection control practices and create as much safety for ourselves and our patients as possible.

MEET YOUR TEACHER



- B.S. from Southern Illinois University at Carbondale in Workforce Education.
- M. Ed. From Western Washington University in 2008 in Adult Education.
- Coordinated Washington State Skill Standard for Dental Assistants.
- Taught Dental Assisting and various topics to adults over a 15 years.
- Worked as a dental assistant for over 12 years.

About this Course

- In response to the new registration process the WSDA has provided this training course to meet the seven hour AIDS/HIV training for dental assistants.
 - Each unit will cover specific information and then end with a short quiz to verify comprehension of key learning objectives.
 - Completion of all six units will result in meeting the state requirement for HIV/AIDS training and a certificate will be provided that the student can print off and keep for their records.
 - Many of the slides have live links which you can click on to enrich the learning experience. You need to have the internet explorer open on your computer to access these articles.
 - Make sure you are in slide show view to have full access to both live links and animated features. Simply click on views and press slide show view or click the small button on the bottom of the PowerPoint Program that looks like a screen.
1. Each slide unit has a corresponding audio unit.
 2. You will need to decide what media player you would like to use to listen to it.
 3. If you have iTunes Software you may be able to play it simply by clicking on the audio icon.
 4. If you use windows media player you may need to open windows media player and import the sound component into your player.
 5. Once you import it you simply choose it from the library and play it.
 6. If you have an iPod you can download the audio track to your iPod from the iTunes library and play it from your iPod.

Acknowledgments and Copyright Status

- Special thanks to the WSDA who sponsored the development of this PowerPoint course.
- WSDA owns all rights to the presentation and has chosen to make this presentation available to their members at no cost.
- No part of this presentation should be used beyond the scope of WSDA's purpose for it without written permission by WSDA.
- As for the content of these slides much of it is based on the Washington State HIV/AIDS Curriculum whose content is available copy right free at:
http://www.doh.wa.gov/CFH/HIV_AIDS/Prev_Edu/training_curriculum/KNOW_2007.pdf
- Special thanks is also given to the website http://www.aid_images.ch
Of which provided many pictures of HIV/AIDS case studies for the purpose of education at no cost.
- There are many other websites and information provided in this course of which great effort was made to give credit to the original information source as well as the URL address to locate the original source online. The main sites were the CDC, Government Health Sites, educational sites, and nonprofit HIV/AIDS support groups, and YouTube.com. Special thanks to each an every site available to help support HIV/AIDS information training available to the public.
- At the end of Unit 6 is a comprehensive listing of all the sites used throughout this presentation.

Importance of this Information to the Dental Health Worker

- ❁ As dental health professionals we must be aware of HIV/AIDS safety and patient care issues.
- ❁ We need to fully understand the special risks of treating patients with HIV or AIDS and how to minimize them.
- ❁ We need to practice standard operating procedures that keep ourselves and our patients safe from this communicable disease.



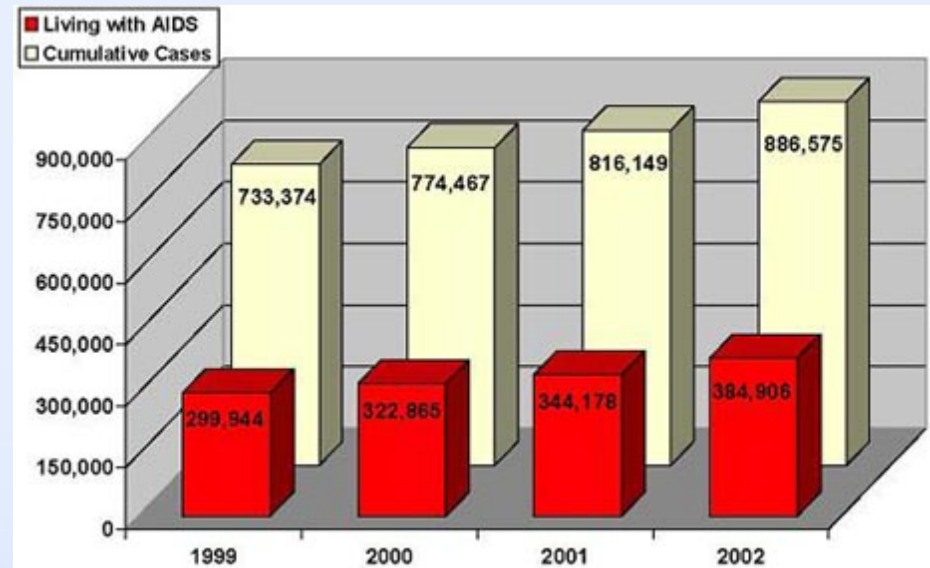
Importance Continued...

