

HIV in America

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Contact hours: 7

Course price: \$49

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Course Summary

This course on HIV covers HIV origin and epidemiology, transmission precautions and infection control, testing and counseling, clinical manifestations and treatment, legal and ethical issues, and psychosocial issues.

COI Support

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This course will be reviewed every two years. It will be updated or discontinued on March 1, 2020.

Criteria for Successful Completions

80% or higher on the post test, a completed evaluation form, and payment where required. No partial credit will be awarded.

Course Objectives

When you finish this course you will be able to:

1. Discuss the origin and epidemiology of HIV in the United States.
2. Describe transmission, infection control, and prevention of HIV.
3. Outline the common testing and counseling requirements for HIV-infected individuals.
4. Characterize the clinical manifestations, opportunistic infections and treatment options of HIV/AIDS.
5. Identify the legal and ethical issues associated with HIV.
6. Discuss the main psychosocial issues facing HIV-infected people and their caregivers.
7. Identify global and national resources for healthcare professionals and clients with HIV.

Origin and Epidemiology of HIV/AIDS

UNAIDS reports that reaching Fast-Track Targets will avert nearly 28 million new HIV infections and end the AIDS epidemic as a global health threat by 2030.

If the world does not rapidly scale up in the next five years, the epidemic is likely to spring back with a higher rate of new HIV infections than today.

Your client, Mr. Glover, has been diagnosed with HIV. You don't know much about HIV and are concerned whether you can "catch" HIV by working with him or even shaking hands. You recognize your need to be better educated so you can give appropriate care without bias or fear. You know that quality care can be given when you have a sound understanding of the disease, risk factors, diagnostics, clinical symptoms, and treatments. Becoming culturally sensitive to the unique needs of your patients requires you to better understand your patient's values, definitions of health and illness, and preferences for care.

Definitions of HIV and AIDS

[Note: If not otherwise identified, material in this course is taken from the Centers for Disease Control and Prevention.]

The **human immunodeficiency virus (HIV)** has infected tens of millions of people around the globe in the past three decades, with devastating results. In its advanced stage—**acquired immunodeficiency syndrome (AIDS)**—the infected individual has no protection from diseases that may not even threaten people who have healthy immune systems. While medical treatment can delay the onset of AIDS, no cure is available for HIV or AIDS.

The human immunodeficiency virus (HIV) kills or impairs the cells of the immune system and progressively destroys the body's ability to protect itself. Over time, a person with a deficient immune system (**immunodeficiency**) may become vulnerable to common and even simple infections by disease-causing organisms such as bacteria or viruses. These infections can become life-threatening.

The term **AIDS** comes from "acquired immunodeficiency syndrome." AIDS refers to the most advanced stage of HIV infection. Medical treatment can delay the onset of AIDS, but HIV infection eventually results in a **syndrome** of symptoms, diseases, and infections. The diagnosis of AIDS requires evidence of HIV infection and the appearance of specific conditions or diseases beyond just the HIV infection. Only a licensed medical provider can make an AIDS diagnosis. A key concept is that all people diagnosed with AIDS have HIV, but an individual may be infected with HIV and not yet have AIDS.

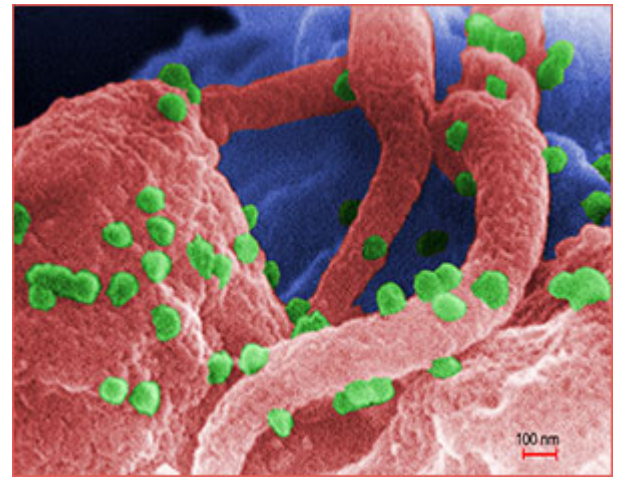
HIV-Infection in the Body

**Human Lymphocyte Showing
HIV Infection**

HIV enters the bloodstream and attacks **T-helper lymphocytes**, which are white blood cells essential to the functioning of the immune system. One of the functions of T-helper cells is to regulate the immune response in the event of attack from disease-causing organisms such as bacteria or viruses. The T-helper lymphocyte cell is also called the **T4** or the **CD4** cell. When any pathogen infects the T-helper lymphocyte, the T cell sends signals to other cells, which produce helpful antibodies.

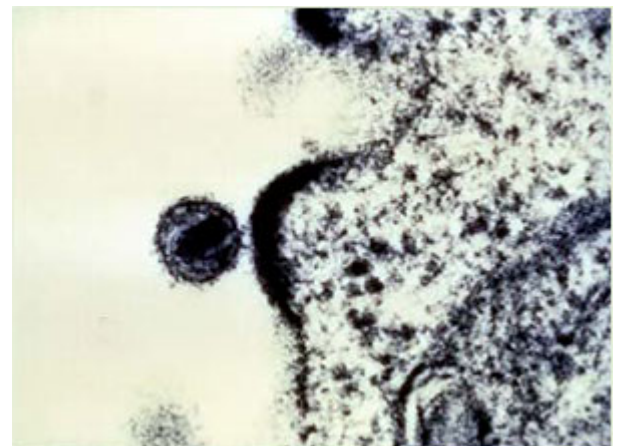
Antibodies (proteins made by the immune system in response to infection) are produced by the immune system to help get rid of specific foreign invaders that can cause disease. Producing antibodies is an essential function of our immune system. The body makes a specific antibody for each pathogen. For example, if we are exposed to the measles virus, the immune system will develop antibodies specifically designed to attack that virus. Polio antibodies fight the polio virus. A healthy immune system creates customized identification of pathogens, which results in the body's ability to target and kill invading microorganisms. 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 HIV is then able to reproduce without being killed from the body. CD4 counts therefore are of great importance to people with HIV to confirm their ability to fight infection. The normal range for CD4 is between 500 and 1,500. A CD4 count below 200 reveals the body's inability to create antibodies and fight infection, putting the client at greater risk for AIDS and other potentially fatal opportunistic infections. Serum lab results may also express CD4 percentage, and a normal result in an HIV negative person is between 25% and 65%, identifying that percentage of lymphocytes are CD4 cells. The remaining cells are other types of lymphocytes also involved in the immune attack against pathogens.



A scanning electron micrograph showing HIV-1 virions (in green) on the surface of a human lymphocyte. HIV was identified in 1983 as the pathogen responsible for AIDS. In the infected individual, the virus causes a depletion of T-cells, which leaves these patients susceptible to opportunistic infections and to certain malignancies. Source: Public Health Image Library, image #11279, CDC, 1989.

HIV "Budding" Out of a T-cell



Source: NIAID, courtesy of Dr. Tom Folks.

Primary HIV Infection

Primary HIV infection (acute HIV infection) is the first stage of HIV disease. It begins with initial infection and typically lasts only a week or two. During this time the virus is establishing itself in the body but **the body has not yet begun to produce antibodies**. Because of this, the infection cannot be identified by any HIV tests.

This period of acute infection is characterized by a **high viral load** (large numbers of the virus) and a decline in CD4 cells. Approximately half of infected patients experience clinical symptoms mimicking mononucleosis that include fever and swollen glands during the primary infection, but the symptoms are not life-threatening and may be misinterpreted as a minor illness.

During a primary infection, newly infected people can infect partners because they do not yet know they have HIV. The primary infection period ends when the body begins to produce HIV-specific antibodies as the CD4 cells are still able to respond. The number of antibodies is still insufficient, however, to be detectable by HIV testing.

Test Your Learning

Primary HIV infection is:

- A. The period beginning when AIDS is diagnosed.
- B. The time when antibodies are first detected.
- C. Referred to as the window period.
- D. The first weeks after infection when the body has not yet produced antibodies.

Online Resource

Video (10:40): How HIV Kills So Many CD4 T Cells

How HIV kills so many CD4 T cells | Infectious di...



<https://www.youtube.com/watch?v=8gnpnUFNloo>

Answer: D

Window Period

The **window period** is the period of time between initial infection with HIV and the point when the body produces detectable antibodies, which can vary from 2 to 12 weeks. During the window period a person is infectious, with a high viral load, but still presents with a negative HIV antibody test. This false negative test means the infected person might get a negative test result while actually having HIV. The point when the HIV antibody test becomes positive is called **seroconversion**.

Test Your Learning

The window period:

- A. Is the time between infection with HIV and the body's production of detectable antibodies.
- B. Typically lasts only a week or two.
- C. Refers to the stage of disease when the newly infected person is not yet contagious.
- D. Is the first stage of HIV disease.

Answer: A

Asymptomatic Stage

After the acute stage of HIV infection, people infected with HIV continue to look and feel completely well for long periods, sometimes for many years. During this time, the virus is replicating and slowly destroying the immune system. This asymptomatic stage is sometimes referred to as **clinical latency**. This means that, although a person looks and feels healthy, they can infect other people through any body fluid contact such as unprotected anal, vaginal, or oral sex or through needle sharing.

The virus can also be passed from an infected woman to her baby during pregnancy, birth, or breastfeeding when she is unaware of being HIV positive. Unless the infected person is given antiretroviral therapy, the onset of AIDS can occur an average of 10 years after being infected with HIV.

Apply Your Learning

Q: If a person has been infected with HIV but is not symptomatic, how would you explain this to a patient with HIV?

A: Although there may be no clinical symptoms, the HIV is replicating and slowly attacking the immune system's CD4 cells. An untreated person can look and feel healthy, sometimes for many years, however the virus is still present in the blood and can cause infection in others. Also, the virus can be passed through unprotected sex and from pregnant or lactating mother to child.

The Origin of HIV

Since the human immunodeficiency virus was identified 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. Researchers believe that HIV-1 was introduced into the human population when hunters became exposed to infected blood. The transmission of HIV was driven through Africa by migration, housing, travel, sexual practices, drug use, war, and economics that affect both Africa and to the entire world.

HIV Strains and Subtypes

HIV is 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 that easily mutates. This means there are many different strains of HIV, even within the body of a single infected person. Based on genetic similarities, the numerous viral strains may be classified into types, groups, and subtypes.

Both HIV-1 and HIV-2 have several subtypes. It is certain that more undiscovered subtypes already exist. 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 currently known subtypes of HIV.

Epidemiology of HIV and AIDS

Epidemiology is the study of how disease is distributed in populations and the factors that influence the distribution. Epidemiologists try to discover why a disease develops in some people and not in others. Clinically, AIDS was first recognized in the United States in 1981. In 1983 HIV was discovered to be the cause of AIDS. Since then, the number of AIDS cases has continued to increase both in the United States and in other countries.

HIV and AIDS cases are reportable; each state has its own laws and healthcare workers must be familiar with those of the state in which they are licensed.

The discovery of combination antiviral drug therapies in 1996 resulted in a dramatic **decrease** in the number of deaths due to AIDS among people given the drug therapies. On the down side, many people who have access to the 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. Furthermore, in developing countries many people with HIV have no access to the newer drug therapies.

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 Centers for Disease Control and Prevention (CDC) estimate that 1.2 million people aged 13 years and older are living with HIV infection, including 168,000 (14%) who are unaware of their infection. This is a decline from 25% in 2003 and 20% in 2012, and it is a positive sign because studies have shown that people with HIV who know that they are infected avoid behaviors that spread infection to others; also, they can get medical care and take antiviral medications that could eventually reduce HIV spread by as much as 96% (CDC, 2016a).

CDC estimates that there are only 4 transmissions per year for every 100 people living with HIV in the United States, which means that at least 95% of people living with HIV do not transmit the virus to anyone else. This represents an 89% decline in the transmission rate since the mid-1980s, reflecting the combined impact of testing, prevention counseling, and treatment efforts targeted to those living with HIV infection (CDC, 2013).

The estimated incidence of HIV has remained generally stable in recent years, at about 50,000 new HIV infections per year (CDC, 2014a). While this number is still too high, stabilization is in itself a sign of positive progress. With continued increases in the number of people living with HIV due to effective HIV medications, there are potentially more opportunities for HIV transmission than ever before. Yet, the annual number of new infections has not increased (CDC, 2013).

Worldwide, there were about 2.1 million new cases of HIV in 2013, and about 35 million people are living with HIV around the world. Of those, 3.2 million are children, 2.1 million are adolescents, and 4.2 million are people over age 50. In 2013 new HIV infections worldwide were 2.1 million, but new infections have fallen 38% since 2001 and new infections among children have fallen by 58% in the same period (CDC, 2014b; UNAIDS, 2014b).

Through 2011 the cumulative estimated number of deaths of people with diagnosed HIV infection ever classified as stage 3 (AIDS) in the United States was 648,000 (deaths may be due to any cause, which can make data interpretation complex). Nearly 39 million people with AIDS have died worldwide since the epidemic began (CDC, 2014b).

Globally, AIDS-related deaths, which peaked in 2005 at 2.4 million and have declined steadily ever since, were estimated at 1.5 million in 2013 (UNAIDS, 2014a). Even though Sub-Saharan Africa bears the biggest burden of HIV/AIDS, countries in South and Southeast Asia, Eastern Europe and Central Asia, and those in Latin America are significantly affected by HIV and AIDS (CDC, 2014b; UNAIDS, 2014b).

In 2014 UNAIDS set forth the goal known as 90-90-90, which means that, by 2020,

- 90% of people living with HIV will know their HIV status.
- 90% of those diagnosed with HIV infection will receive sustained antiretroviral therapy.
- 90% of all people receiving antiretroviral therapy will have viral suppression. (UNAIDS, 2018)

Transmission and Infection Control

Necessary Conditions for HIV Infection

[If not otherwise identified, the material in this section is from CDC historical records.]

HIV is a relatively fragile virus, which is not spread by casual contact. HIV is not easy to “catch”—it must be **acquired**. In order for HIV to be transmitted, three conditions must occur:

- There must be an HIV source.
- There must be a sufficient dose of virus.
- There must be access to the bloodstream of another person.

Body Fluids That Can Transmit HIV

Anyone infected with the virus is potentially a source of HIV infection. Transmission occurs primarily through infected blood, semen, vaginal secretions, or breast milk. Sweat, tears, saliva, urine, and feces are not capable of transmitting HIV unless visibly contaminated with blood.

In settings such as hospital operating rooms, other fluids such as cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, and amniotic fluid may be considered infectious if the source is HIV positive. These fluids are generally not found outside the hospital setting. Therefore, **the most common body fluids considered potentially infectious for HIV are blood, semen, vaginal secretions, and breast milk.**

Sufficient Dose

The concentration and amount of HIV necessary for infection to occur is called a **sufficient dose**.

Blood

Access to another person's bloodstream involves behaviors or circumstances that place someone at risk for infectious fluid entering their bloodstream. The most common of the risk behaviors are **unprotected sexual intercourse (anal, vaginal, oral) with an infected person** and **use of contaminated equipment for injecting drugs**.

HIV transmission may occur during practices such as tattooing, blood-sharing activities such as "blood brother" rituals, or any other type of ritualistic ceremonies where blood is exchanged, or when unsterilized equipment contaminated with blood is shared. HIV transmission may also occur in occupational settings, which will be discussed later in this section.

Means and Requirements for HIV Transmission

People may become infected with HIV if they engage in specific risk behaviors or if they are exposed through needlestick injuries (usually in a healthcare setting). Other blood contact with mucous membranes or non-intact skin provides a possible, but not probable, chance of transmission.

HIV is transmitted through:

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

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

The **transmission** of HIV depends upon:

- The **availability** of the infectious agent (HIV) in sufficient quantity
- The **viability** of the infectious agent (how strong it is)
- The **virulence** of the infectious agent (how infectious it is)
- The **ability** of the infectious agent to reach the bloodstream, mucous membranes, or broken skin of a potential host (the entry for getting into another person's body)

One of the predictors of the infectious level of an HIV-positive person is viral load, which is how much HIV is present in the bloodstream. Studies show a clear connection between higher viral load in the blood and increased transmissibility of HIV.

Test Your Learning

Conditions for the transmission of HIV include:

- A. Dispersal of droplets from an infected person with a cough.
- B. Casual contact with an infected person.
- C. A genetic predisposition to HIV and a compromised immune system..
- D. Access to the bloodstream of another person, sufficient dose of virus, and an HIV source.

Answer: D

Blood Transfusions

Transmission by contaminated blood or blood products occurred in the United States before March 1985. Testing for HIV at blood banks and organ transplant centers began in 1985 and has almost completely eliminated the risks for transmission in developed countries. In 1999 about 1% of national AIDS cases were caused by transfusions or use of contaminated blood products. The majority of those cases were in people who received blood or blood products before 1985.

Sexual Intercourse

HIV can enter the bloodstream through mucous membranes—breaks, sores, and cuts in the mouth, anus, vagina, or penis. Anal, vaginal, and oral intercourse (both receptive and penetrative) can transmit HIV from person to person.

Anal Intercourse

Unprotected anal intercourse is considered to be the greatest sexual risk for transmitting HIV. Anal intercourse frequently results in tears of mucous membranes, which makes it very easy for the virus to enter the bloodstream. The receptive partner is considered to be at more risk of getting HIV if the virus is present. Risks vary for the insertive partner.

Vaginal Intercourse

Unprotected vaginal intercourse with the exchange of semen, pre-ejaculate fluid, menstrual blood, or vaginal fluid is also a risk for HIV transmission. Studies have shown that women are more likely to become infected with HIV through vaginal sex than men who have sex with them. The larger amount of mucous membrane surface area of the vagina is a probable reason for women's greater rate of HIV infection from their male partners.

Sharing Needles and Drug Injection Equipment

Sharing injection needles, syringes, and other drug paraphernalia with an HIV-infected person can put HIV directly into the user's bloodstream and is the behavior that most easily transmits HIV, hepatitis B (HBV), and hepatitis C (HCV).

Indirect sharing occurs when drug users share injection paraphernalia or divide a shared or jointly purchased drug while preparing and injecting it. The paraphernalia that carry the potential for transmission are the syringe, needle, "cooker," cotton, and rinse water. Sharing these items (sometimes called "works") may transmit HIV, bacteria, and other viruses. Examples of indirect sharing are when a user squirts the drug back (from a dirty syringe) into the drug cooker or someone else's syringe or shares a common filter or rinse water.

Probability of HIV Transmission from One HIV Exposure

Donor screening, blood testing, and other processing measures have reduced the risk of transfusion-caused HIV transmission in the United States to between 1 in 450,000 and 1 in 600,000 transfusions. Donating blood is always safe in the United States, because sterile needles and equipment are used. All used syringes, needles, and blood or body fluid spills should be considered potentially infectious, and should be treated using Standard Precautions (formerly known as Universal Precautions).

Online Resource

HIV Risk Behaviors

<http://www.cdc.gov/hiv/policies/law/risk.html>

Probability of Infection Following One Exposure to HIV*

Source of infection	HIV infection rate (%)
Contaminated blood transfusion (prior to 1986)	95.0
One intravenous syringe or needle exposure	0.67
One percutaneous exposure (e.g. a needlestick)	0.4
One episode of receptive anal sexual intercourse	0.1–3
One episode of receptive vaginal intercourse	0.1–0.2
One episode of insertive vaginal intercourse	0.03–0.09

*A 1% risk means 1 chance in 100 for infection to occur. An 0.10% risk means 1 chance in 1,000.

Source: CDC.

HIV and Pregnancy

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

In 1994 researchers discovered that a course of the antiretroviral drug AZT (zidovudine) significantly reduced the transmission of HIV from woman to baby. In 2002 medications such as AZT and others were introduced during pregnancy and delivery to prevent transmission of HIV.

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

In some pregnancies, cesarean section (C-section) may be recommended to reduce the risk of transmission from woman to baby. Advice about medications and C-section should be given on an individual basis by a medical provider with experience in treating HIV-positive pregnant women.

Video (2:57): HIV and Pregnancy



<https://www.youtube.com/watch?v=QSILvoKGJxE&t=44s>

Lifelong Infection

HIV infection is lifelong—once people become infected with HIV, their blood, semen, vaginal secretions, and breast milk will always be potentially infectious.

Transmission of Multidrug-Resistant Forms of HIV

There is evidence of transmission of multidrug-resistant forms of HIV. People who have been infected with HIV and have used a number of the available antiretroviral medicines may transmit forms of HIV that are resistant to some of these available drug therapies. This reduces the treatments available for the newly HIV-infected person.

Factors Affecting HIV Transmission

The Presence of Other STDs

The presence of other **sexually transmitted diseases (STDs)** increases the risk for HIV transmission, because the infected person may have a much larger number of HIV-infected white blood cells present at the site of infection. The infected person's immune system may be less able to suppress or combat HIV infection. Lesions from STDs break down the protective surface of the skin or mucous membrane, which makes the infected person more vulnerable to other infections.

The presence of a co-infection with other STDs increases the risk of HIV transmission because:

- STDs like syphilis and symptomatic herpes can cause breaks in the skin, which provide direct entry for HIV.
- Inflammation from STDs, such as chlamydia, makes it easier for HIV to enter and infect the body.
- HIV is often detected in the pus or other discharge from genital ulcers of HIV-infected men and women.
- Sores can bleed easily and come into contact with vaginal, cervical, oral, urethral, and rectal tissues during sex.
- Inflammation appears to increase HIV viral shedding and the viral load in genital secretions.

Multiple Partners

Having multiple partners for drug injection or sexual intercourse increases the chances of being exposed to a person infected with HIV. People who have unprotected sex with multiple partners are considered to be at high risk for HIV infection. In some studies, the CDC defines multiple partners as six or more partners in a year. However, someone who has only one partner is still at risk if the person is HIV-positive and they have unprotected sex and/or share needles.

Use of Non-Injecting Drugs

Use of other substances, including alcohol and non-injecting street drugs, can also put a person at risk for getting HIV. These substances impair judgment, increasing the likelihood that a person will take risks (have unprotected sex, share needles), or may place the person in unsafe situations. Additionally, some substances have physiologic and biologic effects on the body, including masking pain and producing sores on the mouth and genitals, which can create additional “openings” for HIV and other sexually transmitted diseases.

Gender and Equality Issues

Lack of power (being subservient) in a relationship can affect a person’s ability to insist on sexual protection, such as the use of condoms. Women are socially and economically dependent upon men in many societies. This sometimes results in their being unable to ask their partner to use condoms or to leave a relationship that puts them at risk.

In some cultures, females are not encouraged to learn about their bodies, sex, birth control, or sexuality topics, while some other cultures promote the value of the male having multiple sexual partners but discourage the same behavior in females. Gender inequality places women at risk for contracting HIV.

Casual Contact

HIV is not transmitted through the air or by sneezing, breathing, or coughing. Touching, hugging, and shaking hands do not transmit HIV. HIV transmission is not possible through restaurant food prepared or served by an HIV-infected employee.

HIV is not transmitted through casual contact in the workplace. No cases of HIV transmission have been linked to sharing computers, food, telephones, paper, water fountains, swimming pools, bathrooms, desks, office furniture, toilet seats, showers, tools, equipment, coffee pots, or eating facilities. However, personal items that may be contaminated with blood, including but not limited to razors, toothbrushes, and sex toys, should not be shared. There have been no cases of HIV transmission by children playing, eating, sleeping, kissing, and hugging someone infected with HIV.

Unusual Cases of HIV Transmission

To date, less than a dozen known cases of HIV transmission have occurred in household settings in the United States and elsewhere. Reports of these cases have been thoroughly investigated by the CDC. The researchers determined that the transmissions were caused by sharing a razor contaminated with infected blood, exposure of infected blood to cuts and broken skin, and (possibly) deep kissing involving a couple who both had bleeding gums and poor dental hygiene. It is important to remember that these cases were extremely unusual. Sensible precautions with bleeding cuts and not sharing personal hygiene items could have prevented these cases of infection.

There are also few isolated cases of transmission from healthcare workers to patients. To date, there were three instances where transmission of HIV could only be tracked to the HIV-infected clinician treating the patient. At least one of these cases occurred prior to the implementation of strict equipment disinfection.

Biting

Biting poses very little risk of HIV transmission. The possibility only exists if the person who is biting and the person who is bitten have an exchange of blood such as through bleeding gums or open sores in the mouth. Bites may transmit other infections, and should be treated immediately by thoroughly washing the bitten skin with soap and warm water and then disinfecting and prophylaxis with antibiotic skin ointment.

Workplace Situations

Workplace exposures generally occur through a needlestick injury but can occur through a splash of infectious blood or exposure to blood-contaminated material. (Occupational exposure is discussed later in the course.)

Test Your Learning

The behavior associated with the highest risk of HIV transmission is:

- A. Unprotected vaginal intercourse.
- B. Breastfeeding.
- C. Unprotected anal intercourse.
- D. Direct sharing of drug paraphernalia.

Apply Your Learning

Q: A client wants to know what behaviors will increase his risk of HIV. What would you teach him?

A: Your risk of exposure to HIV increases by risky behaviors such as having multiple sexual partners, unprotected anal and vaginal intercourse, and exposure to any used and infected IV needles and drug paraphernalia.

Answer: C

Risk Reduction Methods

There are many effective methods for reducing the risk of sexual and drug-related transmission of HIV.

Sexual Abstinence

Sexual abstinence (not engaging in anal, vaginal, or oral intercourse or other sexual activities where blood, semen, or vaginal fluid can enter the body) is a completely safe and 100% effective method for preventing the sexual transmission of HIV.

Non-Penetrative Sex

Non-penetrative sex, where the penis does not enter the vagina, anus, or mouth, and when penetrative sex toys are not shared, is a safer sex method that greatly decreases your risk of getting infected with HIV. This practice will not transmit HIV, provided that there is no exchange of blood, semen, vaginal fluids, or breast milk in the sexual contact. Non-penetrative sexual intercourse, however, may still be a risk factor for the transmission of other sexually transmitted diseases.

Monogamous Long-Term Relationships

Monogamy—having sex with only one person who only has sex with you—is another choice to prevent/reduce the risk of HIV infection. If neither partner is infected with HIV or other STDs, and neither has other sexual or injection equipment-sharing contacts, then neither partner is at risk of exposure to HIV or other STDs. In order for monogamy to protect against HIV and STDs, both partners must be free of disease and both partners must remain monogamous.

Limiting Partners

The decision to limit the number of sexual or drug-injecting partners may reduce the risk of HIV transmission but is not a guarantee of safety. The fewer the partners the greater the reduction of risk. If however, even one of the partners has HIV, the risk of transmission increases.

Safer Sexual Practices

Did you know . . .

Not all condoms and lubricants provide effective protection against the transmission of HIV and other STDs.

Latex Condoms

When used correctly and consistently during sexual intercourse (anal, vaginal, and oral), latex condoms are highly effective in preventing the transmission of HIV. To prevent tearing of latex condoms, only water-based lubricants should be used. Oil-based lubricants like petroleum jelly or cooking oils should not be used because the oil in these products breaks down the latex condom.

Polyurethane Condoms

For the male, polyurethane condoms are made of a soft plastic. They look like latex condoms but are thinner. Lab tests show that sperm and viruses (like HIV) cannot pass through polyurethane.

Female condoms are insertive (fit inside the vagina or anus). They are made of polyurethane, which blocks sperm and viruses (like HIV). These condoms may be inserted several hours before intercourse. If however, there is still blood/semen contact with a cut on the outside of the vagina, this may still serve as a point of entry for the HIV even if the female condom is used.

Dental Dams

Dental dams—large pieces of new, unused, clear, non-microwaveable plastic wrap—and latex condoms may be used to provide a barrier to reduce the risk of HIV transmission during oral intercourse. The latex condom can be cut into a square for use as a dental dam. Water-based lubricants may be used with the dental dams, plastic wrap, or cut-open condoms to enhance sensitivity and reduce friction.

Natural Membrane Condoms

Did you know . . .

Natural membrane condoms (skins) do not provide protection from HIV, HBV, and some other STDs. They can, however, help prevent pregnancies and some STDs, such as syphilis.

When Both Partners Are HIV Positive

If two people are infected with HIV, do they still need to have protected sex? Some people think it is safe for HIV-infected people to have unprotected sex with each other, but latex condoms are advised when both partners are HIV positive. Each additional exposure to the virus may further weaken an immune system already damaged by HIV. Variations and mutations of the HIV may create additional infection from other strains of the HIV with unprotected sex. Other STDs are transmitted through unprotected sex. Any additional viral or bacterial infection stresses the immune system and should be avoided.

Avoidance of Injection Drug Use

Not injecting drugs is another way to avoid transmission of HIV. If a person refuses to abstain from injecting drugs, then they should use a clean needle each time and not share injection equipment. This includes people who use needles to inject insulin, vitamins, steroids, or prescription and non-prescription drugs.

Syringe Exchange

Syringe and needle exchange is a disease-prevention program for people who use illegal drugs. It provides new sterile syringes in exchange for used ones. People who trade in their used syringes/needles for clean ones at needle exchanges significantly reduce their risk for becoming infected with HIV or hepatitis through sharing infected needles.

Syringe exchanges are also referral sources for drug treatment. Participants may be able to secure drug treatment through the intervention of the syringe exchange staff. Public support for syringe exchange has grown in recent years.

It is safest always to use new, sterile needles and syringes, as well as other “works,” which can all become contaminated with blood. If someone cannot avoid sharing syringes, rinsing out the syringe/needle with full-strength bleach and clean water helps clean the syringe/needle and kill any HIV inside it.

There is high prevalence of HBV and HCV infection among injecting drug users; these viruses are stronger than HIV and are not likely to be killed by short contact with bleach. Cleaning the syringe with bleach and water is not likely to prevent transmission of HBV or HCV. There is no substitute for a new syringe. If there is no possible way to obtain new needles, the directions for using bleach to clean syringes/needles are:

1. Fill the syringe completely with water.
2. Tap it with your finger to loosen any traces of blood.
3. Shake the syringe and shoot out the bloody water.
4. Repeat these steps until you can't see any blood. Then:
5. Fill the syringe completely with fresh bleach.
6. Keep the bleach inside the syringe for at least 30 seconds.
7. Shoot out the used bleach.
8. Rinse out the syringe with new, clean water.
9. Shake the syringe and squirt out the water.

It is important to follow these steps exactly, because inadequate cleaning can result in the possibility of HIV infection. Always do the final rinse with water!

Occupational Exposure to Bloodborne Pathogens

Occupational exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infected materials (OPIM) that may result from the performance of an employee's duties.

Exposure incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or OPIM that results from the performance of an employee's duties. Examples of non-intact skin at risk include skin with dermatitis, hangnails, cuts, abrasions, chafing, or acne.

Occupational groups that have been widely recognized as having potential exposure to HBV/HCV/HIV include, but are not limited to, healthcare employees, law enforcement, fire, ambulance, and other emergency response, and public service employees.

The compliance directive of the federal Occupational Safety and Health Administration (OSHA) on occupational exposure to bloodborne pathogens, CPL 2-2.69, may be consulted for guidance. For more information or assistance, contact a Department of Labor and Industries (L&I) consultant in your area. Check the blue government section of the phone book for the office nearest you.

Test Your Learning

Occupational exposure means:

- A. Exposure to food served by an HIV-infected employee.
- B. Being infected by an occupational worker.
- C. Caring for a patient who has HIV.
- D. Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or OPIM that may result from the performance of an employee's duties.

Apply Your Knowledge

Q: Healthcare professionals need to receive bloodborne pathogens training. What would it include?

A: Training includes protective measures to minimize the risk and what to do if exposure occurs.

Answer: D

Bloodborne Pathogens

While HBV and HIV are specifically identified in the standard, **bloodborne pathogens include any human pathogen present in human blood or OPIM**. Bloodborne pathogens may also include HCV, hepatitis D, malaria, syphilis, babesiosis, brucellosis, leptospirosis, arboviral infections, relapsing fever, Creutzfeldt-Jakob disease, adult T-cell leukemia/lymphoma (caused by HTLV-I), HTLV-I-associated myelopathy, diseases associated with HTLV-II, and viral hemorrhagic fever. According to the CDC, hepatitis C (HCV) infection is the most common chronic bloodborne infection in the United States. Hepatitis C is a viral infection of the liver transmitted primarily by exposure to blood.

Blood and OPIM

Bodily fluids that have been recognized and linked to the transmission of HIV, HBV, and HCV, and to which Standard Precautions apply, are:

- Blood
- Blood products
- Semen
- Vaginal secretions
- Cerebrospinal fluid
- Synovial (joint) fluid
- Pleural (lung) fluid
- Peritoneal (gut) fluid
- Pericardial (heart) fluid
- Amniotic (fluid surrounding the fetus) fluid
- Saliva in dental procedures
- Specimens with concentrated HIV, HBV and HCV viruses

Body fluids such as urine, feces, and vomitus are not considered OPIM unless visibly contaminated by blood. Wastewater (sewage) has **not** been implicated in the transmission of HIV, HBV, and HCV and is not considered to be either OPIM or regulated waste. However, plumbers working in healthcare facilities or who are exposed to sewage originating directly from healthcare facilities carry a theoretical risk of occupational exposure to bloodborne pathogens.

Employers should consider this risk when preparing their written “exposure determination.” Plumbers or wastewater workers working elsewhere are probably not at risk for exposure to bloodborne pathogens. Wastewater contains many other health hazards and workers should use appropriate personal protective equipment (PPE) and maintain personal hygiene standards when working.

Exposure Control Plan (ECP)

If exposures to blood or other body fluids are reasonably anticipated, you are required by the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens Standard to develop an Exposure Control Plan.

An Exposure Control Plan is designed to protect staff who may be exposed to blood and other body fluids. By protecting staff, you also control exposure incident costs. Such a plan is meant to be a “living” document—a source for answering bloodborne pathogen–related questions and an assurance that exposure control activities are in place.

Be sure your facility’s Exposure Control Plan meets OSHA’s criteria. According to the OSHA Bloodborne Pathogens Standard, an Exposure Control Plan must meet certain criteria:

- It must be written specifically for each facility.
- It must be reviewed and updated at least yearly (to reflect changes such as new worker positions or technology used to reduce exposures to blood or body fluids).
- It must be readily available to all workers.
- You must regularly educate your workers on the uses of the Exposure Control Plan and where it’s kept, so it is available when needed.

OSHA developed a model template, the Model Plans and Programs for the OSHA Bloodborne Pathogens and Hazard Communications Standards, which includes a guide for creating an Exposure Control Plan that meets the requirements of the OSHA Bloodborne Pathogens Standard.

Bloodborne Pathogens Training

Training will include information on the hazards associated with blood/OPIM, the protective measures to be taken to minimize the risk of occupational exposure, and information on the appropriate actions to take if an exposure occurs. Retraining is required annually, or when changes in procedures or tasks affecting occupational exposure occur. Employees must be provided access to a qualified trainer during the training session to ask and have answered questions as questions arise.

Hepatitis B Vaccination

All employees with occupational exposure to blood or OPIM must be offered hepatitis B vaccination after receiving required training and within 10 days of initial assignment. The vaccine must be provided free of charge. Serologic testing after vaccination (to ensure that the shots were effective) is recommended for all people with ongoing exposure to sharp medical devices.

Infection Control Systems

Universal Precautions was a system designed to prevent transmission of bloodborne pathogens in healthcare and other settings. Under Universal Precautions, blood/OPIM of all patients should always be considered potentially infectious for HIV and other pathogens. **Standard Precautions is the preferred, newer system** because it considers all body fluids except sweat to be potentially infectious.

Standard Precautions and Universal Precautions involve the use of protective barriers to reduce the risk of exposure of the employee's skin or mucous membranes to OPIM. It is also recommended that all healthcare workers take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices. Both Standard and Universal Precautions apply to blood and OPIM.

Personal Protective Equipment (PPE)

Gloves, masks, protective eyewear and chin-length plastic face shields are examples of personal protective equipment (PPE). PPE shall be provided and worn by employees in all instances where they will or may come into contact with blood or OPIM. This includes but is not limited to dentistry, phlebotomy, or processing of any bodily fluid specimen, and postmortem (after death) procedures.

Traditionally, latex gloves have been advised for use when dealing with blood or OPIM. However, some people are allergic to latex. In most circumstances, nitrile, vinyl, and other glove alternatives meet the definition of "appropriate" gloves and may be used instead of latex gloves. Employers are required to provide non-latex alternatives to employees with latex and other sensitivities. Reusable PPE must be cleaned and decontaminated or laundered by the employer.

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

Safer Medical Devices

Safe medical devices and work practices are preferable to personal protective equipment to minimize or eliminate employee exposure. There are now many safer medical devices available.

Employers must include employees in ongoing evaluation of safer medical devices and implement these devices whenever feasible. Evaluation and implementation of these devices must be documented in the environmental safety manual. Safer medical device lists can be accessed through websites maintained by the California Division of Occupational Safety and Health SHARP program, the National Association for the Primary Prevention of Sharps Injuries, and the International Health Care Worker Safety Center.

Hand Hygiene

Hand hygiene is the first key behavior to minimize risk of contact with potentially infected blood. Soap-and-water washing or use of a waterless alcohol-based hand rub must be performed:

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

It is also strongly recommended that hand hygiene be performed before and after patient contact and after using restroom facilities. Soap-and-water hand washing must be performed whenever hands are visibly contaminated or there is a reasonable likelihood of contamination. Proper soap-and-water hand washing technique involves the following:

- Using soap, warm (almost hot) water, and good friction, scrub the top, back, and all sides of the fingers.
- Lather well and rinse for at least 10 seconds. When rinsing, begin at the fingertips, so that the dirty water runs down and off the hands from the wrists. It is preferable to use a pump-type of liquid soap instead of bar hand soap.
- Dry hands on paper towels. Use the dry paper towels to turn off the faucets (don't touch with clean hands).

It is advisable to keep fingernails short, and to wear a minimum of jewelry.

Apply Your Knowledge

Adherence to hand hygiene has been measured at rates as low as 5% in some healthcare settings. How does your workplace measure up? At your next staff meeting, see how many of your coworkers can correctly identify the three steps of hand hygiene listed above.

Test Your Learning

Hand hygiene:

- A. Is required after removal of gloves or other PPEs and upon leaving the work area.
- B. Is not required after removing gloves.
- C. Is required only after contact with blood or other infectious materials.
- D. Includes the use of lotion to prevent dry skin.