To answer these questions effectively we must:

- ✿ Understand the etiology and epidemiology of the disease.
- ✿ Know how significantly this disease has impacted our community and our state.
- ✿ Understand populations that share special risks.
- ✿ And know what behaviors create HIV/AIDS risks.

Unit One Overview

- ✿ What is HIV and AIDS?
- ✿ What is the Etiology of the Disease?
- ✿ What are the statistics on reported AIDS cases in the United States and Washington State?
- ✿ What populations have special HIV/AIDS risks?
- ✿ What behaviors have special HIV/AIDS risk?



HIV transmission in the US

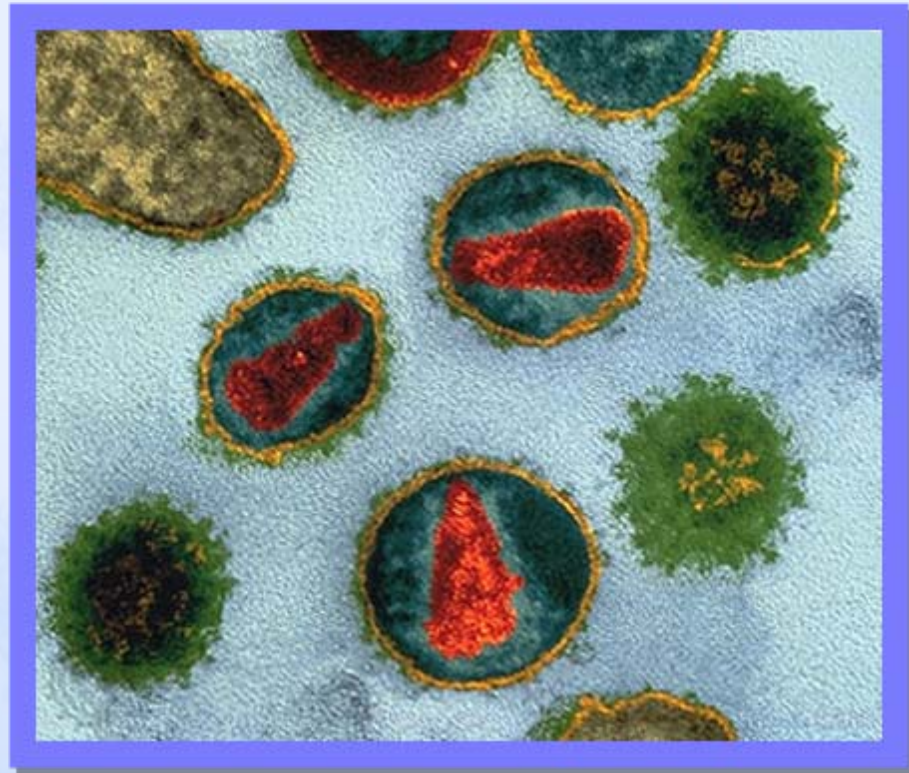
For more information and to view the original artwork and research on its original website click on or visit the following link

<http://www.thebody.com/content/art33760.html>

HIV STANDS FOR: HUMAN IMMUNODEFICIENCY VIRUS

For more information and to view the original artwork and research on its original website click on or visit the following link:

<http://techfreep.com/tags/hiv/>



A picture of the HIV virus

How does the HIV Virus Effect the Body?

- The Human Immunodeficiency Virus (HIV) attacks the immune system, causing deficiency or damage in the immune system.
- HIV damages the body's ability to fight diseases and infections.
- HIV infection leads to Acquired Immunodeficiency Syndrome (AIDS).
- Without a healthy, functioning immune system, a person may become vulnerable to infections by bacteria, other viruses and disease-causing organisms.
- These infections may cause life threatening illnesses.



A Russian family ravaged by aids

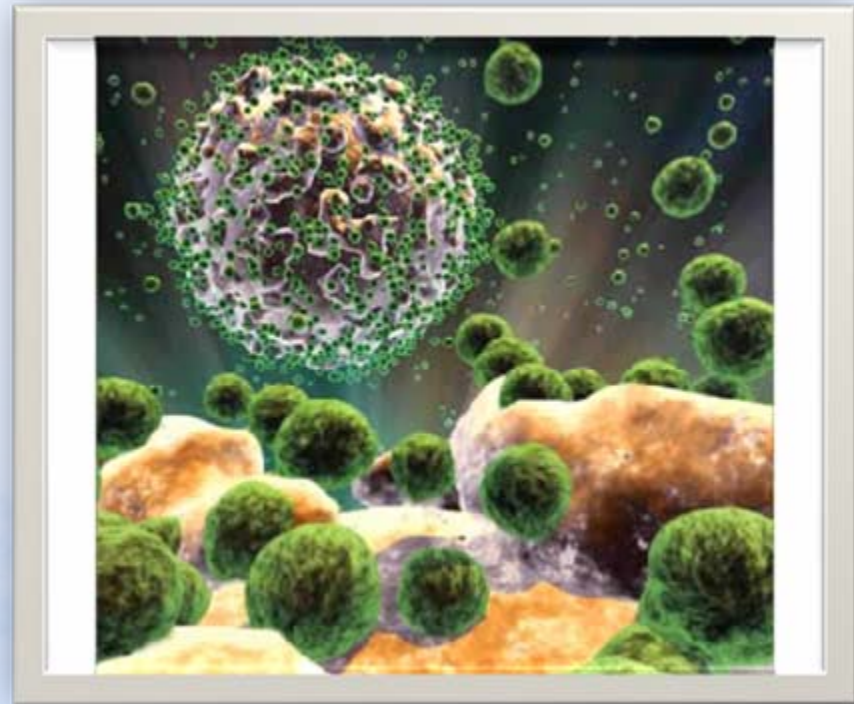
To read the case study on this family and to see this picture on its original website click on the following link

http://www.filmmakermagazine.com/summer2003/features/global_crisis.php

AIDS : ACQUIRED IMMUNODEFICIENCY (SOMETIMES IMMUNE DEFICIENCY) SYNDROME.

To read an interesting article on the spread of AIDS and to see this picture on its original web site click on the following link:

<http://www.intmath.com/Differential-equations/Predicting-AIDS.php>



HIV Virus invading a white blood cell.

HIV/AIDS

- * **ACQUIRED:** This disease is not hereditary. It is not passed casually from one person to another. HIV must enter the bloodstream in order to infect someone.
- * **IMMUNODEFICIENCY:** The immune system is the body's defense against infection and disease. When the immune system becomes damaged in its ability to fight off infectious diseases, it is called "deficient." Over time, a person with a deficient immune system may become vulnerable to infections by disease-causing organisms such as bacteria or viruses. These infections may cause life-threatening illnesses.
- * **SYNDROME:** HIV infection causes a combination of symptoms, diseases and infections. This condition is known as a syndrome.

How Does AIDS Effect the Body?

- ✿ AIDS is a complex condition caused by the human immunodeficiency virus (HIV), which kills or impairs cells of the immune system and progressively destroys the body's ability to fight infection and disease.
- ✿ People with damaged immune systems are vulnerable to diseases that do not threaten people with healthy immune systems.
- ✿ The term AIDS applies to the most advanced stages of an HIV infection.
- ✿ Medical treatment can delay the onset of AIDS.

AIDS Diagnosis

- ✿ The diagnosis of AIDS requires a positive HIV antibody test or evidence of HIV infection and the appearance of some very specific diagnosis conditions or diseases. Only a licensed medical provider can make a diagnosis.
- ✿ HIV infection is not necessarily the same thing as AIDS. All people diagnosed with AIDS have HIV, but not all people with HIV have reached an AIDS diagnosis.



Oral thrush involving hard and soft palate

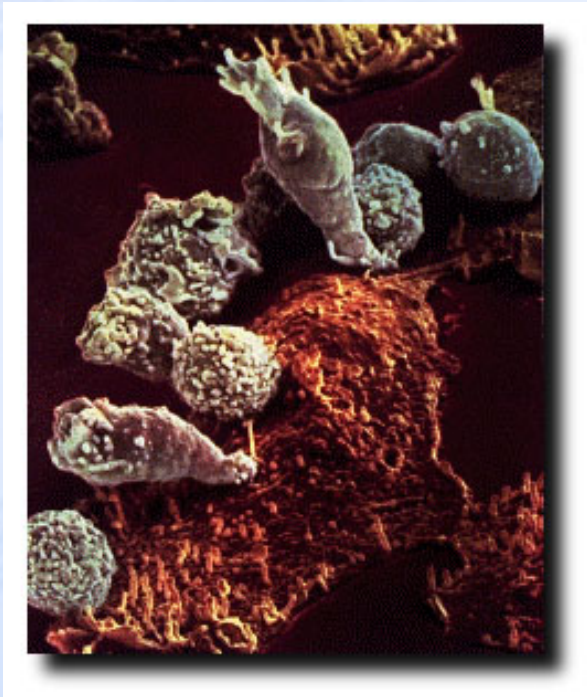
Picture credit: Pr J. Samson, Geneva

For more information and other pictures of HIV/AIDS click on the following link

dermis.multimedica.de/.../en/11043/image.htm

How HIV Works in the Body

Scanning Electron Micrograph (SEM) of T cell Lymphocytes attacking a cancer cell.