Answer: A

Housekeeping

The work area is to be maintained in a clean and sanitary condition. The employer is required to determine and implement a written schedule for cleaning and disinfection based on the location within the facility, type of surface to be cleaned, type of soil present and tasks or procedures being performed. All equipment and environmental and working surfaces must be properly cleaned and disinfected after contact with blood or OPIM. Broken glassware that is contaminated must be removed using mechanical means, like a brush and dustpan or vacuum cleaner.

Disinfectants

Chemical germicides and disinfectants used at recommended dilutions must be used to decontaminate environmental surfaces. Consult the Environmental Protection Agency (EPA) lists of registered sterilants, tuberculocidal disinfectants, and antimicrobials with HIV/HBV efficacy claims for verification that the disinfectant used is appropriate.

Specimen Handling

Specimens of blood or OPIM must be placed in a closeable, labeled or color-coded, leakproof container prior to being stored or transported.

Laundry

Laundry that is or may be soiled with blood or OPIM, or may contain contaminated sharps, must be treated as though contaminated. Contaminated laundry must be bagged at the location where it was used, and shall not be sorted or rinsed in patient-care areas. It must be placed and transported in bags that are labeled or color-coded (red-bagged).

Laundry workers must wear protective gloves and other appropriate personal protective clothing when handling potentially contaminated laundry. All contaminated laundry must be cleaned or laundered so that any infectious agents are destroyed.

Guidance regarding laundry handling and washing procedures in the healthcare setting can be found in the CDC *Guideline Disinfection and Sterilization in Health-Care Facilities, 2008* (CDC, 2008; latest available).

Regulated Waste Disposal

All regulated waste must be placed in closeable, leakproof containers or bags that are color-coded (red-bagged) or labeled to prevent leakage during handling, storage, and transport. Disposal of waste shall be in accordance with federal, state, and local regulations. Individual county or health jurisdiction waste management regulations may need to be consulted.

Apply Your Knowledge

Q: A co-worker asks you how to dispose of regulated waste. How would you explain the process?

A: Regulated waste is suspicious of body fluids and may not be flushed down toilets and must be placed in closeable leakproof containers or bags, and color-coded or labeled. This includes items on which blood has dried.

Sharps Disposal

Disposal Container

Needles are not to be recapped, purposely bent or broken, removed, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items are to be immediately placed in puncture-resistant, labeled containers for disposal. Phlebotomy needles must not be removed from holders unless required by a medical procedure. The intact phlebotomy needle/holder must be placed directly into an appropriate sharps container.



Source: Courtesy of Joe Mabel, photographer, Wikimedia Commons.

Tags/Labels

Tags or labels identifying medical equipment, chemicals or medications must be used to protect employees from exposure to potentially hazardous biological agents.

All required tags must have the following:

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

Personal Activities

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

Post Exposure Management

Employers must make a confidential post exposure medical evaluation available to employees who report an exposure incident. The employer is also responsible for arranging individual testing in accordance with the law and state statutes.

The post exposure medical evaluation must be:

- Made immediately available to the employee
- Kept confidential
- Provided at no cost to the employee
- Provided according to current U.S. Public Health Service recommendations

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

An **occupational exposure** to a bloodborne pathogen is defined as a percutaneous injury such as a needle stick or cut with a sharp object, or contact of mucous membrane or non-intact skin (eg, exposed skin that is chapped, abraded, or afflicted with dermatitis) with blood, tissue, or OPIM.

The CDC states that the risk of infection varies case by case. Factors influencing the risk of infection include:

- Whether the exposure was from a hollow-bore needle or other sharp instrument
- Non-intact skin or mucus membranes (such as the eyes, nose, and/or mouth)
- The amount of blood that was involved
- The amount of virus present in the source's blood

Risk of HIV Transmission

The risk of HIV infection to a healthcare worker through a needlestick is less than 1%. Approximately 1 in 300 exposures through a needle or sharp instrument result in infection. The risks of HIV infection through splashes of blood to the eyes, nose, or mouth is even smaller—approximately 1 in 1,000. There have been no reports of HIV transmission from blood contact with intact skin. There is a theoretical risk of blood contact to an area of skin that is damaged, or from a large area of skin covered in blood for a long period of time. The CDC reports that “as of 2010, 57 documented transmissions and 143 possible transmissions had been reported in the United States,” and “no confirmed cases of occupational HIV transmission have been reported since 1999” (CDC, 2016).

Risk of Hepatitis B and C Transmission

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

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

Treatment After a Potential Exposure

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

Mucous Membrane Exposure

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

Sharps Injuries

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

Bite or Scratch Wounds

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

Did you know . . .

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

Exposure to Urine, Vomitus, or Feces

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

Reporting the Exposure

Follow the protocol of your employer. After cleaning the exposed area as recommended above, report the exposure to the department or individual at your workplace that is responsible for managing exposure. Obtain medical evaluation as soon as possible. Discuss with a healthcare professional the extent of the exposure, treatment, follow-up care, personal prevention measures, the need for a tetanus shot or other care.

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

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

Post Exposure Prophylaxis

Post exposure prophylaxis (PEP) provides anti-HIV medications to someone who has had a substantial exposure, usually to blood. PEP has been the standard of care for occupationally exposed healthcare workers with substantial exposures since 1996. Animal models suggest that cellular HIV infection happens within 2 days of exposure to HIV and the virus in blood is detectable within 5 days. Therefore, PEP should be started as soon as possible, within hours not days, after exposure and continued for 28 days. However, PEP for HIV does not provide prevention of other bloodborne diseases like HBV or HCV.

Hepatitis B PEP for susceptible people would include administration of hepatitis B immune globulin and HBV vaccine. This should occur as soon as possible and no later than 7 days post exposure.

The benefit of the use of antiviral agents to prevent HCV infection is unknown and antivirals are not currently FDA-approved for prophylaxis. Post exposure prophylaxis can only be obtained from a licensed healthcare provider. Your facility may have recommendations and a chain of command in place for you to obtain PEP. After evaluation of the exposure route and other risk factors, certain anti-HIV medications may be prescribed. The national bloodborne pathogen hotline provides 24-hour consultation for clinicians who have been exposed on the job.

PEP is not as simple as swallowing one pill. The medications must be started as soon as possible and continued for 28 days. Many people experience significant medication side effects. It is very important to report occupational exposure to the department at your workplace that is responsible for managing exposure. If post exposure treatment is recommended, it should be started as soon as possible. In rural areas, police, firefighters, and other at-risk emergency providers should identify a 24-hour source for PEP (thebody.com, 2017).

In addition, in many states, health care and civil workers have a right to file a workers' compensation claim for exposure to bloodborne pathogens. Industrial insurance covers the cost of post exposure prophylaxis and follow-up for the injured worker.

Apply Your Knowledge

Q: A fellow health care worker has just had a needle stick and the source was HIV positive. She panics and asks you what to do. What are resources to help her?

A: After immediately cleaning the affected area with soap and water and a disinfectant, you would direct her to her supervisor and facility director over occupational health, you would direct her to get PEP. She can also make a worker's compensation claim for the PEP. She will need to take it for at least 28 days. You would tell her the National Hotline for PEP is also a resource. PEP should begin immediately, preferably within hours of exposure.

Health care professionals and Providers can call 888-448-4911 for the latest information on PEP for HIV, hepatitis, and other pathogens.

HIV/HBV/HCV Testing Post Exposure

All occupational exposures should be evaluated by a healthcare professional. Evaluation should include follow-up counseling, post exposure testing, and medical evaluation regardless of whether PEP is indicated. Antibody testing for HIV, HBV, and HCV should be conducted for 6 months after occupational exposure. After baseline testing at the time of exposure, follow-up testing is recommended to be performed at 6 weeks, 12 weeks, and 6 months after exposure. Extended HIV follow-up for 12 months is recommended for those who become infected with HCV after exposure to a source co-infected with HIV. Extended follow-up in other circumstances for those people with an impaired ability to mount an antibody response to infection may also be considered.

Source Testing

Many states require the employer to arrange to test the source individual—someone whose blood or OPIM an employee was exposed to—for HIV, HBV, and HCV as soon as feasible after getting their consent. If the employer does not get consent the employer must document such and inform the employee.

Mandatory Source Testing

Because of an increased risk for HIV exposure, many state codes provide for HIV antibody testing of a “source” when a law enforcement officer, firefighter, healthcare provider, or healthcare facility staff, and certain other professions experience an occupational exposure. If you experience an occupational exposure to another person’s blood or OPIM, you can request HIV testing of the source individual through your employer or local health officer.

Before health officers issue an order for HIV testing of the source individual, they will first determine whether a substantial exposure occurred and if the exposure occurred on the job. Depending on the type of exposure and risks involved, the health officer may make the determination that source testing is unnecessary.

In the case of occupationally exposed healthcare workers, if the employer is unable to obtain permission of the source individual, the employer may request assistance from the local health officer if the request is made within 7 days of the occurrence.

Source testing does not eliminate the need for baseline testing of the exposed individual for HIV, HBV, HCV, and liver enzymes. Provision of PEP should also not be contingent upon the results of a source’s test. Current wisdom indicates immediate provision of PEP in certain circumstances, with discontinuation of treatment based upon the source’s test results.

Test Your Learning

HIV transmission risk to healthcare workers is:

- A. Highest with a blood splash to the eyes, nose, or mouth.
- B. Less than 1% from a needlestick.
- C. Exactly the same as that of HCV.
- D. Not affected by the amount of virus present in the exposure.

Answer: B

Non-Occupational Exposure to HIV

Post exposure prophylaxis (PEP) for occupational exposure is standard, and its effectiveness has been well documented. For sexual exposure (assault or consensual) or for needle-sharing, PEP is not standard medical practice in many communities. Depending on your location, providers may not even be familiar with the idea of providing PEP to people who have post-sexual exposure to HIV. A good place to start PEP is your local emergency department. Post exposure prophylaxis should never be used for primary prevention of HIV. Unlike emergency contraception to prevent pregnancy, there are no good studies to show that PEP works for post-sexual exposure. It is a complicated combination of medicines that sometimes have serious and uncomfortable side effects.

Procedures for Homes and Home-like Settings

People who live or work in homes and home-like settings should practice good hygiene techniques in preparing food, handling body fluids, and using medical equipment. Cuts, accidents, or other circumstances can result in spills of blood/OPIM. These spills may be deposited upon carpeting, vinyl flooring, clothing, a person's skin, or other surfaces. It is important that everyone, even young children, have a basic understanding that they should not put their bare hands in, or on, another person's blood. Safe practices for some commonly encountered situations can help minimize the risk of HIV exposure and infection.

Gloves

Gloves are available in latex, nitrile, or vinyl. Some people have allergies to latex.

- Gloves should be worn when caretakers anticipate direct contact with any body substances (blood or OPIM) or non-intact skin.
- When you are through, carefully pull the gloves off, inside-out, one at a time, so that the contaminated surfaces are inside and you avoid contact with any potentially

infectious material.

- Gloves should be changed and hands washed as soon as possible between children, patients, and others.
- Never rub the eyes, mouth or face while wearing gloves. Latex gloves should never be washed and reused.

Handwashing Technique

Just as with occupational exposure to bloodborne pathogens, hand hygiene (see above) is the first key behavior to minimize risk of contact with potentially infected blood.

Precautions with Personal Hygiene Items

People should not share razors, toothbrushes, personal towels or washcloths, dental hygiene tools, vibrators, enema equipment, or other personal care items.

Cleaning Blood/OPIM

Wear appropriate gloves. Use sterile gauze or other bandages, and follow normal first-aid techniques to stop the bleeding. After applying the bandage, remove the gloves slowly, so that fluid particles do not splatter or become aerosolized. Hands should be washed using good technique as soon as possible.

Cleaning Body Fluid Spills on Vinyl Floors

Any broken glass should be swept up using a broom and dustpan (never bare hands!). Empty the dustpan in a well-marked plastic bag or heavy-duty container. The body fluid spill may be pretreated with full-strength liquid disinfectant or detergent. Next, wipe up the body fluid spill with either a mop and hot soapy water or appropriate gloves and paper towels. Dispose of the paper towels in the plastic bag. Use a good disinfectant such as household bleach 5.25% mixed fresh with water 1:10 to disinfect the area that the spill occurred. If a mop was used for the cleaning, soak it in a bucket of hot water and disinfectant for the recommended time. Empty the mop bucket water in the toilet, rather than a sink. Sponges and mops used to clean up body fluid spills should not be rinsed out in the kitchen sink, or in a location where food is prepared.

Cleaning Body Fluid Spills on Carpeting

Pour dry cat litter or other absorbent material on the spill to absorb the body fluid. Then pour full-strength liquid detergent on the carpet, which helps to disinfect the area. If there are pieces of broken glass present, the broom-and-dustpan method can be used next to sweep up the kitty litter and visible broken glass. Use carpet-safe liquid disinfectant instead of diluted bleach on the carpeting. Pour this carefully on the entire contaminated area; let it remain there for the time recommended by the manufacturer. Follow this by absorbing the spill with paper towels and sturdy rubber gloves. Vacuum normally afterwards.

Any debris, paper towels, or soiled kitty litter should be disposed of in a sealed plastic bag that has been placed inside another plastic garbage bag. Twist and seal the top of the second bag as well.

Cleaning Laundry in Home Settings

Clothes, washable uniforms, towels, or other laundry that have been stained with blood/OPIM should be cleaned and disinfected before further use. If possible, have the person remove the clothing, or use appropriate gloves to assist with removing the clothes. If it is a distance to the washing machine, transport the soiled clothing items in a sturdy plastic bag. Next, place the items in the washing machine, and soak or wash the items in cold, soapy water to remove any blood from the fabric. Hot water permanently sets blood stains. Use hot soapy water for the next washing cycle, and include sufficient detergent, which will act as a disinfectant, in the water. Dry the items using a clothes dryer. Wool clothing or uniforms may be rinsed with cold soapy water and then dry cleaned to remove and disinfect the stain.

Apply Your Knowledge

Q: A family member of an HIV positive patient asks you how to avoid any infectious HIV when doing the laundry. How would you advise her on home clothing care?

A: When caring for an HIV-infected person at home, clothes or towels that are contaminated with blood or OPIM should be cleaned and disinfected before further use. If there is no blood contamination on clothing, the clothes can be laundered like any other clothing.

Diaper Changes

Care providers should use a new pair of appropriate gloves to change diapers. Gloves should be removed carefully and discarded in the appropriate receptacle. Hands should be washed immediately after changing the diaper. Disinfect the diapering surface afterwards. Cloth diapers should be washed in very hot water with detergent and a cup of bleach, and dried in a hot clothes dryer.

Cleaning Sponges and Mops

Sponges and mops that are used in a kitchen should not be used to clean body fluid spills or bathrooms. All sponges and mops should be disinfected routinely with a fresh bleach solution or another similar disinfectant.

Toilet/Bedpan Safety

It is safe to share toilets/toilet seats without special cleaning, unless the surface becomes contaminated with blood/OPIM. If this occurs, disinfect the surface by spraying on a solution of 1:10 bleach. Wearing gloves, wipe this away with disposable paper towels. People with open sores on their legs, thighs, or genitals should disinfect the toilet seat after each use. Urinals and bedpans should not be shared between family members unless they are thoroughly disinfected beforehand.

Thermometers

Electronic thermometers with disposable covers do not need to be cleaned between users, unless they are visibly soiled. Wipe the surface with a disinfectant solution if necessary. Glass thermometers should be washed with soap and warm water before and after each use. If it will be shared between family members, the thermometer should be soaked in 70%–90% ethyl alcohol for 30 minutes, then rinsed under a stream of warm water between each use.

Pet Care Precautions

Certain animals may be health hazards for people with compromised immune systems. These animals include turtles, reptiles, birds, puppies and kittens under the age of 8 months, wild animals, pets without current immunizations, and pets with illnesses of unknown origin.

Did you know . . .

HIV cannot be spread to, from, or by cats, dogs, birds, or other pets.

Pet cages and cat litter boxes can harbor infectious, and often aerosolized organisms. These pet items should be cared for only by someone who is not immunocompromised. If this is not possible, a mask with a sealable nose clip, and disposable latex gloves should be worn each time pet care is done. Follow all pet care with thorough handwashing.

Animals may carry a variety of diseases harmful to people with weakened immune systems. Some of these diseases may be passed by the animal licking their person's face or open wounds. Wash hands after petting or other contact with pets. Keep cats' and dogs' nails trimmed. Wear latex gloves to clean up a pet's urine, feces, or vomitus. The soiled area should be cleaned with a fresh solution of 1:10 bleach.

Pet food and water bowls should be regularly washed in warm, soapy water, and then rinsed. Cat litter boxes should be emptied out regularly and washed at least monthly. Fish tanks should be kept clean. It is possible to order disposable latex "calf-birthing" gloves with longer sleeves from a veterinarian for immunocompromised individuals. These gloves should offer protection from the organisms that are present in the fish tank.

Do not let your pet drink from the toilet, eat other animal's feces, or eat any type of dead animal or garbage. It is best to restrict cats to the indoors only. Dogs should be kept indoors or on a leash. Many communities have volunteer groups and veterinarians that will assist people with HIV take care of their pets, if needed. Do not hesitate to consult your veterinarian with your questions.

Kitchen Safety and Proper Food Preparation

Wash hands thoroughly before preparing food and use care when tasting food. Use a clean spoon and wash the spoon after using it once. People with HIV infection should avoid unpasteurized milk, raw eggs or products that contain raw eggs, raw fish, and cracked or non-intact eggs. Cook all meat, eggs, and fish thoroughly to kill any organisms that may be present in them. Wash fruits and vegetables thoroughly before eating.

Disinfect countertops, stoves, sinks, refrigerators, door handles, and floors regularly. Use window screens to prevent insects from entering the room. Discard food that has expired or is past a safe storage date, shows signs of mold, or smells bad.

Use separate cutting boards for meat and for fruits and vegetables. Disinfect cutting boards frequently. Avoid wooden cutting boards if possible. Kitchen garbage should be contained in a leakproof, washable receptacle that is lined with a plastic bag. Seal the garbage liner bags and remove the garbage frequently.

Safe and Legal Disposal of Sharps

Disposal of sharps, which includes syringes, needles, and lancets is regulated. They can carry hepatitis, HIV, and other germs that cause disease. Throwing them in the trash or flushing them down the toilet can pose health risks for others. Regulations governing disposal of sharps protect garbage and other utility workers and the general public from needlesticks and illness. There are different rules and disposal options for different circumstances. Contact your local health department to determine which option applies to your situation.

Found Syringes in Public Locations

Syringes that are found in parks, along roadsides, in laundromats, or in other public locations present potential risk for accidental needlesticks. Risks for infection from a found syringe depends on a variety of factors, including the amount of time the syringe was left out, the presence of blood, and the type of injury (scratch versus puncture). The risk of HIV infection to a healthcare worker from a needlestick containing HIV-positive blood is about 1 in 300, according to CDC data.

Anyone with an accidental needlestick requires an assessment by a medical professional. Clinicians should make certain that the injured person had been vaccinated against hepatitis B and tetanus and may also recommend testing for HIV, HCV, and HBV. If a found syringe is handled, but no needlestick occurred, testing for HIV is not necessary.

Safe Disposal of Found Syringes

Found used syringes or needles present a risk for HIV, HBV, HCV, and other pathogens. Parents and other caregivers should make sure children understand they should never touch a found needle or syringe, but instead should immediately ask a responsible adult for help. Your local health department can provide a list of what disposal sites are available to you.