To read an interesting article on the T cells and see this picture on its original web site click on the following link.

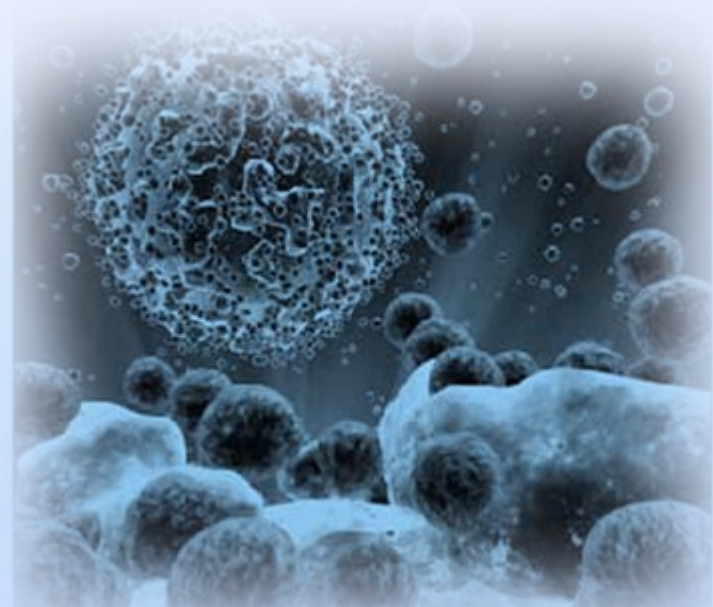
<http://www.acm.uiuc.edu/sigbio/project/updated-lymphatic/lymph8.html>

- HIV enters the bloodstream and seeks out "T-Helper lymphocyte", white blood cells (lymphocytes) essential to the functioning of the immune system.
- One of the functions of these cells is to regulate the immune response in the event of attack from disease-causing organisms such as bacteria or viruses.
- When the virus infects the T-Helper Lymphocyte, the cell sends signals to other cells which produce antibodies.
- This T-Helper lymphocyte cell may also be called the T4 or the CD4 cell.

HIV Antibodies

- Antibodies are produced by the immune system to help get rid of specific foreign invaders that can cause disease.
- Producing antibodies is an essential function of our immune systems.
- The body makes a specific antibody for each disease. For example, if we are exposed to measles virus, the immune system will develop antibodies specifically designed to attack the measles virus. Polio antibodies fight polio virus.
- When our immune system is working correctly, it protects against these foreign invaders.
- HIV infects and destroys the T-Helper Lymphocytes and damages their ability to signal for antibody production.
- This results in the eventual decline of the immune system.

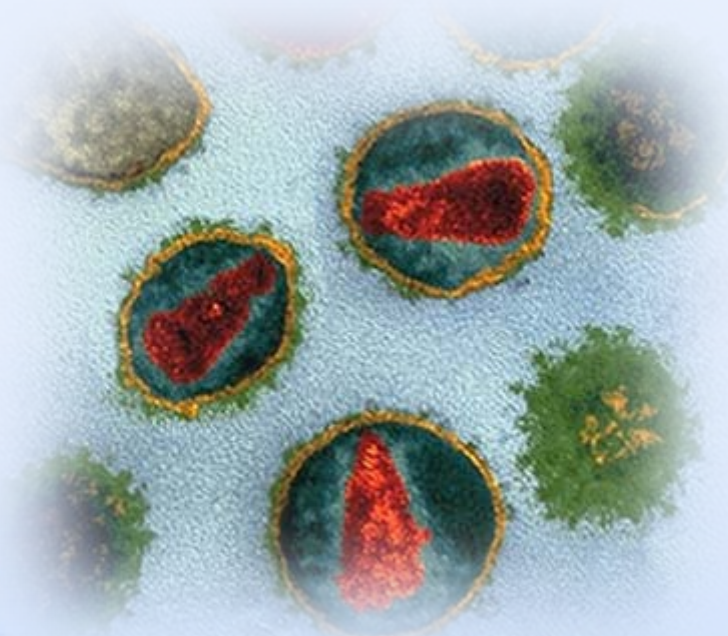
The following link is a great video clip on how HIV and AIDS effects the body. To view it make sure that your computer is connected to the internet and that you are in slide show view. You will need to have high speed internet access. Also once you get to the page you can press the full screen button for a bigger viewing area (look for the button that looks like a button with in a button under the film box and the movie will show on your whole screen). When done viewing press the escape button if in full view or the X at the top and you will return to this course.