For safe disposal of found syringes:

- If you find a syringe or needle, do not pick it up with your bare hands. Wear gloves and use tongs, a shovel, or a broom and dustpan to pick it up. Hold the needle away from your body.
- Do not break the needle off from the syringe.
- Do not flush needles or syringes down the toilet!
- Place used sharps and syringes in a safe container: one with at least a 1-inch opening and a lid that will seal tightly. An empty plastic laundry detergent, shampoo, pickle, oil, or similar bottle or jar will work. If a glass jar is used, place it into a larger plastic

bucket or container that has a tight-fitting lid. Soda cans are not good containers to use because people often try to recycle discarded cans.

- Carefully place the needle or syringe into the bottle or jar and seal the lid tightly. Tape it shut for added safety, and label it with the warning: Sharps, Do Not Recycle. The sealed container should not be placed where children might open it.

Testing and Counseling

The CDC believes that many people in the United States have HIV but have not been tested for it. These people do not know they are infected and that they need medical care. Without being identified as a carrier of HIV they can unknowingly pass HIV infection on to others.

Some people do not find out that they are infected with HIV until they get sick or show symptoms and go to a clinic or hospital and get a test to find out their HIV status. Since most people don't have symptoms for years, they do not find out their status until later in the disease progression. By the time they find out they are infected, they have missed opportunities to take care of their health and avoid passing the infection on to others. It is important for anyone at risk of HIV infection to get tested. Those who are uninfected can learn to take steps to avoid infection and those who are infected can be proactive to take care of their own health as well as to avoid passing the infection on to others.

HIV Antibody Tests

The first HIV antibody test became available in 1985. Since then, new HIV antibody tests have been developed and approved by the Food and Drug Administration (FDA). Currently, these antibody tests involve a two-step process utilizing a **screening test** and, when the screening test is reactive it is positive, which is a **confirmatory test**.

Step 1: Screening Test. The first test done on a specimen is a screening test called an enzyme-linked immunosorbent assay (EIA or ELISA). This type of test screens for the presence of antibodies to HIV in blood, urine, or oral fluid. Screening tests are inexpensive and highly accurate.

Most HIV antibody screening tests are conventional, in that the specimen is collected from the client and sent to a laboratory for testing. If a screening test is negative (no HIV antibodies are detected), the results can be released to the client. If the screening test is reactive (positive) at the laboratory, a confirmatory Western Blot test is conducted on the same sample.

Rapid tests are also screening tests, but they are conducted at the test site, often with the client present, and negative results are available in under an hour. Reactive (antibodies detected) results from a rapid test must be confirmed. This is done because there is a small chance that an HIV screening test may detect proteins related to other autoimmune diseases and react to those proteins with a false positive result.

Step 2: Confirmatory Testing. If a rapid test is reactive, an additional specimen must be drawn from the client and sent to the lab for confirmatory Western Blot testing. The HIV Western Blot detects antibodies to the individual proteins that make up HIV. This test is much more specific, and therefore more costly, than the EIA screening test.

False Results. Someone not infected with HIV may test reactive on a screening test because the test detected proteins related to other autoimmune diseases and gave a positive result. For this reason, it is critical that reactive screening tests be verified with a confirmatory test and that clients not be told they are infected with HIV unless the confirmatory test verifies that HIV antibodies are present. A false negative may result during the window period before antibodies have been created. For people at high risk who receive a negative HIV test, retesting at three months is recommended. All babies born to mothers with HIV will have HIV antibodies present in their blood but may not actually have HIV.

Apply Your Knowledge

Q: A friend suspects they have been exposed to HIV through sexual contact and want the fastest test to find out if they have HIV. How would you explain the testing process?

A: They can have a blood test called ELISA, which detects if there are antibodies triggered by HIV, and results can be determined within 20 minutes. If the ELISA is positive, an additional blood test, the Western Blot Test, must be sent to a lab, which takes about a week. There are fingerstick blood tests available as an initial screening; however, all must be verified by a Western Blot Test. Because of the window period (the delay before seroconversion), a followup blood test should be done after three months.

Antibody Testing Specimen Options

HIV antibody tests are designed to detect HIV antibodies in blood, urine, or oral fluid (oral mucosa transudate) samples.

Blood

The most frequently used HIV antibody test detects HIV antibodies in blood. Depending on test type, blood from a venipuncture or fingerstick will be used. This is the test that is used most often in public health clinics and doctors' offices. Most rapid screening tests use fingerstick blood.

As with all screening tests, reactive blood screening tests must be confirmed with a Western Blot test. For most HIV testing, this confirmatory testing is done on the same sample in the laboratory. For reactive rapid tests, an additional sample needs to be drawn and sent to the laboratory.

Oral Fluid

This test detects HIV antibodies in the mucous membrane (oral mucosal transudate) of the mouth. The oral test kit uses a special collection device that looks like a toothbrush. No needles are used. There are some rapid tests that use oral fluids. Many public health clinics also offer oral fluid testing. Some provide rapid oral fluid testing. As with all screening tests, positive oral fluid screening tests must be confirmed with a Western Blot test.

It is important to note that although antibodies to HIV can be found in saliva and oral fluids, these fluids do not contain sufficient amounts of the virus to be infectious and therefore are not considered a risk for transmitting the virus.

Urine

A urine-based test for HIV antibodies is available for use only in physician's offices or medical clinics. It tests for HIV antibodies in the urine. It is important to note that, even though antibodies to HIV can be found in urine, urine is not considered a risk for transmitting the virus. As with all screening tests, a positive urine HIV screening test must be confirmed with a Western Blot test, which can be done on the same specimen.

Rapid HIV Test

The rapid HIV test is a screening test that can provide results in less than an hour. Rapid testing can be conducted on blood and/or oral mucosal transudate, depending on the type of test. As with all screening tests, any reactive rapid test result must be confirmed with a conventional Western Blot test.

Home Test Kits

[Material in this section is from FDA, 2012.]

Rapid Test Kit



Contents of the CAPILLUS HIV-1/HIV-2 Rapid Test Kit that tests whole blood, serum, or plasma. Source: CDC.

The first licensed and FDA-approved test kit for home HIV antibody testing is the “Home Access HIV-1 Test System” manufactured by Home Access Health Corporation. The test requires a few drops of blood, which is mailed to the company in a safe mailer. If the screening test is reactive, a confirmatory Western Blot test is done by the same laboratory so that final results are available to clients. The client calls the company to learn the results over the phone.

The second test kit was approved when, “On July 3, 2012 the Food and Drug Administration (FDA) approved the ‘OraQuick In-Home HIV Test,’” a rapid home-use HIV test kit that does not require sending a sample to a laboratory for analysis. The kit provides a test result in 20 to 40 minutes, and you can test yourself in your own home. The kit, which tests a sample of fluid from your mouth, is approved for sale in stores and online to anyone age 17 and older.

The FDA noted that positive test results using the OraQuick test must be confirmed by followup laboratory-based testing, and that the test can be falsely negative for reasons that include having been exposed to HIV within three months before testing. Those who engage in risky behaviors should be re-tested on a regular basis and should not interpret a negative test to mean that such high-risk behaviors are safe.

If you are unsure if an HIV test is FDA approved, you can check the FDA list, which is available online (see Resources section at the end of the course).

Internet Test Kits

Although other home test kits may be ordered over the Internet, they may not be approved by the FDA and are not guaranteed to be accurate. The CDC does not recommend using any test that has not been approved by the FDA.

Other HIV Tests

There are several other methods for testing HIV, including the p24 antigen test, the plasma HIV RNA or proviral DNA test, and the HIV viral load test. Tests and testing procedures are constantly being refined and updated.

p24 Antigen Test

This blood test measures a core protein of HIV. This protein occurs during primary infection (the first weeks of infection) but may disappear as soon as antibodies to the virus are present. Because of this, and because of the expense of the test, p24 antigen tests are currently only available under limited circumstances.

Plasma HIV RNA or Proviral DNA Tests

These blood tests may be run on people with suspected new HIV infection. They are expensive and not used as screening tests for the general public. However, anyone who has had a potential exposure to HIV through unprotected sex or sharing needles, and who presents with symptoms of primary infection (usually seen within the first 2 weeks of infection with HIV) should ask their medical practitioner if this test is advisable.

HIV Viral Load Test

This test measures the amount of HIV in an infected person's bloodstream. It is rarely used to diagnose HIV infection. It is most often used in individuals who are HIV-positive to measure the effectiveness of antiretroviral medications used to treat HIV infection.

Getting Tested for HIV

Who Should Be Tested?

Anyone who has put themselves at risk through anal, vaginal, or oral sex, or shared needles and anyone who has had an occupational exposure, may benefit from HIV testing. People may have partners with risk factors, and these people (along with their partners) should consider testing. For occupational exposure, refer to your employer protocol.

Where to Test for HIV

People may get an HIV test at public health departments, through their medical provider, family planning, or sexually transmitted disease clinics and at some community clinics.

Confidential Testing

With confidential HIV testing, clients do give their real name, and the information about their testing is maintained in medical records. Their results are confidential. Results and testing information are not released to others except when medically necessary or under special circumstances such as when they sign a release for the results to be given to another person or agency. HIV is a reportable condition, therefore confidential HIV results are reported to local public health officials.

Anonymous Testing

An anonymous HIV antibody test means that the clients don't give their name and the person who orders or performs the test does not maintain a record of the name of the person they are testing.

Informed Consent Required

HIV testing can only be done with the person's consent. Consent may be contained within a comprehensive consent for medical treatment. It can be verbal or written but must be specific to HIV and must be documented. There are some rare exceptions where a person can be tested without their consent, including source testing relating to occupation exposures and legally mandated situations specified in state law.

Testing Information and Risk Assessment Required

Aside from the exceptions listed above, all people tested for HIV should be assessed for their risk of infection and unless previously tested and having declined information, be provided with appropriate information about the test, including, but not limited to:

- The benefits of learning their HIV status and the potential dangers of the disease
- How HIV is transmitted and way in which it can be prevented
- Meaning of HIV test results and the importance of obtaining the results
- As appropriate, the availability of anonymous testing and the differences between anonymous and confidential testing

HIV Antibody Test Results

Antibody test results can be negative, positive, or indeterminate. A negative test result is not certain until you have passed the window period.

The Window Period

It is important to remember that HIV antibody testing has a window period. The **window period** is the time between initial infection with the virus and when the HIV-infected person develops enough antibodies to be detected by the antibody test. Until the infected person's immune system makes enough antibodies to be detected, the test will be negative even though the person is infected with HIV.

Some infected people are able to produce antibodies as early as 2 weeks after infection. Almost everyone will develop enough antibodies to be detected by 12 weeks after infection. Unfortunately, there is no way to know how long each infected person will take to develop antibodies. However, virtually everyone who is infected will produce enough antibodies for detection by 12 weeks (3 months). Therefore, to be sure, people should test 3 months after the last potential HIV exposure even if an initial screening is negative.

Because people who are newly infected have so few antibodies to fight HIV, the virus can grow and multiply unchecked. During this time, they can have a large amount of virus in their blood, making them highly infectious for HIV. During the window period it is possible for an infected person to test negative (before they develop antibodies) but still be able to infect another person.

Negative Results

If the test result is negative, it means one of two things:

- Either the person is not infected with the virus, or
- The person became infected recently and has not produced enough antibodies to be detected by the test

If a person is concerned about a recent incident, they should test 3 months from the date of their last possible exposure. A negative test result does not mean a person is immune to HIV. If risky behavior continues, infection may occur.

Positive Results

A positive confirmatory test indicates the presence of HIV antibodies and that the person:

- Is infected with HIV
- Can spread the virus to others through unsafe sexual practices, sharing contaminated injection equipment, or breastfeeding
- Is infected for life

Indeterminate Results

Occasionally, a Western Blot test result will come back with an indeterminate or inconclusive test result. If a person has recently engaged in behaviors that put them at risk for getting HIV, it could mean that they are newly infected with HIV and are slowly developing antibodies, or **seroconverting**.

If seroconversion is suspected, RNA testing can determine if the HIV virus is present. If RNA testing is not available, a second specimen should be gathered and tested with an antibody test. If seroconversion is present, this second test may give a positive result.

Indeterminate results are not always indicative of seroconversion. They can also be caused by cross reaction with other proteins from several sources, including pregnancy, other autoimmune diseases, and recent influenza vaccinations.

For low-risk people when seroconversion is not suspected, retesting should be conducted at 1 month and at 3 months from the last possible exposure to verify that they are not infected. Non-infection is indicated if the subsequent tests continue to be indeterminate (without additional HIV antibody protein bands) or negative.

Indeterminate results for low-risk clients are rare. It is possible that some uninfected people may always test indeterminate due to the cross reaction from protein bands from something other than HIV. Other uninfected people who first test indeterminate may clear their bodies of those other proteins that are causing the cross reaction and, in subsequent tests, test negative. Still others go back and forth between indeterminate and negative.

Counseling messages should explain that only HIV-positive tests indicate infection with HIV and that some people test indeterminate because of non-HIV proteins in their bodies that register on the test. No further testing for other diseases is indicated.

Advantages of Early Testing for HIV Infection

New drug therapies for HIV infection can sustain an infected person's health for long periods of time. Early detection allows people with HIV the option to receive medical treatment sooner, take better care of their immune system, and stay healthier longer. Additionally, early detection of HIV allows people to take precautions not to infect others.

Test Your Learning

A negative HIV test result means this person:

- A. Is immune to HIV and can never become infected.
- B. Is infected with HIV and will remain infected for life.
- C. Has never been exposed to HIV.
- D. May have been exposed to HIV but not yet produced enough antibodies to be detected by the test.

A positive HIV test result means this person:

- A. Is infected with HIV and can spread the virus to others.
- B. Cannot spread the virus until symptoms of AIDS develop.
- C. Can be cured with current antiviral drugs.
- D. Does not have AIDS.

Counseling with HIV Testing

The person who provides HIV test counseling to clients should direct the counseling toward increasing client's understanding of their own risk of acquiring or transmitting HIV, motivating them to reduce their risk, and assisting them to build skills to reduce their risk.

Pre-Test Counseling

Pre-test counseling should be based on recommendations of the CDC's 2006 *Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings* (latest available).

Pre-test counseling should always:

- Assist the individual to set realistic behavior-change goals and establish strategies for reducing their risk of acquiring or transmitting HIV
- Provide appropriate risk reduction skills-building opportunities to support their behavior change goals
- Provide or refer for other appropriate prevention, support, or medical services

Post-Test Counseling

Those who test HIV negative should be offered an individual counseling session at the time they receive their test results. For those clients who test HIV-positive, counseling can't just be offered, it **must** be provided or referred and in addition to what is provided to HIV-negative clients, must also include:

- If confidentially tested, the information that HIV is a reportable condition
- Either the provision of partner notification support or referral to public health for these services
- Appropriate referrals for alcohol and drug and mental health counseling, medical evaluation, TB screening, and HIV prevention and other support services

Testing Confidentiality

Information about a person's HIV test and results is confidential and must not be shared with others. People who perform HIV counseling and testing in public health departments or health districts must sign strict confidentiality agreements. These agreements regulate the personal information that may be revealed in counseling and testing sessions as well as test results. HIV test results are kept in locked files, with only a few appropriate staff members having access to them.

HIV Testing: Pregnancy

[Material from this section was retrieved on January 8, 2018 from <https://www.cdc.gov/hiv/group/gender/pregnantwomen/opt-out.html>.]

In the 2006 Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings, CDC recommended the opt-out approach to testing for all adult and adolescent patients in healthcare settings, including pregnant women.

These recommendations emphasize:

- Universal “opt-out” HIV testing for all pregnant women early in every pregnancy.
- A second test in the third trimester in certain geographic areas or for women who are known to be at high risk of becoming infected (eg, injection-drug users and their sex partners, women who exchange sex for money or drugs, women who are sex partners of HIV-infected persons, and women who have had a new or more than one sex partner during this pregnancy).
- Rapid HIV testing at labor and delivery for women without a prenatal test result.
- Exploration of reasons that women decline testing.

Studies show that the opt-out approach can:

- Increase testing rates among pregnant women, thereby increasing the number of pregnant women who know their HIV status.
- Increase the number of HIV-infected women who are offered treatment.
- Reduce HIV transmission to their babies.

How is opt-out implemented in the healthcare setting?

Opt-out comprises three steps for healthcare providers to follow to put this approach into practice (CDC recommends all three steps):

- Tell all pregnant women that an HIV test will be performed as part of the standard group of tests for pregnant women.
- Tell all pregnant women that they may decline this test.
- Give all pregnant women information about how to prevent HIV transmission during pregnancy and provide information about treatment for pregnant women who are HIV-positive.

HIV Testing: Sexual Assault

Sexual assault is prevalent in the United States. In 2010 the CDC began annual collection of comprehensive data on sexual violence victimization, including rape, with the National Intimate Sexual Violence Survey (NISVS). The last reported year of data in 2011 indicate that more than 23 million women were raped at some point in their lifetime, and 40% of those rapes took place before the women reached age 18. In addition, nearly 2 million men report being raped at some point in their lifetime (NISVS, 2011). Unfortunately, a study found that rape is hugely underreported in the United States due to women not wanting to report the crime and official records undercounting to “create the illusion of success in fighting violent crime” (Yung, 2014).

For the 12-month period preceding the 2011 data collection, 1,929,000 women reported being raped, and 6,687,000 subjected to other forms of sexual violence. Although rape data for men was not available, 5,797,000 of them reported being subjected to other kinds of sexual violence during that one-year period (NISVS, 2011).

Apart from the emotional and physical trauma that accompany sexual assault, many victims are concerned about HIV infection from the rapist.

Sexual Assault HIV Risks

According to CDC, the odds of HIV infection from a sexual assault in the United States are 2 in 1,000. While this is a low risk, the fear of HIV poses an additional emotional burden on people who have been victims of sexual assault.

HIV Testing

When assault victims are worried about HIV, testing can help their healing process. Almost all such HIV tests will be negative and thus provide emotional relief to the victim. The very few who do test HIV-positive will need that information both for obtaining healthcare and as evidence in possible criminal court cases.

Assault and the Window Period

The window period for HIV antibody testing must be taken into account when testing after an assault. Recall that it takes from 2 to 12 weeks after exposure for antibodies to show up in an HIV test. Any test conducted shortly after the assault reveals only the original status of the victim. An early test can, however, provide proof that the victim was HIV-negative at the time of the assault, which may be useful as evidence in a criminal case.

To verify that the victim was not infected by the assault, it is necessary to test again after the window period. If, following an earlier HIV-negative result, the second test is HIV-positive, it indicates that the victim was infected by the assault (assuming no other opportunity for infection occurred in the interim).

Other Testing

When counseling assault victims about the risk of HIV, remember that the risk of HIV is low but there are other potentially higher risks to be addressed. The risk of other STDs and pregnancy are much higher than HIV. Victims of sexual assault should be tested for STDs and females given emergency contraception. The emergency contraception hotline number (888 668 2528) should be provided by telephone rape counselors or other health care professionals.

Most experts recommend that a sexual assault victim should go directly to the nearest hospital emergency room, without first changing their clothing, bathing, or showering. Trained staff in the emergency department will counsel the victim, and may also offer testing or referral for HIV, STDs, and pregnancy. It is common practice for the ED physician or Sexual Assault Nurse Examiner (SANE) nurse to take DNA samples of blood or semen from the vagina, rectum, and perineal and adjacent areas, which can be used as evidence against the attacker. Unfortunately many hospitals do not have a dedicated SANE nurse or adequate testing materials and if rape victims are referred to another hospital, the victim may decide to do without the invasive medical care and testing. Some EDs may refer sexual assault survivors to the local health jurisdiction for HIV testing.

Many people feel that the ED setting is a profoundly unpleasant one in which to question sexual assault victims regarding their sexual risks history. However, testing shortly after a sexual assault provides baseline information on their status for various STD infections. All testing to be used for baseline information and legal action should be done confidentially.

Assailant Testing

The victim needs to consider whether to start post exposure prophylaxis (PEP) independent of the source's test result, because the time between the attack and the conviction will likely be longer than the 24 to 48 hours time frame recommended for starting PEP.

Partner Notification

Partner notification is a voluntary service provided to HIV positive people and their sexual partners or injecting-drug-sharing partners. This service is provided using a variety of strategies to maintain the confidentiality of both the HIV-infected client and the partners.

HIV-infected people are counseled about the importance of their partners' being notified of exposure to HIV and offered an HIV test. Clients can choose to notify their partners themselves or to have public health staff notify them. When public health staff notify partners, they notify them of their exposure, provide counseling and information, and offer HIV testing without revealing the partner who tested HIV positive.

Partner notification is a critical tool for those notified because it alerts them to the need for being tested. If they are uninfected, they can take steps to ensure they don't become infected. If infected, they can take steps to care for their own health and to ensure that they do not pass the virus on to others.

Reporting Requirements

AIDS cases have been reportable to the CDC since 1984, when the existence of the syndrome that follows HIV infection was clearly established.

Clinical Manifestations and Treatment

Natural History of HIV Infection

A person with untreated HIV infection will experience several stages in infection. These include viral transmission, primary HIV infection, seroconversion, asymptomatic HIV infection, symptomatic HIV infection, and AIDS. These stages are sometimes called the "natural history" of disease progression and are described below. The natural history of HIV infection has been altered dramatically in developed countries because of new medications. In countries where there is no access to these expensive medications, or in cases where people do not become aware of their HIV infection until very late, the disease progresses as described below.

Natural History of HIV Infection

- Viral transmission
- Primary HIV infection
- Seroconversion
- Asymptomatic HIV infection
- Symptomatic HIV infection
- AIDS

The first three constitute the window period.

Viral Transmission

Viral transmission is the initial infection with HIV. People infected with HIV may become infectious to others within 5 days. They are infectious before the onset of any symptoms, and they will remain infectious for the rest of their lives.

Primary HIV Infection

During the first few weeks of HIV infection, individuals have a very high level of virus (viral load) in their bloodstream. The high viral load means the individual can easily pass the virus to others. Unfortunately, during primary infection many people are unaware that they are infected.

In this stage, about half of infected people have symptoms of fever, swollen glands (in the neck, armpits, groin), rash, fatigue, and a sore throat. These symptoms, which resemble mononucleosis, go away in a few weeks, but the individual continues to be infectious to others.

It is extremely important that healthcare providers consider the diagnosis of primary HIV infection if clients engage in behaviors that put them at risk for HIV and are presenting with the above symptoms. If individuals experience these symptoms after having unprotected sex or sharing needles, they should seek medical care and tell their provider why they are concerned about HIV infection.

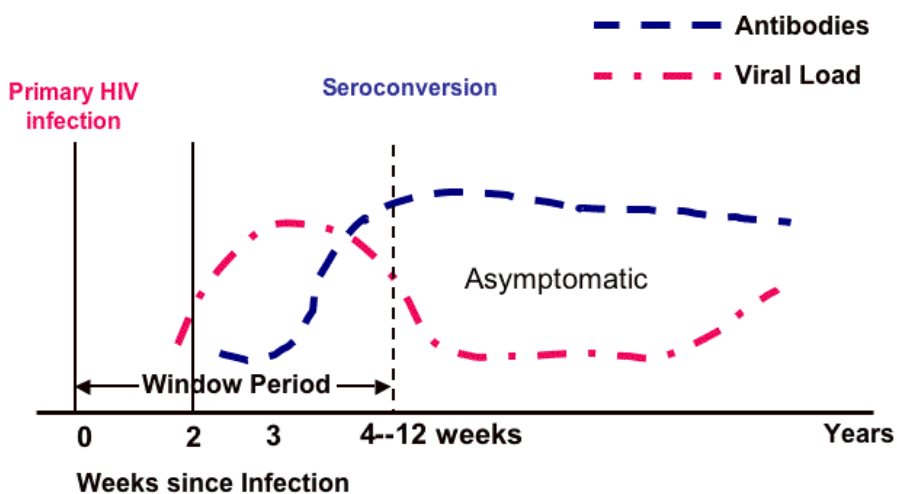
Window Period and Seroconversion

The window period begins with initial infection and continues until the virus can be detected by an HIV antibody test. Seroconversion is the term for the point at which HIV antibodies are detectable and the window period ends.

Natural Course of Untreated HIV Infection

The first two weeks following infection are highly contagious but not detectable by HIV tests (see figure below). Antibodies may begin to appear after 2 weeks but take up to 12 weeks or longer to reach seroconversion. As is seen on the line curves, the viral load continues to increase until there are sufficient antibodies to suppress, but not kill, the virus. Once the antibodies become active, an untreated patient may be asymptomatic for 10 years before the antibodies are no longer able to suppress the virus and the person becomes symptomatic.

Natural Course of Untreated HIV Infection



Source: Adapted from Conway & Bartlett, 2003.

Asymptomatic HIV Infection

Following seroconversion, a person infected with HIV is **asymptomatic** (has no noticeable signs or symptoms). The person may look and feel healthy, but can still pass the virus to others. It is not unusual for an HIV-infected person to live 10 years or longer without any outward physical signs of progression to AIDS. Meanwhile, the person's blood and other systems are affected by HIV, which would be reflected in laboratory tests. Unless a person in this stage has been tested for HIV, they will probably not be aware they are infected.

Symptomatic HIV Infection

During the symptomatic stage of HIV infection, a person begins to have noticeable physical symptoms that are related to HIV infection. Anyone who has symptoms like these and has engaged in behaviors that transmit HIV should seek medical advice. The only way to know for sure if you are infected with HIV is to take an HIV antibody test.

Although no symptoms are specific only to HIV infection, some common symptoms are:

- Persistent low-grade fever
- Pronounced weight loss that is not due to dieting
- Persistent headaches
- Diarrhea that lasts more than 1 month
- Difficulty recovering from colds and the flu
- Being sicker than they normally would with ordinary illnesses
- Recurrent vaginal yeast infections in women
- Thrush/yeast infection coating the mouth or tongue

Apply Your Learning

Q: A client comes into your clinic complaining of a fever of 99 °F for 3 weeks, weight loss of 15 pounds in the past 2 months, and diarrhea for 6 weeks. He claims he has not changed his regular diet and is not trying to lose weight. He states he has had a lingering cold for weeks and just doesn't feel good or have energy. What additional history and physical factors would you need to assess?

A: These are classic symptoms of an HIV infection but could also be a gastrointestinal or respiratory virus. Sexual history, diet history, and family history of GI diseases would need to be assessed. A chest x-ray, CBC, basic metabolic panel, and thyroid levels should be ordered to rule out pneumonia, infections, thyroid health, and inflammatory conditions. It is said as high as 90% of a diagnosis can be determined by a thorough history alone.

AIDS

Did you know . . .

An AIDS diagnosis can only be made by a licensed healthcare provider and, once the diagnosis is made, the person is always considered to have AIDS.

An AIDS diagnosis is based on the result of HIV-specific blood tests and/or on the person's physical condition. Established AIDS-defining illnesses, white blood cell counts, and other conditions are specifically linked to making an AIDS diagnosis. Once a person is diagnosed with AIDS, even if they later feel better, they do not "go backwards" in the classification system for HIV infection. They are always considered to have AIDS.

People who have an AIDS diagnosis may often appear to a casual observer to be quite healthy, but they continue to be infectious and can pass the virus to others. Over time, people with AIDS frequently have a reduced white blood count and develop poorer health. They may also have a significant amount of virus present in their blood, measurable as viral load.

Cofactors

A **cofactor** is a separate condition that can change or speed up the course of disease. There are several cofactors that can increase the rate of progression to AIDS. They include a person's age, certain genetic factors, and possibly drug use, smoking, nutrition, and HCV.

Time from Infection to Death

If the infection is untreated, the average time from HIV infection to death is 10 to 12 years. Early detection and continuing medical treatment have been shown to prolong life for many more years.

AIDS Surveillance Case Definition

[This section was taken from CDC, 2014.]

Following extensive consultation and peer review, the CDC and the Council of State and Territorial Epidemiologists have revised and combined the surveillance case definitions for human immunodeficiency virus (HIV) infection into a single case definition for people of all ages, which includes adults and adolescents aged ≥ 13 years and children aged < 13 years. The revisions were made to address multiple issues, the most important of which was the need to adapt to recent changes in diagnostic criteria.

Laboratory criteria for defining a confirmed case now accommodate new multi-test algorithms, including criteria for differentiating between HIV-1 and HIV-2 infection and for recognizing early HIV infection. A confirmed case can be classified in one of five HIV infection stages: 0, 1, 2, 3, or unknown.

Early infection, recognized by a negative HIV test within 6 months of HIV diagnosis, is classified as stage 0, and acquired immunodeficiency syndrome (AIDS) is classified as stage 3. Criteria for stage 3 have been simplified by eliminating the need to differentiate between definitive and presumptive diagnoses of opportunistic illnesses.

Clinical (non-laboratory) criteria for defining a case for surveillance purposes have been made more practical by eliminating the requirement for information about laboratory tests. The surveillance case definition is intended primarily for monitoring the HIV infection burden and planning for prevention and care on a population level, not as a basis for clinical decisions for individual patients (CDC, 2014).

Since the first cases of AIDS were reported in the United States in 1981, surveillance case definitions for HIV infection and AIDS have undergone several revisions to respond to diagnostic advances. This new document updates the surveillance case definitions originally published in 2008. It addresses multiple issues, the most important of which was the need to adapt to recent changes in diagnostic criteria.

Other needs that prompted the revision included:

- Recognition of early HIV infection
- Differentiation between HIV-1 and HIV-2 infections
- Consolidation of staging systems for adults/adolescents and children

- Simplification of criteria for opportunistic illnesses indicative of AIDS
- Revision of criteria for reporting diagnoses without laboratory evidence (CDC, 2014)

Stage 3–Defining Opportunistic Illnesses in HIV Infection

- Bacterial infections, multiple or recurrent*
- Candidiasis of bronchi, trachea, or lungs
- Candidiasis of esophagus
- Cervical cancer, invasive†
- Coccidioidomycosis, disseminated or extrapulmonary
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis, chronic intestinal (>1 month's duration)
- Cytomegalovirus disease (other than liver, spleen, or nodes), onset at age >1 month
- Cytomegalovirus retinitis (with loss of vision)
- Encephalopathy attributed to HIV§
- Herpes simplex: chronic ulcers (>1 month's duration) or bronchitis, pneumonitis, or esophagitis (onset at age >1 month)
- Histoplasmosis, disseminated or extrapulmonary
- Isosporiasis, chronic intestinal (>1 month's duration)
- Kaposi sarcoma
- Lymphoma, Burkitt (or equivalent term)
- Lymphoma, immunoblastic (or equivalent term)
- Lymphoma, primary, of brain
- *Mycobacterium avium complex* or *Mycobacterium kansasii*, disseminated or extrapulmonary
- *Mycobacterium tuberculosis* of any site, pulmonary†, disseminated, or extrapulmonary
- *Mycobacterium*, other species or unidentified species, disseminated or extrapulmonary
- *Pneumocystis jirovecii* (previously known as "Pneumocystis carinii") pneumonia
- Pneumonia, recurrent†
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia, recurrent
- Toxoplasmosis of brain, onset at age >1 month
- Wasting syndrome attributed to HIV

* Only among children aged <6 years.

† Only among adults, adolescents, and children aged ≥6 years.

Source: CDC, 2016b.

Clinical Manifestations vs. Opportunistic Infections

When their immune system is suppressed, people have weaker defenses against the wide variety of bacteria, viruses, fungi, and other pathogens that are present almost everywhere. A **clinical manifestation** is the physical result of some type of illness or infection.

The **opportunistic infections** associated with HIV include any of the infections that are part of an AIDS-defining classification. For example, the opportunistic infection cytomegalovirus often causes the clinical manifestation of blindness in people with AIDS.

HIV in the Body

Scientists are always learning new information about how HIV affects the body. HIV infection seems to affect many body systems. It is well known that HIV infection causes a gradual, pronounced decline in the immune system's functioning. People with HIV are at risk for a wide variety of illnesses, both common and exotic.

HIV affects the:

- Kind and number of blood cells
- Amount of fat and muscle distribution in the body
- Structure and functioning of the brain
- Normal functioning of the immune system
- Body's basic metabolism

HIV infection can cause many painful or uncomfortable conditions, including:

- Confusion or dementia
- Diarrhea
- Fatigue
- Fever
- Nausea or vomiting
- Painful joints, muscles, or nerve pain
- Difficulty with breathing
- Urinary or fecal incontinence
- Vision or hearing loss

- Thrush (yeast infections in the mouth)
- Chronic pneumonias, sinusitis, or bronchitis
- Loss of muscle tissue and body weight

Test Your Learning

Opportunistic diseases and infections:

- Are seen only during the window period of HIV infection.
- Affect the kind and number of blood cells in HIV-infected patients.
- Are caused by a suppressed immune system that weakens defenses against bacteria, viruses, and fungi.
- Are the physical result of some type of illness or infection.

Answer: C

HIV in Children

Children show significant differences in their HIV disease progression and their virologic and immunologic responses when compared to adults. Without drug treatment, children may have developmental delay, failure to thrive, recurrent bacterial infections such as *P. carinii* pneumonia, and other conditions related to low immune response. The antiretroviral treatments that are available for HIV infection may not be available in pediatric formulations. The medications may have different side effects in children than they do in adults.

It is vital that women know their HIV status before and during pregnancy. Antiretroviral treatment significantly reduces the chance that their child will become infected with HIV. Prior to the development of antiretroviral therapies, most HIV-infected children were very sick by 7 years of age.

In 1994 scientists discovered that a short treatment course of the medication AZT for pregnant women dramatically reduced the number and rate of children who became infected perinatally. Cesarean sections for delivery may be warranted in certain cases to reduce HIV transmission. As a result, perinatal HIV infections have substantially declined in the developed world.

Early diagnosis of HIV infection in newborns is now possible. Antiretroviral therapy for infants is now the standard of care and should be started as soon as the child is determined by testing to be HIV-infected. Apparently uninfected children who are born to HIV-positive mothers are currently treated with antiretroviral medicines for 6 weeks to reduce any possibility of HIV transmission.

Did you know. . .

Women with HIV who take antiretroviral medication during pregnancy as recommended can reduce the risk of transmitting HIV to their babies to less than 1%.

Test Your Learning

HIV infection in children:

- A. Has the same disease progression as adults.
- B. Has been reduced by using AZT in HIV-infected pregnant women.
- C. Does not usually cause symptoms until puberty.
- D. Causes developmental delay when treated with drugs too early.

Answer: B

HIV in Women

Certain strains of HIV may infect women more easily. The strain of HIV present in Thailand seems to transmit more easily to women through sexual intercourse. Scientists believe that women and receptive partners are more easily infected with HIV than insertive partners. Receptive partners are at greater risk for transmission of any sexually transmitted disease, including HIV.

Women infected with HIV are at increased risk for a number of gynecologic problems, including pelvic inflammatory disease (PID), abscesses of the fallopian tubes and ovaries, and recurrent yeast infections.

Some studies have found that HIV-infected women have a higher prevalence of infection with the human papilloma virus (HPV). Cervical dysplasia is a precancerous condition of the cervix caused by certain strains of HPV. Cervical dysplasia in HIV-infected women often becomes more aggressive as the woman's immune system declines. This may lead to invasive cervical carcinoma, which is an AIDS-indicator condition. It is important for women with HIV to have more frequent Pap tests than those who are not infected.

Several studies have shown that women in the United States who have HIV receive fewer healthcare services and HIV medications than men. This may be because women aren't diagnosed or tested as frequently.

Access to Medical Care

As the medications that are available to treat HIV infection have become more numerous and complex, HIV care has become a medical specialty. If possible, people who have HIV infection should seek out a physician who is skilled in the treatment of HIV and AIDS. Your local health department may be able to provide this information.

Impact of New Drugs on Clinical Progression

Before 1996 there were three medications available to treat HIV. These drugs were used singly and were of limited benefit. Researchers in 1996 discovered that taking combinations of these and newer medications dramatically reduced the amount of HIV (viral load) in the bloodstream of a person infected with HIV. Two or three different medications are used in combination. Each one targets a separate part of the virus and its replication. The reduction of deaths from AIDS in the United States has been primarily attributed to this combination therapy, called **highly active antiretroviral therapy (HAART)**.

Not everyone with HIV infection benefits from the new drug therapies. Some people cannot tolerate the unpleasant or serious side effects from the medications. Others cannot adhere to the complex treatment schedule. If patients do not take their medication every day according to their physician's instructions, the drugs do not work effectively and viral resistance may develop.

Cost of new drug therapies can be prohibitive. Insurance programs and government programs for individuals with low income pay for much of the cost of the HIV medicines in many states. These medicines may cost upwards of \$2,000 per person each month. People who live in other countries where the medication is unaffordable have very limited access to the newer therapies.

Although the new drug therapies work for many people to keep the amount of virus in their bodies to very low levels, they are not a cure for HIV. Once therapy is discontinued, viral load will increase. Even during treatment, viral replication occurs and the person remains infectious to others.

It is now common to see combination drug therapy referred to simply as **ART**, or antiretroviral therapy. New drugs and new guidelines for their usage are not uncommon and information about them can be accessed on the CDC and National Institutes of Health (NIH) AIDSinfo websites.

Test Your Learning

HAART therapy:

- A. Is a newly discovered antiretroviral drug.
- B. Is a cure for HIV/AIDS.
- C. Decreases viral load to a point where patients are no longer contagious.
- D. Is the primary reason for the reduction of deaths from AIDS in the United States.

Answer: D

Resistance

Many people find that over time the virus becomes resistant to their medication and they must change medications. This is especially true when the medications are not taken correctly, but it limits the number of possible drug therapies the person might be able to use.

Side Effects

Patients often have unpleasant side effects when they use prescription medications to treat their HIV infection. These side effects include:

- Nausea
- Diarrhea
- Peripheral neuropathy (numbness or pain in feet and hands)
- Lipodystrophy: changes in body fat distribution, which presents with large fat deposits on the back of the neck, on the stomach area and in breast size in women and with pronounced thinning of the arms and legs
- Interference with the metabolism of oral contraceptives
- Osteoporosis
- Diabetes or other changes in glucose metabolism
- Very high cholesterol or triglycerides

- Damage to the nervous system, liver, and/or other body organs

Alternative Therapies

People have relied on alternative (sometimes called complementary) therapies to treat HIV infection for as long as HIV has been known. Many people use these treatments along with therapies from their medical provider. Other people choose to use only alternative therapies. These therapies comprise a wide range of treatments, including vitamins, massage, herbs, naturopathic remedies, and many more. While there is no evidence of harm from these treatments, there is also very little evidence of benefit. Many of these remedies still have not been studied to see if they help.