[Click here to view video of HIV infecting cells](#)

Primary or Acute HIV Infection

- ✿ Primary/acute HIV infection is the first stage of HIV disease, typically lasting only a week or two, when the virus first establishes itself in the body.
- ✿ Some researchers use the term acute HIV infection to describe the period of time between when a person is first infected with HIV and when antibodies (proteins made by the immune system in response to infection) against the virus are produced by the body (usually 6 to 12 weeks) and can be detected by an HIV test.



[Click here to view movie on HIV and AIDS](#)

Window Period



To see this artwork on its original web site and learn about a nonprofit AIDS support organization click on the following link.
<http://www.charitynavigator.org/index.cfm?bay=search.summary&orgid=4310>

- This is the period of time between when the body first becomes infected with HIV and when the body is able to produce antibodies to HIV.
- It may take between two weeks to three months for antibodies to develop. Most people develop antibodies by 6-12 weeks. During this time, the person is "infectious," meaning s/he can pass the virus to someone else, and will remain infectious throughout life.
- The window period is the time when a person may not produce sufficient antibodies to be detectable on an HIV antibody test.
- This means they might get a negative result on an antibody test, while actually having HIV. This is why a newly infected person can infect a partner before antibodies develop, when high amounts of virus in the blood are present, and the newly infected person does not yet know they have HIV.

Asymptomatic Stage

- ✿ After the acute stage of HIV infection, people infected with HIV continue to look and feel completely well for long periods, usually for many years.
- ✿ During this time, the virus is replicating and slowly destroying T4 cells and the immune system.
- ✿ This means that although the individual looks and feels healthy, they can infect other people through unprotected anal, vaginal or oral sex or through needle sharing--especially if they have not been tested and don't know yet that they are infected.
- ✿ The virus can also be passed from an infected woman to her baby during pregnancy, the birth, or through breast-feeding.
- ✿ Without antiretroviral therapy, there is an average of ten years between the time a person is infected with HIV and the start of persistent symptoms of "AIDS."

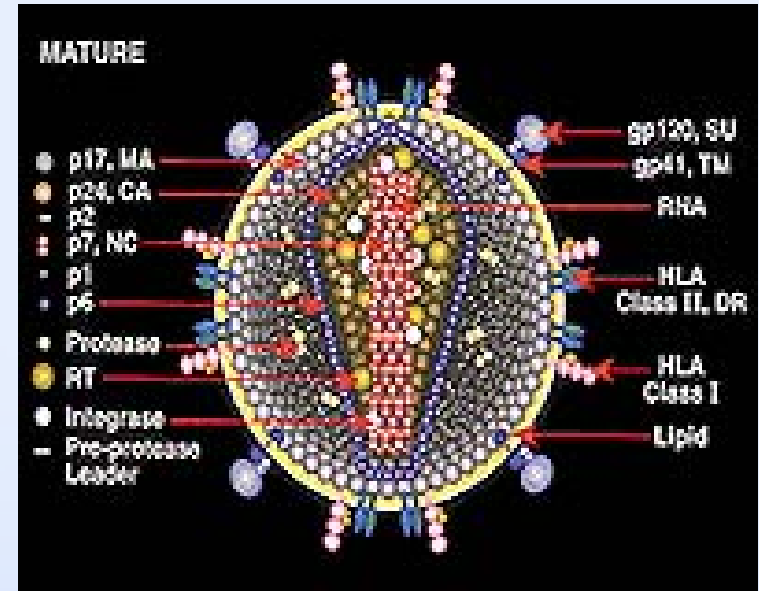
The Origin of HIV

- Since HIV was discovered in 1983, researchers have worked to pinpoint the origin of the virus.
- In 1999, an international team of researchers reported that they discovered the origins of HIV-1, the predominant strain of HIV in the developed world.
- A subspecies of chimpanzees native to west equatorial Africa was identified as the original source of the virus.
- The researchers believe that HIV-1 was introduced into the human population when hunters became exposed to infected blood.
- HIV transmission is driven by changes in migration, housing, travel, sexual practices, drug use, war, and economics that affect both Africa and the entire world.



HIV Strains and Subtypes

- HIV has divided into two primary strains: HIV-1 and HIV-2. Worldwide, the predominant virus is HIV-1, and generally when people refer to HIV without specifying the type of virus they are referring to HIV-1.
- The relatively uncommon HIV-2 type is concentrated in West Africa and is rarely found elsewhere.
- HIV is a highly variable virus which mutates very readily. This means there are many different strains of HIV, even within the body of a single infected person.
- Based on genetic similarities, the numerous virus strains may be classified into types, groups and subtypes.
- Both HIV-1 and HIV-2 have several subtypes. It is virtually certain that more undiscovered subtypes are in existence now. It is also probable that more HIV subtypes will evolve in the future.
- As of 2001, blood testing in the United States can detect both strains and all known subtypes of HIV.