It is important for people who are taking alternative therapies to tell their medical provider what they are using. There may be harmful side effects from the interactions of the “natural” medicine and antiretrovirals. For example, St. John’s Wort is an herbal remedy often used for depression that interacts negatively with HIV medications.

Other drugs, including over-the-counter (OTC) medications, prescription medications, and street drugs, may have serious interactions with antiretroviral medications. It is extremely important that people on HIV medications tell their doctor, pharmacist, and social worker about all other drugs they take.

Case Management

People living with HIV often seek the assistance of an HIV case manager who can help explain the different types of services available. Most states have systems in place to provide prescription and medical assistance to people living with HIV and AIDS. Contact your local health department or district to find case management in your community.

Prevention Strategies

Anthony Fauci, director of the National Institute on Allergy and Infectious Diseases (NIAID), has stated, “Prevention is not unidimensional with HIV, it is a multidimensional, heterogeneous combination of preventions” (NIAID, 2014a).

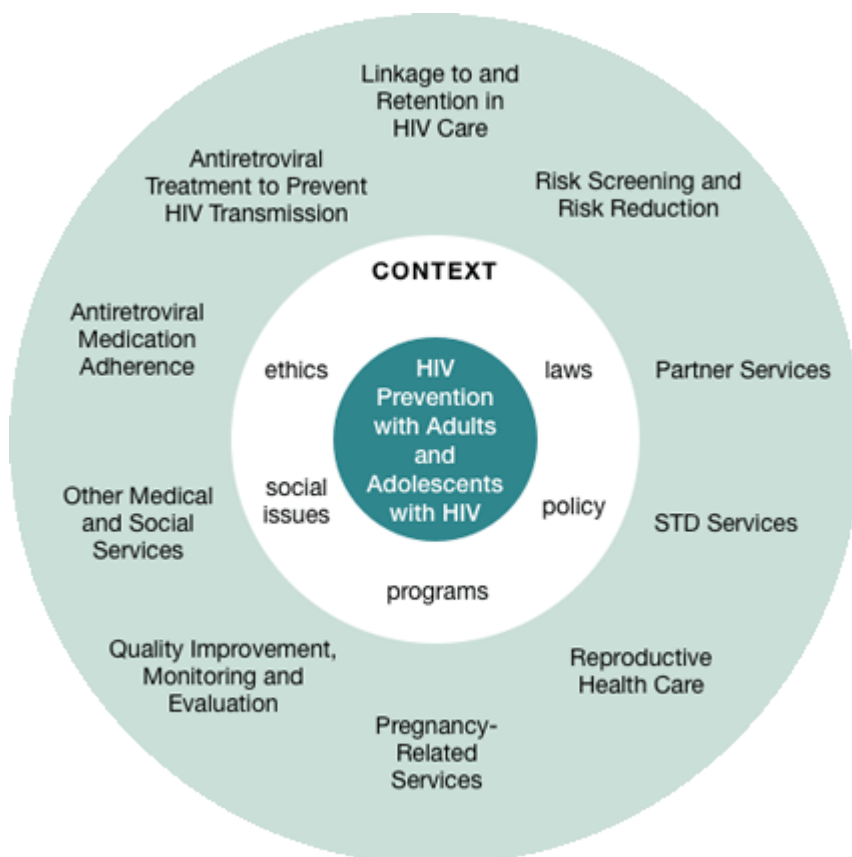
Fauci accompanied the statement above with a graphic entitled “Combination HIV Prevention” that included:

- HIV Testing/Counseling
- Treatment as Prevention
- Medical Male Circumcision
- STI Treatment

- Microbicides
- Treatment/Prevention of Drug/Alcohol Abuse
- Clean Syringes
- Education/Behavior Modification
- Condoms
- Blood Supply Screening
- ARVs for PMTCT, PEP, PrEP [Antiretroviral therapies for Prevention of Mother to Child Transmission, Post Exposure Prophylaxis, Pre Exposure Prophylaxis] (Fauci, 2014)

No one prevention option works all the time with every target group, but each one has shown, and continues to show, frequent measurable success with many groups. Used together, they have made significant headway against HIV (Fauci, 2014; NIAID, 2014a).

HIV Prevention for Adults and Adolescents with HIV



Source: CDC.

Treatment as Prevention

The advent in 1996 of potent combination antiretroviral therapy (ART), sometimes called HAART (highly active antiretroviral therapy) or cART (effective combination antiretroviral therapy), changed the course of the HIV epidemic. These “cocktails” of three or more antiretroviral drugs used in combination gave patients and scientists new hope for fighting the epidemic and have significantly improved life expectancy—to decades rather than months.

For many years, scientists believed that treating HIV-infected people also significantly reduced their risk of transmitting the infection to sexual and drug-using partners who did not have the virus. The circumstantial evidence was substantial, but no one had conducted a randomized clinical trial—the gold standard for proving an intervention works.

That changed in 2011 with the publication of findings from the HIV Prevention Trials Network (HPTN) 052 study, a randomized clinical trial designed in part to evaluate whether the early initiation of ART can prevent the sexual transmission of HIV among heterosexual couples in which one partner is HIV-infected and the other is not. This landmark study validated that early HIV treatment has a profound prevention benefit; results showed that the risk of transmitting HIV to an uninfected partner was reduced by 96% (HPTN, 2016).

As a concept and a strategy, treating HIV-infected people to improve their health and to reduce the risk of onward transmission—sometimes called **treatment as prevention**—refers to the personal and public health benefits of using ART to continuously suppress HIV viral load in the blood and genital fluids, which decreases the risk of transmitting the virus to others. The practice has been used since the mid-1990s to prevent mother-to-child, or perinatal, transmission of the virus.

Research published in 1994 showed that zidovudine, more commonly known as AZT, when given to HIV-infected pregnant women and to their newborns reduced the risk of perinatal transmission from about 25% to 8%. Since then, routinely testing pregnant women and treating infected mothers with ART during pregnancy, delivery, and while breastfeeding, when practiced according to recommendations, has reduced the mother’s risk of transmitting HIV to her child by 90%.

Treatment alone won’t solve the global HIV epidemic, but it is an important element of a multi-pronged attack that includes prevention efforts, wise investment of resources, greater access to screening and medical care, and involvement by everyone—local, state, and federal government; faith-based communities; and private groups and individuals. Providing treatment for people who are living with HIV infection must be the first priority and, in order to get treatment, one must be aware of the need. Thus testing and identification of those with HIV infection become the “pivotal entry point into the medical care system for both treatment and prevention” (CDC, 2013).

Vaccine

Work on an HIV vaccine can be traced back three decades to before the first HIV vaccine clinical trial at the National Institutes of Health in 1987, yet one researcher has said recently that he believes the vaccine he is working on is still 8 to 10 years away from proving workable in humans. Discouraging as that may sound, it takes a great deal of time to do the work needed to create a vaccine, and HIV provides some unique challenges (NIAID, 2013; Hayes, 2017; AIDS.gov, 2015).

Vaccines historically have been the most effective means to prevent and even eradicate infectious diseases. Like smallpox and polio vaccines, a preventive HIV vaccine could save millions of lives. Developing safe, effective, and affordable vaccines that can prevent HIV infection in uninfected people is the best hope for controlling and/or ending the HIV epidemic.

The long-term goal is to develop a safe and effective vaccine that protects people worldwide from getting infected with HIV. However, even if a vaccine only protects some people, it could still have a major impact on the rates of transmission and help control the epidemic, particularly for populations where there is a high rate of HIV transmission. A partially effective vaccine could decrease the number of people who get infected with HIV, further reducing the number of people who can pass the virus on to others.

HIV is a very complex, highly changeable virus, and it is different from other viruses because the human immune system never fully gets rid of it. Most people who are infected with a virus, even a deadly one, recover from the infection, and their immune systems clear the virus from their bodies. Once cleared, an immunity to the virus often develops. But humans do not seem to be able to fully clear HIV and develop immunity to it. The body cannot make effective antibodies and HIV actually targets, invades, and then destroys important cells that the human body needs to fight disease. So far, no person with an established HIV infection has cleared the virus naturally, and this has made it more difficult to develop a preventive HIV vaccine.

Scientists continue to develop and test vaccines in labs, in animals, and even in human subjects. Trials allow researchers to test the efficacy and safety of their vaccine candidate, and each trial has yielded important information on the path to developing a widely effective vaccine, but there are still many challenges to be overcome.

Pre-Exposure Prophylaxis (PrEP)

Pre-exposure prophylaxis (PrEP) is a way for people who do not have HIV to help prevent HIV infection by taking a pill every day. The pill contains two medications that are also used, in combination with others, to treat HIV. When someone is exposed to HIV through sex or injection drug use, PrEP can help stop the virus from establishing a permanent infection (CDC, 2014c).

Currently, the only pill approved by the FDA for use as PrEP for people at very high risk of getting HIV infection is called **Truvada**, and it contains tenofovir and emtricitabine. These drugs work by blocking important pathways that HIV uses to set up an infection (AIDS.gov, 2014a).

When used consistently, PrEP has been shown to greatly reduce the risk of HIV infection in people who are at substantial risk. In all of the several national and international clinical trials, the risk of getting HIV infection was lower—up to 92% lower—for participants who took the medications consistently than for those who did not. PrEP is much less effective when it is not taken consistently (CDC, 2014c).

PrEP is a powerful HIV prevention tool, and can be combined with condoms and other prevention methods to provide even greater protection than when used alone. People who use PrEP must commit to taking the drug daily and seeing their healthcare provider every 3 months for HIV testing and other followup (CDC, 2014c).

PrEP is not for everyone, and in 2014 the U.S. Public Health Service released the first comprehensive clinical practice guidelines for PrEP, *Pre-exposure Prophylaxis for the Prevention of HIV Infection in the United States, 2014: A Clinical Practice Guideline*, accompanied by a supplement with forms and counseling guidance.

In 2014 the CDC, in collaboration with others, launched the nation's first PrEPline, which enables clinicians (physicians, nurse practitioners, and physician assistants) to call toll-free to consult with experts about using pre-exposure prophylaxis (PrEP) with a patient. PrEP will also provide written and online checklists, guidelines, informational material, and educational tools (CDC, 2014c).

Tuberculosis, Other STDs, and Hepatitis B and C

Because of the interrelationships between HIV, tuberculosis (TB), sexually transmitted diseases, HBV, and HCV, a brief discussion of each requires review by health care professionals.

Tuberculosis and HIV

Mycobacterium tuberculosis (TB) is transmitted by airborne droplets from people with active pulmonary or laryngeal TB during coughing, sneezing, or talking. Although TB bacteria can live anywhere in the body, infectious pulmonary or laryngeal TB poses the greatest threat to public health.

Cause of TB

Latent infection, which is asymptomatic and not infectious, can last for a lifetime. A presumptive diagnosis of active TB is made when there are positive test results or acid-fast bacilli (AFB) in sputum or other bodily fluids. The diagnosis is confirmed by identification of *M. tuberculosis* on culture, which should be followed by drug sensitivity testing of the bacteria.

Epidemiology of TB

Tuberculosis is one of the world's deadliest diseases. One-third of the world's population is infected with TB. Thirteen million Americans, an estimated 4.2%, became sick with TB disease and there were approximately 1.5 million TB-related deaths. The CDC estimated that 6% to 10% of all TB cases in America occurred among people who were HIV positive (CDC, 2016).

In 2013, 9,582 TB cases were reported in the United States. This number and the case rate of 3.0 cases/100,000, both decreased over 2012 and are in line with a continuing decrease since the 1992 TB resurgence peak (CDC, 2014e).

Transmission and Progression

When infectious secretions sneezed or coughed by an adult with pulmonary TB are breathed in by another person, the bacteria may come to rest in the lungs. After several weeks the bacteria multiply, and some asymptomatic, pneumonia-like symptoms may occur. The TB bacteria are carried through the bloodstream and lymph system, pumped through the heart, and then disseminated through the body.

The largest amount of bacteria goes to the lungs. In most cases, this process, called *primary infection*, resolves by itself and something called **delayed-type hypersensitivity** is established. This is measured with the tuberculin skin test. The incubation period for this primary infection is 2 to 10 weeks. In most cases, a latent state of TB develops. Ninety percent of people with **latent TB (LTBI)** never experience subsequent disease. Other than a positive tuberculin skin test, people with latent TB infection have no clinical, radiographic (x-ray), or laboratory evidence of TB and cannot transmit TB to others.

Among the other 10% of infected individuals, the TB infection undergoes **reactivation** at some time and they develop active TB. About 5% of newly infected people reactivate within the first 2 years of primary infection and another 5% will do so at some point later in life.

Symptoms of TB

The period from initial exposure to conversion of the tuberculin skin test is 4 to 12 weeks. During this period, the patient shows no symptoms. The progression to active disease and symptoms (such as cough, weight loss, and fever) usually occurs within the first 2 years after infection but may occur at any time.

Prevention of TB

It is important to recognize the behavioral barriers to TB management, which include deficiencies in treatment regimens, poor client adherence to TB medications, and lack of public awareness. Primary healthcare providers need adequate training in screening, diagnosis, treatment, counseling, and contact tracing for TB through continuing education programs and expert consultation.

Promoting patient adherence to the sometimes-complicated medication schedule also requires consideration of patients' cultural and ethnic perceptions of their health condition. Providing strategies and services that address the multiple health problems associated with TB (such as alcohol and drug abuse, homelessness, and mental illness) also builds trust and promotes adherence to treatment plans.

A daily regimen of Isoniazid for 9 months is recommended because prospective, randomized trials in HIV-negative people indicate that 12 months of treatment is more effective than 6 months of treatment. Although a 9-month regimen of Isoniazid is the preferred regimen for the treatment of LTBI, a 6-month regimen does provide substantial protection.

In some situations, treatment for 6 months rather than 9 months may be cost-effective and still provide a favorable outcome. Thus, based on local conditions, health departments or providers may conclude that a 6-month rather than a 9-month course of Isoniazid is preferred.

Clinical trials have shown that daily preventive therapy for 12 months reduces the risk for TB disease by more than 90% in patients with LTBI who complete a full course of therapy. There is evidence that 6 months of preventive therapy with Isoniazid may also prevent disease in approximately 69% of patients who complete the regimen. Every effort should be made to ensure that patients adhere to this therapy for at least 6 months. Children should receive at least 9 months of preventive therapy.

Treatment of TB and Multidrug-Resistant TB

In order to prevent drug resistance and cure TB, the CDC recommends that TB be treated with a multidrug regimen that may last 6 to 12 months.

TB/HIV Co-Infection

People co-infected with HIV/TB are at considerably greater risk of developing TB disease than those with TB alone. Studies suggest that the risk of developing TB disease is 7% to 10% each year for people who are infected with both *M. tuberculosis* and HIV, whereas it is 10% over a lifetime for a person infected only with *M. tuberculosis*.

In an HIV-infected person, TB disease can develop in either of two ways. A person who already has latent TB infection can become infected with HIV, and then TB disease can develop as the immune system is weakened. Or, a person who has HIV infection can become infected with *M. tuberculosis*, and TB disease can then rapidly develop because the immune system is not functioning well.

Other STDs and HIV

The term **STD (sexually transmitted disease)** refers to more than twenty-five infectious organisms transmitted through sexual activity and dozens of clinical syndromes that they cause. Sexually transmitted diseases affect men and women and can be transmitted from mothers to babies during pregnancy and childbirth. They are also called **sexually transmitted infections (STIs)**.

Bacterial, Viral, and Other Causes of STD

Bacteria cause STDs including chlamydia, gonorrhea, and syphilis. Viruses cause herpes, genital warts, hepatitis B, and HIV. Scabies are caused by mites, and pubic lice cause "crabs." Trichomoniasis is caused by tiny organisms called protozoa and "yeast" infections are caused by fungi. Some STDs, such as pelvic inflammatory disease, can have more than one cause, for example, a woman may have both gonorrhea and chlamydia, causing PID. A man may have more than one cause for epididymitis, usually gonorrhea and chlamydia. Non-gonococcal urethritis (NGU) is usually caused by bacteria.

STD, Nationally and Internationally

Since the beginning of the AIDS epidemic, researchers have noted the strong association between HIV and other STDs. The CDC estimates that there are 20 million new STD infections every year, including gonorrhea, chlamydia, and syphilis—the three that physicians are required to report. Half of these new STD infections occur in young people aged 15 to 24 and accrue almost \$16 billion in healthcare costs.

Since 2015 saw increases in the three reportable STDs and 1.5 million new cases of chlamydia was the highest of any condition ever reported to the CDC. Gay and bisexual men face the highest, and continually rising, number of syphilis cases, representing 90% of all cases. Syphilis infection increases the rate of HIV infection (CDC, 2016).

Globally, more than 1 million people acquire a sexually transmitted infection (STI) every day. The term STI is often used to reflect the fact that a person may be infected yet show no symptoms of disease. Each year 500 million become ill with chlamydia, gonorrhea, syphilis, and trichomoniasis. Drug resistance, especially for gonorrhea, presents a major challenge to fighting these diseases worldwide (WHO, 2013).

Primary STD infections may cause pregnancy-related complications, congenital infections, infertility, ectopic pregnancy, chronic pelvic pain, and cancers. STDs can also accelerate other infections like HIV.

HIV and STDs

The presence of infection with other STDs increases the risk of HIV transmission because:

- STDs like syphilis and symptomatic herpes can cause breaks in the skin, which provide direct entry for HIV.
- Inflammation from STDs such as chlamydia makes it easier for HIV to enter and infect the body.
- HIV is often detected in the pus or other discharge from genital ulcers from HIV-infected men and women.
- Sores can bleed easily and come into contact with vaginal, cervical, oral, urethral, and rectal tissues during sex.
- Inflammation appears to increase HIV viral shedding and the viral load in genital secretions.

STD Transmission

STDs are transmitted in the same way that HIV is transmitted: by anal, vaginal, and oral sex. In addition, skin-to-skin contact is important for the transmission of herpes, genital warts, and HPV infection, syphilis, scabies, and pubic lice.

Symptoms of STD

In the past there was a great emphasis on symptoms as indicators of STD infection. Research has changed this. We now know that 80% of those with chlamydia, 70% of those with herpes, and a great percentage of those with other STDs have no symptoms but can still spread the infections.

Along with prompt testing and treatment for those who do have symptoms, the emphasis in the United States is on screening for infection based on behavioral risk. Patients cannot assume that their healthcare providers do STD testing. In other words, women who are getting a Pap test or yearly exam should not just assume that they are also being tested for chlamydia or any other STD.

Prevention of STD

The following steps will help prevent STD infection:

- Abstain or be in a mutually monogamous relationship with an uninfected partner.
- Know that many STDs have no symptoms.
- Know that birth control pills and shots do not prevent infections—you must use condoms along with other birth control methods.
- Go with your sex partner(s) for tests.
- Avoid douching.
- Learn the right way to use condoms and then use them correctly and consistently every time you have sex.
- Be sure all sex partners are examined and treated if an STD occurs.
- Change the ways you have sex so that there is no risk of infection.
- Learn how to talk about correct use of condoms with all sex partners.
- Practice the prevention you have learned for HIV and hepatitis.

STD Tests

At most sites, new urine tests (urinate in a cup) are available for some STDs. The Western Blot (blood) test for herpes and hybrid capture tests for genital warts may also be available. In most places, however, cultures, wet preps, and blood draws for syphilis remain the standard testing method. It is vital that women get Pap tests, and that both men and women disclose a history of STD during medical workups.