HIV-1--most closely related to an SIV strain found in chimpanzees--is the more virulent of the two human strains and the source of the majority of HIV infections throughout the world.

To see this artwork on its original web and study further on the original HIV strain click on the following link.

http://www.terraily.com/reports/High_Virulence_Of_HIV_1_Might_Be_An_Accident_Of_Evolution.html

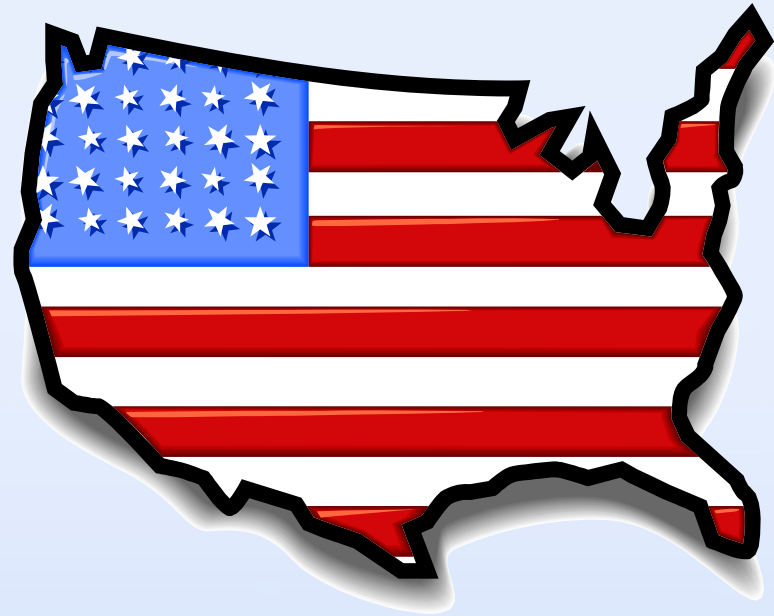
Epidemiology of HIV and AIDS

- * Epidemiology is defined as "the study of how disease is distributed in populations and of the factors that influence or determine this distribution."
- * Epidemiologists try to discover why a disease develops in some people and not in others.

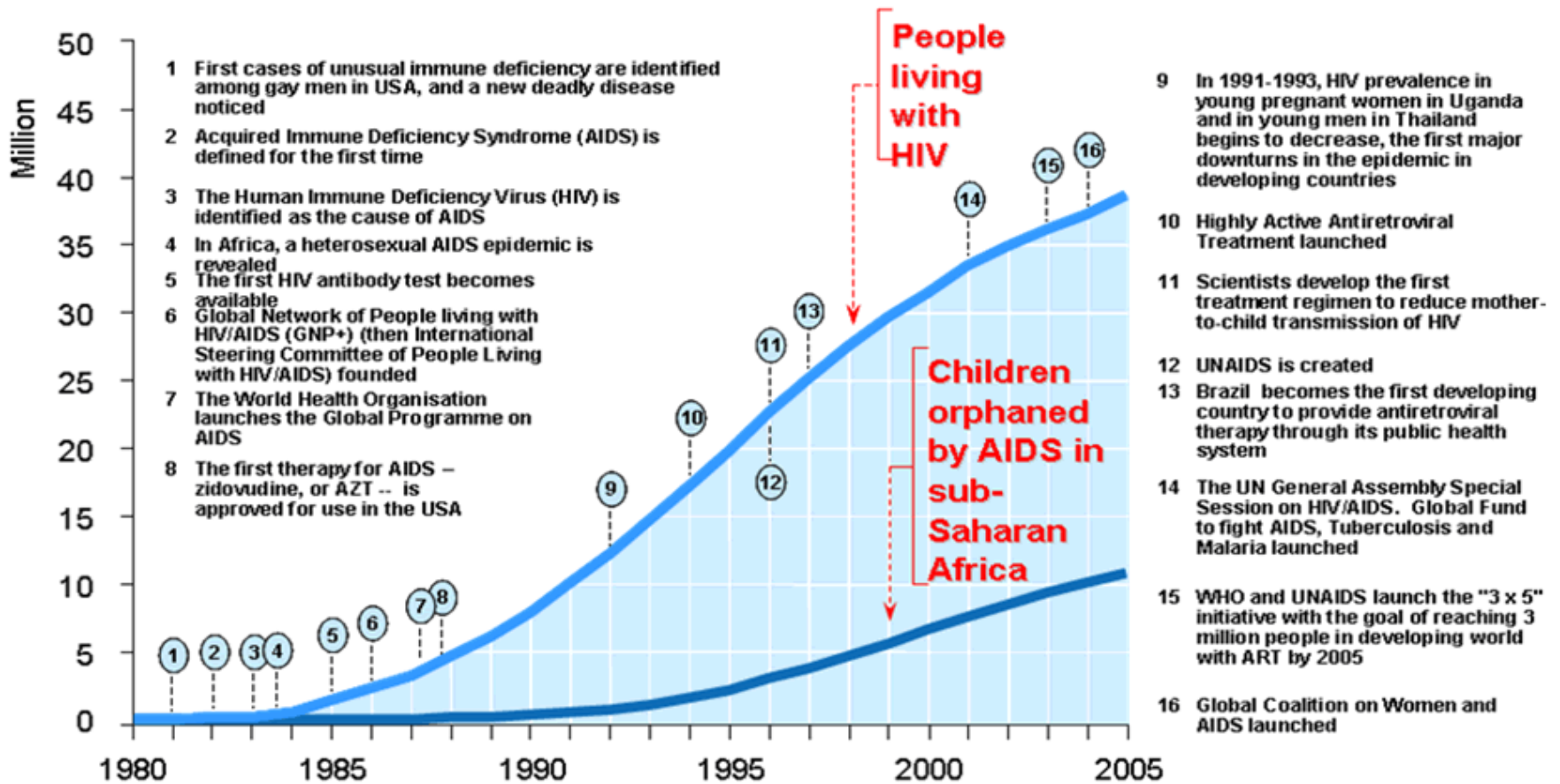


AIDS Cases first Recognized

- ✿ AIDS was first recognized in the United States in 1981.
- ✿ In Washington State, the first reported case of AIDS was in 1982.
- ✿ Since then, the number of AIDS cases has continued to increase both in the U.S. and other countries.
- ✿ In 1983, HIV was discovered to be the cause of AIDS.



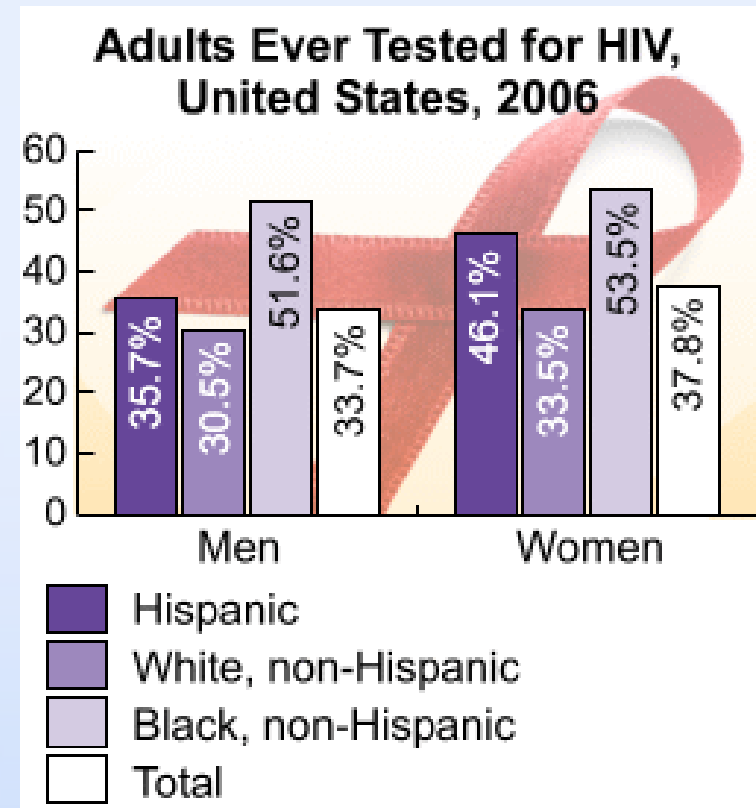
25 Years of AIDS



To see this graphic on its original web and study further on the original HIV strain click on the following link. www.pacpnwfp.gov.pk/develop_history/index.html

HIV Infection Knows no Boundaries

- People who are infected with HIV come from all races, countries, sexual orientations, genders, and income levels.
- Globally, most of the people who are infected with HIV have not been tested, and are unaware that they are living with the virus.
- The U.S. Centers for Disease Control and Prevention (CDC) estimates that a quarter of people with HIV are unaware that they are living with the virus.



To see view this chart on its original web page and study further on AIDS' testing click on the following link.

<http://www.cdc.gov/DataStatistics/2007/WorldAIDSDay>

HIV & AIDS Cases

- The number of HIV-infected people worldwide has grown dramatically.
- HIV cases only became reportable to the Department of Health in the fall of 1999. AIDS cases have been reportable since 1984.
- Contact the State AIDS Hotline at 1-800 272-2437 for updated information on reported HIV and AIDS cases in Washington.