STD Treatment

Treatment for STDs is based on lab work and clinical diagnosis. Treatments vary with each disease or syndrome. Because there is developing resistance to medications for some STDs, check the latest CDC treatment guidelines.

Hepatitis B and HIV

Hepatitis is inflammation of the liver that may be caused by many things, including viruses. Current viruses include hepatitis A (fecal/oral transmission), B, C, D, and others. Hepatitis B (HBV) is a virus that is transmitted by the blood and body fluids of an infected person. There are approximately 10% of people with HIV co-infected with HBV. Transmission of HBV occurs in the same behaviors as becoming infected with HIV, namely unprotected sex and through blood transmission of sharing needles.

Prevention of HBV

A vaccine to prevent HBV is available. Hepatitis B vaccine is administered intramuscularly as a three-dose series over 6 months. More than 90% of people who take the three injections become immune to HBV. Why isn't everyone vaccinated for HBV? The HBV vaccine is relatively inexpensive for infants and children but more expensive for adults (costing about \$150 per person). This cost is the likely reason that most adults are not vaccinated against HBV.

HBV Epidemiology

Each year tens of thousands of people become infected with HBV in the United States. Of these, about 2% to 6% of adults will become chronically infectious carriers of the virus. There are up to 1.4 million carriers of HBV in the United States.

HBV is not transmitted by:

- Breastfeeding
- Sneezing
- Hugging
- Coughing

- Sharing eating utensils or drinking glasses
- Food or water
- Casual contact

Risk Factors for HBV Infection

Unvaccinated people are at higher risk for getting HBV if they:

- Share injection needles/syringes and equipment
- Have sexual intercourse with an infected person or with more than one partner
- Are a man and have sex with a man
- Work where they come in contact with blood or body fluids, such as in a healthcare setting, prison, or home for the developmentally disabled
- Use the personal care items (razors, toothbrushes) of an infected person
- Are on kidney dialysis
- Were born in a part of the world with a high rate of hepatitis B (China, Southeast Asia, Africa, the Pacific Islands, the Middle East, South America, and Alaska)
- Receive a tattoo or body piercing with equipment contaminated with the blood of someone infected with HBV

Progression of HBV

The average incubation period for HBV is about 12 weeks. People are infectious when they are “hepatitis B surface-antigen positive” (HBsAg), either because they are newly infected or because they are chronic carriers.

HBV causes damage to the liver and other body systems, which can range in severity from mild, to severe, to fatal. Most people recover from their HBV infection and do not become carriers. Carriers (about 2%–6% of adults who become infected) have the virus in their body for months, years, or for life. They can infect others with HBV through their blood or other body fluid contact.

Symptoms of HBV

People with HBV may feel fine and look healthy. Some people who are infected with HBV display only mild symptoms, which could include:

- Loss of appetite
- Extreme fatigue
- Abdominal pain

- Jaundice (yellowing of the eyes and skin)
- Joint pain
- Malaise
- Dark urine
- Nausea or vomiting
- Skin rashes

Others who are infected with HBV experience more severe symptoms and may be incapacitated for weeks or months. Long-term complications may also occur, and include chronic hepatitis, recurring liver disease, liver failure, and cirrhosis (chronic liver damage).

Prevention of HBV

A vaccine for HBV has been available since 1982. This vaccine is suitable for people of all ages, even infants. People who may be at risk for infection should get vaccinated. To further reduce the risk of or prevent HBV infection, a person can:

- Abstain from sexual intercourse and/or injecting drug use
- Maintain a monogamous relationship with a partner who is uninfected or vaccinated against HBV
- Use safer sex practices (as defined in the Transmission section)
- Never share needles/syringes or other injection equipment
- Never share toothbrushes, razors, nose clippers, or other personal care items that may come in contact with blood
- Use Standard Precautions with all blood and body fluids

Infants born to mothers who are HBV carriers have a greater than 90% reduction in their chance of becoming infected with HBV, if they receive a shot of hepatitis B immune globulin and hepatitis B vaccine shortly after birth, plus two additional vaccine doses by age 6 months. It is vital that the women and their medical providers are aware that the woman is an HBV carrier. People with HBV should not donate blood, semen, or body organs.

Treatment of HBV

There are no medications available for recently acquired (acute) HBV infection. There are antiviral drugs available for the treatment of chronic HBV infection, however treatment success varies by individual. The vaccine is not used to treat HBV once a person is infected.

Hepatitis C and HIV

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of people who have this disease. Hepatitis C is the leading cause of chronic liver disease in the United States. Hepatitis C was discovered in the late 1980s, although it was likely spread for at least 40 to 50 years prior to that.

HCV Epidemiology

Globally, 180 million people are infected with HCV. An estimated 4.1 million Americans have been infected with HCV and about 3.2 million are chronically infected (meaning they have a current or previous infection with the virus). The CDC estimates that as many as 1 million Americans were infected with HCV from blood transfusions, and that 3.75 million Americans do not know they are HCV-positive. Of these, 2.75 million people are chronically infected and are infectious for HCV.

In the United States, 8,000 to 10,000 deaths per year are attributed to HCV-associated liver disease. The number of deaths from HCV is expected to triple in the next 10 to 20 years.

Transmission of HCV

HCV is transmitted primarily by blood and blood products. Blood transfusions before 1992 and the use of shared or unsterilized needles and syringes have been the main causes of the spread of HCV in the United States. The primary way that HCV is transmitted now is through injecting drug use. Since 1992 all blood for donation in the United States is tested for HCV.

Sexual transmission of HCV is considered low, but it accounts for 10% to 20% of infections. If a pregnant woman is infected with HCV, she may pass the virus to her baby, but this occurs in only about 5% of those pregnancies. Household transmission is possible if people share personal care items such as razors, nail clippers, or toothbrushes.

HCV is not transmitted by:

- Breastfeeding (unless blood is present)
- Sneezing
- Hugging
- Kissing
- Coughing
- Sharing eating utensils or drinking glasses
- Food or water

- Casual contact

Progression of HCV

The severity of HCV differs from HIV. The CDC states that, for every hundred people who are infected with HCV:

- About 15% will fully recover and have no liver damage
- 85% may develop long-term chronic infection
- 70% may develop chronic liver disease
- 20% may develop cirrhosis over a period of 20–30 years
- 1%–5% may die from chronic liver disease

Symptoms of HCV

People with HCV may have few or no symptoms for decades. When present, the symptoms of HCV are:

- Nausea and vomiting
- Weakness
- Fever
- Muscle and joint pain
- Jaundice (yellowing of the eyes and skin)
- Dark-colored urine
- Tenderness in the upper abdomen

Prevention of HCV

There is no vaccine to prevent HCV infection. People with HCV should not donate blood, semen, or body organs.

The following steps can protect against HCV infection:

- Follow Standard Precautions to avoid contact with blood or accidental needlesticks.
- Refrain from acquiring tattoos or skin piercings outside of a legitimate business that practices Universal Precautions.
- Refrain from any type of injecting drug use or drug equipment sharing.
- Never share toothbrushes, razors, nail clippers, or other personal care items.
- Cover cuts or sores on the skin.

- People who are HCV-infected may lower the small risk of passing HCV to their sex partner by using latex condoms and practicing safer sex.
- Women who are HCV-infected and wish to have children should discuss their choices beforehand with a medical specialist.

Treatment of HCV

Currently there are approved antiretroviral treatments for HCV. The cost of the treatments can be high, and the side effects can be significant (fatigue, flu-like symptoms, nausea, depression, and anemia). People infected with HCV should abstain from alcohol use to avoid further damage to the liver.

Testing for HCV

Many people who are infected with HCV are unaware of their status. People who should consider testing are:

- Current or former injecting drug users
- People who received blood transfusions or an organ transplant prior to 1992
- Hemophiliacs who received clotting factor concentrates produced before 1987
- People who received chronic hemodialysis
- Infants born to infected mothers
- Healthcare workers who have been occupationally exposed to blood or who have had accidental needlesticks
- People who are sex partners of people with HCV

Testing for HCV is available through physicians and some health departments. In 1999 the Food and Drug Administration approved the first home test for HCV. The test kit, called *Hepatitis C Check*, is available from the Home Access Health Company. The test is accurate if it has been at least 6 months since the possible exposure to HCV.

HIV/HCV Co-Infection

Many people who become infected with HIV from injecting drug use are already infected with HCV. Some estimate that 40% of HIV-infected people in the United States are also infected with HCV. People who are co-infected with both viruses and have immune system impairment may progress faster to serious, chronic, or fatal liver damage. Most new HCV infections in the United States are among injecting drug users. The majority of hemophiliacs who received blood products contaminated with HIV also are infected with HCV.

Treating HIV in someone with HCV may be complicated because many of the medicines that are used to treat HIV may damage the liver; however, treatment for co-infection is possible in some cases with close physician supervision.

Comparison Chart of HIV, HBV, and HCV			
Transmission by	HIV	HBV	HCV
Blood	Yes	Yes	Yes
Semen	Yes	Yes	Rarely (more likely if blood present)
Vaginal fluid	Yes	Yes	Rarely (more likely if blood present)
Breast milk	Yes	No (but may be transmitted if blood is present)	No (but may be transmitted if blood is present)
Saliva	No	No	No
Target in the body	Immune System	Liver	Liver
Risk of infection after needlestick exposure to infected blood	0.5%	1–31%	2–3%
Vaccine available?	No	Yes	No

For more information on Hepatitis B or C, go to the CDC hepatitis website or call the Hepatitis Hotline at 888 443 7232 (888 4HEPCDC).

Legal and Ethical Issues

Did you know. . .

In the case of HIV or AIDS, **reportable** means that providers who diagnose a person must submit a confidential case report to the local health jurisdiction within 3 days.

HIV and AIDS Are Reportable Conditions

Reporting of HIV and AIDS cases assists local and state officials in tracking the epidemic. It also allows for effective planning and intervention to be provided in the effort to reduce the transmission of HIV to other people.

Anonymous Tests and Reporting

Positive HIV results obtained through anonymous testing are not reportable. However, once a patient with positive results seeks medical care for conditions related to HIV or AIDS, the provider is required to report the case to the local health department.

Spousal Notification

Federal Public Law 104-146 (1996) requires that states take action to require that a “good faith effort” be made to notify all spouses of HIV-infected people. A **spouse** is defined as anyone who is or has been the marriage partner of an HIV-infected individual within 10 years prior to the HIV diagnosis.

Notification means that individuals testing positive will be counseled about the importance of notifying spouses and partners and will be given the choice to notify, to allow the healthcare provider to notify, or to refer to the local health jurisdiction for assistance in notifying the spouse.

Confidentiality

All medical records are confidential and must be maintained in a manner that protects that confidentiality. **Confidentiality** of medical information means that a person’s medical information (including HIV testing and HIV results) may not be disclosed to anyone unless the individual signs a release-of-information form. However, there are exceptions to this. Medical information can be disclosed under certain circumstances, including:

- When it is given from one healthcare provider to another healthcare provider for related ongoing medical care of the patient
- In a life or death emergency
- To a third-party payer (insurance provider)
- In reporting notifiable conditions to the local health jurisdiction or the Department of Health (DOH)

Violation of the above-mentioned laws is a misdemeanor and may result in civil liability actions for reckless or intentional disclosure up to \$10,000 or actual damages, whichever is greater. It is the responsibility of the county’s health officer to investigate potential breaches of confidentiality of HIV identifying information and report them to the DOH.

Additional Confidentiality Protections

Some areas of the medical record have additional confidentiality requirements because disclosure of the information to the wrong person or agency could mean additional harm to the patient. It has been determined that there exists a level of prejudice, fear, and discrimination directed at people with these medical conditions. Therefore, there is a legal balance between civil protection and information access.

Disability and Discrimination

People with AIDS and HIV are also protected by federal law under Title II of the Americans with Disability Act of 1990 (ADA) and Section 504 of the Federal Rehabilitation Act of 1973, as amended. People with HIV infection and/or AIDS who feel discriminated against on the basis of their disease may file a complaint with the Office for Civil Rights (OCR) of the U.S. Department of Health and Human Services, or their own state rights commission.

Disability

Federal and state jurisdictions differ in approaches to disability. They do not necessarily cover all employers. State laws must be reviewed for state-specific mandates.

Discrimination-Free Environment

Employers are required to provide and maintain a working environment free of discrimination. They must assure that no harassment, intimidation, or adverse action or personnel distinction is made in terms and conditions of employment based on HIV status.

If a worksite situation develops that poses the threat of discrimination, it is best practice for the employer to provide education and supervision to employees in order to end harassment, the use of slurs, or intimidation. An employer should promptly investigate allegations of discrimination, take appropriate action, and not retaliate against the person who complained.

If someone is in a situation in which they feel they are being discriminated against, they should first document the discrimination, speak with their supervisor, and follow the entity's internal process to file a discrimination charge. However, it is not necessary to follow an internal grievance process. If these remedies do not work, a person should contact the Office for Civil Rights within their own state. An aggrieved person can also file directly in state court. A complaint must be filed within 180 days of the alleged discriminatory incident.

Reasonable Accommodation

Employers are responsible for providing reasonable worksite accommodations that will enable a qualified disabled employee or job applicant to perform the essential tasks of the particular job.

Reasonable accommodation means modifications to a worksite or job, in the context of the entire employer's operation, such as:

- Providing special equipment
- Altering the work environment
- Allowing flex-time
- Providing frequent rest breaks
- Allowing the person to work at home (telecommute)
- Restructuring the job

An employee with a disability must self-identify and request a reasonable accommodation. The employer must engage in an interactive process with the requestor. The reasonable accommodation grant may not be exactly the same one as requested by the employee, but one that is equally effective. The employer does not have to change the essential nature of its work, or engage in undue hardship or heavy administrative burdens. The essential functions of the job must be accomplished, with or without reasonable accommodations.

Potentially Prejudicial Information

When a person goes for a job interview or is hired, it is best practice for an employer to refrain from asking questions directed at the perception or presence of HIV infection or AIDS unless the employer has obtained a "bona fide occupational qualification" (BFOQ) from their state.

It is best practice for an employer to refrain from asking "lifestyle" questions, such as inquiring about an applicant's religion, living arrangements, sexual orientation, or gender identity. Exceptions to the above include people applying for U.S. citizenship under federal law, which supersedes state law.

Behaviors Endangering the Public Health

Health Officers

The local health officer is the physician hired to direct the operations of the local county's health department or health district. Included in the broad responsibilities of the health officer is the authority to:

- Interview people infected with an STD

- Notify sexual or needle-sharing partners of exposure to disease
- Order people suspected of being infected to receive examination, testing, counseling, or treatment
- Issue orders to cease and desist from specific conduct that endangers the public health of others

Court enforcement of these orders can be sought. State law delineates the standards that must be met before action by the health officer may be taken.

Reporting Non-Compliance

Healthcare providers are required to provide instruction on infection control measures to the patient who is diagnosed with a communicable disease. They are also required to report certain information to the local health officer where there are either impediments to or refusal to comply with prescribed infection control measures.

When a healthcare provider has knowledge that a specific patient is failing to comply with prescribed infection control measures (acquisition of a new STD, sex without disclosure of HIV status to sexual partners, failure to disclose HIV status to needle-sharing partners, donating or selling HIV-infected blood), they should contact the local public health officer to discuss the circumstances of the case and to determine whether the name of the person should be reported for investigation and followup.

Case Investigation

The health officer or other authorized representative will investigate the case if credible evidence exists that an HIV-infected person is engaging in conduct endangering the public health. Other laws and regulations concern endangering behaviors as well as occupational exposures. These may be specific to professions and to the jurisdictions of public health officers.

Test Your Learning

Positive HIV test results obtained through anonymous testing are not reportable to the local health department until the infected person seeks healthcare for conditions related to HIV or AIDS.:

- A. True
- B. False

HIV testing and results may be disclosed:

- A. In reporting notifiable conditions to the local health jurisdiction or the DOH.
- B. Using “a good faith effort” to notify all spouses with or without the consent of the infected person.
- C. Only to the manager of an HIV-infected person in the workplace.
- D. When positive HIV results are obtained through anonymous testing.

Answers: A,A

Psychosocial Issues

Difficult Realities

People with HIV and their families and friends face a multitude of difficult realities. Even with the advent of antiretroviral (ARV) drugs, people with AIDS still die prematurely. Men who have sex with men and injecting drug users—who may already be stigmatized and subjected to social and job-related discrimination—may encounter even more societal pressure and stress with a diagnosis of HIV or AIDS.

Ninety percent of all adults with AIDS are in the prime of life and may not be prepared to deal with death and dying. The infections and malignancies that accompany AIDS—along with certain medications—can diminish and disfigure the body. People who are living with HIV face the need to practice “safer sex” and take medications for the remainder of their lives.

One thing that characterizes the grief around AIDS is the repetition of deaths that one person may experience. Many people working with or living with AIDS for years have gone to countless funerals and have seen a succession of their friends pass away. This is sometimes termed **chronic grief**. Chronic grief intensifies when an individual realizes that before the grieving process for one death is complete many more people may have died, compounding the grieving process.

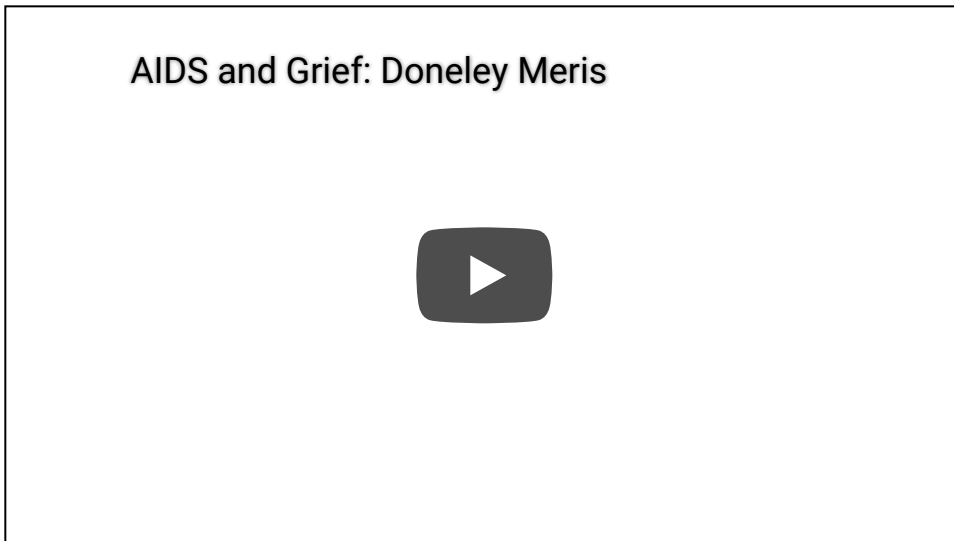
The idea of cumulative multiple loss or grief saturation is not new. The emotions felt by long-term survivors of HIV and their HIV-negative friends and families are similar to the emotions of the survivors of the Holocaust, survivors of natural disasters (earthquakes, tornadoes), and to battle fatigue described by soldiers.

Test Your Learning

Chronic grief refers to:

- A. The fear of the unknown that many HIV sufferers encounter.
- B. The process of moving through the stages of grief.
- C. The psychological symptom of AIDS-related brain infection.
- D. The effect of cumulative multiple loss, or grief saturation.

Video (15:12) AIDS and Grief



<https://www.youtube.com/watch?v=PNvF10O2OIU>

Answer: D

Losses

Physical weakness and pain can diminish a person's ability to cope with psychological and social stresses.

HIV produces many losses, including loss of:

- Physical strength and abilities
- Mental abilities/confusion
- Income and savings
- Health insurance

- Job/work
- Housing, personal possessions, including pets
- Emotional support from family, friends, co-workers, religious and social institutions
- Self-sufficiency and privacy
- Social contacts and roles
- Self esteem

People experiencing multiple losses may feel:

- Guilt
- Grief
- Helplessness
- Rage
- Numbness

Psychological Suffering

Infection with HIV causes distress for those who have HIV and for their caregivers, family, lovers, and friends. Grief can manifest itself in physical symptoms, including clinical depression, hypochondria, anxiety, insomnia, and the inability to get pleasure from normal daily activities. Dealing with these issues may lead to self-destructive behaviors such as alcohol or drug abuse.

Disbelief, numbness, and inability to face facts occur for some. The fear of the unknown, the onset of infections, swollen lymph nodes, and loss of weight (or unusual weight gain) can be accompanied by fear of developing AIDS, or of getting sicker. People infected with HIV/AIDS are often rejected by family, friends, or co-workers. In some cases, guilt develops about the disease, about past behaviors, or about the possibility of having unwittingly infected someone else.

People living with HIV may feel as though their “normal” lives have completely ended as they must plan detailed medication schedules and medical appointments. The cost of the medications for HIV may result in financial hardship, even if the person has medical coverage.

Sadness, hopelessness, helplessness, withdrawal, and isolation are often present. Anger is common: at the virus, at the effects of the medications or the failure of some of the medications, at the prospect of illness or death, and at the discrimination often encountered. Some people with HIV consider suicide or attempt suicide, and some may actually kill themselves. Call the crisis hotline listed in your phone book, or call the National Suicide Prevention Lifeline at 800 273 8255 (273 TALK) or the National Hopeline Network at 800 784 2433 (800 SUICIDE).

Stages of Grief

Grief has been described in a variety of forms. It may be best understood as a process that doesn't follow a straight line. People do not move predictably step-by-step through the various stages of their grieving, but progress at their own speed. There seem to be discreet phases of grief, including:

- Shock and numbing
- Yearning and searching
- Disorganization and despair
- Some degree of reorganization

The length of time it takes to move between these stages is determined by individuals and their values and cultural norms. In uncomplicated grief, an individual is able to move through these stages and come out of the grieving process.

Complicated grief is described as an exaggeration or distortion of the normal process of grieving. People experiencing multiple losses are more at risk for complications. If an individual has been impacted by multiple deaths, it may be difficult to reorganize and move on with the process.

Caregiver Issues

Often feelings experienced by the caregiver will mirror those of the patient; these can include a sense of vulnerability and helplessness. Caregivers may experience the same isolation as the person with HIV infection. Finding a support system, including a qualified counselor, can be just as important for the caregiver as for the person who has HIV disease. Support from co-workers can be especially important.

Caregivers may find it necessary to acknowledge their own experiences and feelings when dealing with all aspects of this disease. Good self-care for the caregiver is important. There are other issues for people who share a home with, or provide home care for, people with HIV or AIDS.

Things to Do

- Do meet with a support person, group, or counselor on a regular basis to discuss your experiences and feelings.
- Do set limits in caregiving time and responsibility and stick to those limits.
- Do allow yourself to have questions. Let “not knowing” be OK.
- Do get the information and support you deserve and need.
- Do discuss with your employer ways to reduce stress and burnout.
- Do remember that Standard Precautions are for the patient’s health and welfare, as well as your own.

Things to Avoid

- Don’t isolate yourself.
- Don’t try to be all things to all people.
- Don’t expect to have all the answers.
- Don’t deny your own fears about AIDS or dying.
- Don’t continue to work in an area where you can’t cope.
- Don’t dismiss Standard Precautions because you know the patient.

Special Populations

Although HIV infection affects people from all ethnic groups, genders, ages, and income levels, some groups have been significantly affected by the AIDS epidemic. These groups include men who have sex with men, injecting drug users, people with hemophilia, women, transgender people, and people of color. The following information details how these different populations may be uniquely affected by the AIDS epidemic.

Men Who Have Sex with Men

American society has issues with homosexuality. Grief may not be validated when relationships are viewed through prejudice and considered unacceptable. An example of this may be the reaction of churches to those who are living with, or have families living with, AIDS. Many congregants report that they do not get the support they need from their church families because of the stigma attached to HIV, AIDS, and homosexuality. Self-esteem issues and psychological issues, including depression, anxiety, diagnosed mental illness and risk-taking behaviors, may also complicate the lives of these men.

Additionally, there are the issues with HIV-negative men who have sex with men. Most of the attention, resources, and services are focused on HIV-positive gay men. As with any behavior change, people can become “tired” of safer sex messages and may make choices that place them at risk. Some may feel that HIV infection is inevitable (although it is not) and purposely engage in unprotected sex.

Men who have sex with both men and women (who do not exclusively self-identify as gay) face additional challenges. It is more difficult to reach men who do not identify as being gay with HIV prevention efforts and activities. Bisexual men face the same challenges as gay men do but may not have the social and community resources they need.

Women Who Have Sex with Women

Women who have sex with women, regardless of whether they self-identify as lesbian or bisexual, are at potentially greater risk than monogamous heterosexual women through their possible use of fingering, oral sex, and sex toys. The risk is lower than women who have sex with infected men because less bodily fluid is exchanged between women. Safer sex guidelines still apply, including avoiding any body fluid exchange through vaginal secretions, breast milk, or blood. It is important to avoid oral sex if either partner has mouth sores or cuts.

Heterosexual Transgender Women

These women have very specific risks because society at large is only now becoming aware of them. When their declaration of transgender is made, they often lose their family support system. Transgender women often face employment and insurance discrimination, and the cascade of rejections can lead to a higher likelihood of doing sex work (Operario, 2008). Until now there was a tendency to include these women in the category of “men who have sex with men,” which is not only inaccurate but also hides the particular reasons they are at higher risk.

Injecting Drug Users

American society also has issues with illegal drug use and with marginalized individuals such as those in poverty and the homeless. People who continue to use injecting drugs, despite warnings and information about risks, may incur additional problems by being viewed by some as “deserving” their infection.

Harm reduction measures such as syringe exchange programs, have been proven to reduce the transmission of bloodborne pathogens like HIV, HBV, and HCV. These programs are controversial because some people believe that providing clean needles and a place to exchange used needles constitutes “approval” of injection drug use.

In addition, poverty, self-esteem issues, and psychological issues (including depression, anxiety, diagnosed mental illness, and risk-taking behaviors) may also complicate the lives of injecting drug users. The desire to stop using illegal drugs may be very far apart from the ability to stop. The reality about inpatient treatment facilities is that while there is a large demand for spaces very few are available. Many substance abusers are placed on waiting lists when they want treatment, and by the time there is a place for them their contact information may be lost, preventing followup.

People with Hemophilia

Hemophiliacs lack the ability to produce certain blood clotting factors. Before the advent of anti-hemophilic factor concentrates ("factor VIII" or "factor IX," clotting material pooled out of donated blood plasma), hemophiliacs could bleed to death. These concentrates allowed hemophiliacs to receive injections of the clotting factors that they lacked, which in turn allowed them to lead relatively normal lives.

Unfortunately, because the raw materials for these concentrates came from donated blood, many hemophiliacs were infected with HIV prior to the advent of blood testing. During the 1980s, 90% of severe hemophiliacs contracted HIV or HCV through use of these products. There is anger within this community because evidence shows that the companies manufacturing the concentrates knew their products might be contaminated but continued to distribute them anyway.

Some people considered hemophiliacs to be innocent victims of HIV, but there has been discrimination against them. The Ryan White Care Act, funding HIV services, and the Ricky Ray Act, which provides compensation to hemophiliacs infected with HIV, were both named after HIV-positive hemophiliacs who suffered significant discrimination such as arson and refusal of admittance to grade school in their home towns.

Women with HIV

In the United States, 1 in 4 people living with HIV are women, with highest prevalence 61% among Black/African American women and 17% Hispanic/Latina women. Eight-seven percent of these women were infected through heterosexual sex and 13% injection drug use. Women in the United States and worldwide are becoming infected with HIV at higher rates than any other group of people. This is particularly true of women of color. Women who are infected with HIV, or who have family members who have HIV, face some unique challenges.

Women may become infected with HIV from a partner who either used injecting drugs or had other sexual partners. These women may have assumed that the relationship was monogamous, or that they “knew” their partner’s history. Many others are unable to discuss or implement safer sex practices because they lack the skills or because domestic violence is present in their relationship.

Women may postpone taking medication, or going to medical appointments, in order to care for their children or other family members. Women (and also men) may hesitate to disclose their HIV status to others, fearing loss of their jobs, or housing, or other forms of discrimination. Single parents with HIV may be particularly fearful because of their lack of support.

Many women have problems with lack of transportation, lack of health insurance, limited education, and low income. They may have childcare problems that prevent them from going to medical appointments.

Many women who are infected with HIV do not consider this to be their worst problem. Their symptoms may be mild and manageable for many years. Meanwhile, they may have more pressing concerns, such as their lack of income, housing, access to medical care, possible abusive relationships, and concerns about their children. State and CDC efforts are working towards state allocated funds, community-based organizations to serve as local resources, and campaigns to promote awareness and prevention behaviors.

Test Your Learning

The group with the highest rate of new HIV infection in the United States and worldwide is:

- A. Hispanic children
- B. Gay men
- C. American Indians
- D. Women

Answer: D

People of Color

African Americans and Hispanics have disproportionately higher rates of AIDS in the United States, despite the fact that there are no biological reasons for the disparities, suggesting lifestyle behaviors determine the increased risk. African American and Hispanic women make up less than 25% of the total U.S. population, but account for 77% of all reported AIDS cases in women. African Americans make up about 12% of the population, but account for 37% of all AIDS cases in the United States. Hispanics make up about 13% of the population, but account for 20% of the AIDS cases in the United States. In some areas, disparities also exist in the number of AIDS cases in Native Americans.

There is no single reason that stands out as to why the disparities exist. One factor is health disparities, which are linked to socioeconomic conditions. Another factor is distrust of the healthcare system based on low educational level and cultural prejudices. Current issues of race mean that many people of color do not trust “the system” for a variety of reasons. Thus, even when income is not a barrier, access to early intervention and treatment may be limited. HIV may be only one of a list of problems that also includes adequate housing, food, and employment.

Another factor may be the diversities within these populations. Diversity is evident in immigrant status, religion, languages, and geographic locations, as well as socioeconomic conditions. Providing targeted information to these diverse populations is challenging.

A significant amount of denial about HIV risk continues to exist in these communities. As with other groups, there may also be fear and stigmatization of those who have HIV. Prevention messages must be tailored and presented in a culturally and linguistically appropriate manner. The messages must be carried through channels that are appropriate for the individual community. These channels may include religious institutions or respected leaders in the community. Ironically, it may be these institutions or leaders who, in the past, have contributed to the misinformation and stigma associated with HIV.

Many HIV prevention programs are recognizing the importance of working with diverse communities. Input from these communities must be included in planning, delivering, and evaluating HIV prevention activities.

Children with HIV

The major cause of HIV in children under age 13 has been mother-to-child transmission during pregnancy, childbirth, or breastfeeding. Testing newborns for antibodies is ineffective because the maternal antibodies remain in the infant's system for up to 18 months. Childhood deaths are related to opportunistic infections and up to 20% of children will acquire an opportunistic infection during their first year of life. Simple infections such as colds, fever, diarrhea, dehydration, and fungal infections from diaper rash can develop into more severe infections and longer hospital stays.

Resources and References

Resources

Global Resources

Joint United Nations Programme on HIV/AIDS (UNAIDS)

<http://www.unaids.org/en/>

National Resources

Centers for Disease Control and Prevention

CDC National AIDS Hotline

800 CDC INFO (800 232 4636)

TTY: 888 232 6348

(English and Spanish, 24 hours)

CDC National AIDS Clearinghouse

800 458 5231; TTY: 800 243 1098

Mon–Fri, 9am–6pm (English and Spanish)

National Institutes of Health (NIH)

AIDSinfo website

Medical practice guidelines, clinical trials, drugs, and education resources

<http://aidsinfo.nih.gov/>

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Post Test

Use the answer sheet following the test to record your answers.

1. Primary HIV infection is:

- a. The period beginning when AIDS is diagnosed.
- b. The time when antibodies are first detected.
- c. Referred to as the window period.
- d. The first weeks after infection when the body has not yet produced antibodies.

2. The window period:

- a. Is the time between infection with HIV and the body's production of detectable antibodies.
- b. Typically lasts only a week or two.
- c. Refers to the stage of disease when the newly infected person is not yet contagious.
- d. Is the first stage of HIV disease.

3. Conditions for the transmission of HIV include:

- a. Dispersal of droplets from an infected person with a cough.
- b. Casual contact with an infected person.
- c. A genetic predisposition to HIV and a compromised immune system.
- d. Access to the bloodstream of another person, sufficient dose of virus, and an HIV source.

4. The behavior associated with the highest risk of HIV transmission is:

- a. Unprotected vaginal intercourse.
- b. Breastfeeding.
- c. Unprotected anal intercourse.
- d. Direct sharing of drug paraphernalia.

5. Occupational exposure means:

- a. Exposure to food served by an HIV-infected employee.
- b. Being infected by an occupational worker.

- c. Caring for a patient who has HIV.
- d. Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or OPIM that may result from the performance of an employee's duties.

6. Hand hygiene:

- a. Is required after removal of gloves or other PPEs and upon leaving the work area.
- b. Is not required after removing gloves.
- c. Is required only after contact with blood or other infectious materials.
- d. Includes the use of lotion to prevent dry skin.

7. HIV transmission risk to healthcare workers is:

- a. Highest with a blood splash to the eyes, nose, or mouth.
- b. Less than 1% from a needlestick.
- c. Exactly the same as that of HCV.
- d. Not affected by the amount of virus present in the exposure.

8. A negative HIV test result means this person:

- a. Is immune to HIV and can never become infected.
- b. Is infected with HIV and will remain infected for life.
- c. Has never been exposed to HIV.
- d. May have been exposed to HIV but not yet produced enough antibodies to be detected by the test.

9. A positive HIV test result means this person:

- a. Is infected with HIV and can spread the virus to others.
- b. Cannot spread the virus until symptoms of AIDS develop.
- c. Can be cured with current antiviral drugs.
- d. Does not have AIDS.

10. Opportunistic diseases and infections:

- a. Are seen only during the window period of HIV infection.
- b. Affect the kind and number of blood cells in HIV-infected patients.
- c. Are caused by a suppressed immune system that weakens defenses against bacteria, viruses, and fungi.

d. Are the physical result of some type of illness or infection.

11. HIV infection in children:

- a. Has the same disease progression as adults.
- b. Has been reduced by using AZT in HIV-infected pregnant women.
- c. Does not usually cause symptoms until puberty.
- d. Causes developmental delay when treated with drugs too early.

12. HAART therapy:

- a. Is a newly discovered antiretroviral drug.
- b. Is a cure for HIV/AIDS.
- c. Decreases viral load to a point where patients are no longer contagious.
- d. Is the primary reason for the reduction of deaths from AIDS in the United States.

13. Positive HIV test results obtained through anonymous testing are not reportable to the local health department until the infected person seeks healthcare for conditions related to HIV or AIDS:

- a. True
- b. False

14. HIV testing and results may be disclosed:

- a. In reporting notifiable conditions to the local health jurisdiction or the DOH.
- b. Using "a good faith effort" to notify all spouses with or without the consent of the infected person.
- c. Only to the manager of an HIV-infected person in the workplace.
- d. When positive HIV results are obtained through anonymous testing.

15. Chronic grief refers to:

- a. The fear of the unknown that many HIV sufferers encounter.
- b. The process of moving through the stages of grief.
- c. The psychological symptom of AIDS-related brain infection.
- d. The effect of cumulative multiple loss, or grief saturation.

16. The group with the highest rate of new HIV infection in the United States and worldwide is:

- a. Hispanic children
- b. Gay men
- c. American Indians
- d. Women

Answer Sheet

HIV in America

Name (Please print your name): _____

Date: _____

Passing score is 80%

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

Course Evaluation

Please use this scale for your course evaluation. Items with asterisks * are required.

- 5 = Strongly agree
- 4 = Agree
- 3 = Neutral
- 2 = Disagree
- 1 = Strongly disagree

* Upon completion of the course, I was able to:

a. Discuss the origin and epidemiology of HIV in the United States.

5 4 3 2 1

b. Describe transmission, infection control, and prevention of HIV.

5 4 3 2 1

c. Outline the common testing and counseling requirements for HIV-infected individuals.

5 4 3 2 1

d. Characterize the clinical manifestations, opportunistic infections and treatment options of HIV/AIDS.

5 4 3 2 1

e. Identify the legal and ethical issues associated with HIV.

5 4 3 2 1

f. Discuss the main psychosocial issues facing HIV-infected people and their caregivers.

5 4 3 2 1

g. Identify global and national resources for healthcare professionals and clients with HIV.

5 4 3 2 1

* The author(s) are knowledgeable about the subject matter.

5 4 3 2 1

* The author(s) cited evidence that supported the material presented.

5 4 3 2 1

* This course contained no discriminatory or prejudicial language.

Yes No

* The course was free of commercial bias and product promotion.

Yes No

* As a result of what you have learned, do you intend to make any changes in your practice?

Yes No

If you answered Yes above, what changes do you intend to make? If you answered No, please explain why.

* Do you intend to return to ATrain for your ongoing CE needs?

- Yes, within the next 30 days.
- Yes, during my next renewal cycle.
- Maybe, not sure.
- No, I only needed this one course.

* Would you recommend ATrain Education to a friend, co-worker, or colleague?

- Yes, definitely.
- Possibly.
- No, not at this time.

* What is your overall satisfaction with this learning activity?

5 4 3 2 1

* Navigating the ATrain Education website was:

- Easy.
- Somewhat easy.
- Not at all easy.

* How long did it take you to complete this course, posttest, and course evaluation?

- 60 minutes (or more) per contact hour
- 50-59 minutes per contact hour
- 40-49 minutes per contact hour
- 30-39 minutes per contact hour
- Less than 30 minutes per contact hour

I heard about ATrain Education from:

- Government or Department of Health website.
- State board or professional association.
- Searching the Internet.
- A friend.
- An advertisement.
- I am a returning customer.
- My employer.
- Other
- Social Media (FB, Twitter, LinkedIn, etc)

Please let us know your age group to help us meet your professional needs.

- 18 to 30
- 31 to 45

46+

I completed this course on:

- My own or a friend's computer.
- A computer at work.
- A library computer.
- A tablet.
- A cellphone.
- A paper copy of the course.

Please enter your comments or suggestions here: _____

Registration Form

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

* Name: _____

* Email: _____

* Address: _____

* City: _____ * State: _____ * Zip: _____

* Country: _____

* Phone: _____

* Professional Credentials/Designations:

Your name and credentials/designations will appear on your certificate.

* License Number and State: _____

* Please email my certificate:

Yes No

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

Payment Options

You may pay by credit card or by check.

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

7 contact hours: \$49

Credit card information

* Name: _____

Address (if different from above): _____

* City: _____ * State: _____ * Zip: _____

* Card type:

Visa Master Card American Express Discover

* Card number: _____

* CVS#: _____

* Expiration date: _____