- The CDC estimates that there are between 1,039,000 to 1,185,000 persons infected with HIV in the United States. Additionally, it is estimated that 40,000 persons in the United States become newly infected with HIV each year.
- In the U.S., there are estimated to be over 17,000 people with AIDS who are dying each year in the U.S. As therapies have improved, fewer people have died of AIDS each year.
- However, the treatments have not reduced the number of new infections. The United Nations AIDS Program estimates there were 38.6 million people in the world living with HIV or AIDS in 2005.
- An estimated 4.1 million people worldwide became infected with HIV in 2005. Half of these new infections were in people between the ages of 15-24.
- There were 3 million deaths worldwide from AIDS in 2000.

Decrease in AIDS Deaths in Wealthier Countries

- The discovery of antiviral "combination" drug therapies in 1996 resulted in a dramatic decrease in the number of deaths due to AIDS (among persons taking the drug therapies).
- Many people who have access to the drug therapies may not benefit from them, or may not be able to tolerate the side effects.
- The medications are expensive and require strict dosing schedules.
- In developing countries, due to lack of access to health care systems and cost, many people with HIV have no access to the newer drug therapies.



HIV Reporting



- ✿ AIDS and symptomatic HIV infections have been reportable (meaning physicians must confidentially report any cases among their patients) to the Washington State Dept. of Health since 1984 and 1993, respectively.
- ✿ HIV cases have been reportable in many states for several years. Reporting of new HIV diagnoses has been required in Washington State since September, 1999.

For Current HIV and AIDS Statistics, Visit these Websites:

- * <http://www.doh.wa.gov/cfh/hiv.htm>
(go to Prevention & Education)
- * <http://hivinsite.ucsf.edu/>
- * <http://www.cdc.gov/>
- * http://www.unaids.org/en/HIV_data/2006
[GlobalReport](#)

Unit One Quiz

Directions:

1. Get a piece of paper and pen and write your answers to the following 10 questions.
2. When finished check your answers on the following answer slides.
3. Keep each self quiz as proof that you have completed the unit.

Unit One Quiz

1. True or false: Due to confidentiality laws new HIV cases do not need to be reported.
2. True or false: The rate of new infection of HIV/AIDS has lowered consistently in Washington State due to the medical treatments that are available.
3. True or false: It is not possible to infect another individual with HIV if both individuals are HIV/AIDS symptom Free.
4. True or False: HIV infects and destroys the T-Helper Lymphocytes and damages their ability to signal for antibody production.
5. True or false: Primary/acute HIV infection is the first stage of HIV disease, typically lasting only a week or two, when the virus first establishes itself in the body.

Quiz for Unit One Cont...

6. What is the name of the period of time between when the body first becomes infected with HIV and when the body is able to produce antibodies to HIV.
7. What is the name of the period after the acute stage of HIV infection, where people infected with HIV continue to look and feel completely well for long periods, usually for many years.
8. True or false: People who are infected with HIV come from mostly third world countries, have non-typical sexual orientations, and are mostly men.
9. True or false: The CDC estimates that there are between 1,039,000 to 1,185,000 persons infected with HIV in the United States.
10. True or false HIV has divided into two primary strains: HIV-1 and HIV-2.

Answer Guide for Quiz One

1. True or **false**: Due to confidentiality laws new HIV cases do not need to be reported.
2. True or **false**: The rate of new infection of HIV/AIDS has lowered consistently in Washington State due to the medical treatments that are available.
3. True or **false**: It is not possible to infect another individual with HIV if both individuals are HIV/AIDS symptom Free.
4. **True** or False: HIV infects and destroys the T-Helper Lymphocytes and damages their ability to signal for antibody production.
5. **True** or false: Primary/acute HIV infection is the first stage of HIV disease, typically lasting only a week or two, when the virus first establishes itself in the body.

Answer Guide for Quiz One

6. What is the name of the period of time between when the body first becomes infected with HIV and when the body is able to produce antibodies to HIV. (**Window Period**)
7. What is the name of the period after the acute stage of HIV infection, where people infected with HIV continue to look and feel completely well for long periods, usually for many years. (**Asymptomatic Period**)
8. True or **false**: People who are infected with HIV come from mostly third world countries, have non-typical sexual orientations, and are mostly men.
9. **True** or false: The CDC estimates that there are between 1,039,000 to 1,185,000 persons infected with HIV in the United States.
10. **True** or false HIV has divided into two primary strains: HIV-1 and HIV-2.

Congratulations!

1. You have completed Unit One of the HIV/AIDS online learning course.
2. You will now move to Unit Two

