Beauty and Health
INSTITUTE

HIV/AIDS
(4 hours)

What is HIV?

HIV is the human immunodeficiency virus that causes AIDS. A member of a group of viruses called retroviruses, HIV infects human cells and uses the energy and nutrients provided by those cells to grow and reproduce. The immune system cannot get rid of HIV because the virus particles attack a key component of the system, the T-cells or $CD4^+$ cells, invade them, use them to produce copies of themselves, and then destroy those cells.
The virus particles that invade the host cells are called virions, consisting of RNA or DNA surrounded by a protein shell. Once the virion invades a host cell, it turns it into a viral "factory." The infected host cell is then referred to as the provirus, a viral cell that can lie dormant for years until it is activated (Encyclopaedia Britannica, 2015).

Origin and Strains of HIV

DNA analysis has identified the HIV-1 virus as originating in a substrain of chimpanzees in west equatorial Africa (Gao et al., 1999). It has been determined that the place of origin was a specific city, Kinshasa, which is now the capital of the Democratic Republic of Congo. Scientists theorize that HIV-1 moved from chimps to humans when hunters were exposed to infected blood while handling bush meat (the flesh of various primates, including chimps and gorillas). Once in the human population, HIV quickly became a global pandemic, driven by travel and migration patterns, sexual practices, drug use, war, and economics (Faria et al., 2014).

There are at least two types of HIV virus: HIV-1 is the cause of AIDS, and HIV-2 is a related group of viruses found in West African patients that is less easily transmitted. Worldwide, the predominant virus is HIV-1. Most of the West Africans infected with HIV-2 show none of the symptoms of classic AIDS. Viral load (the amount of HIV in the blood) tends to be lower in persons infected with HIV-2, which may explain this type's lower transmission rates and nearly complete absence of perinatal transmission.

Most persons infected with HIV-2 do not develop AIDS, although when they do, the symptoms are indistinguishable from those of HIV-1. There have been only several hundred cases of HIV-2 diagnosed in the United States, primarily in New York City and surrounding areas and limited mainly to persons born in West Africa. (New York City is the major gateway for African immigrants coming to the United States.) (NYSDOH, 2016).

HIV mutates readily, leading to 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. HIV-1 comprises four distinct groups: M, N, O, and P. Group M was the first to be discovered and represents the pandemic form of HIV-1. The other three groups are quite uncommon and only occur in Cameroon, Gabon, and Equatorial Guinea (AVERT, 2016a).

HIV Infection Stages

Acute HIV infection stage is the time period immediately following infection with the virus. HIV replication is very rapid in the six to eight weeks after acquiring the HIV infection and results in a high amount of HIV in the blood (viral load). During this time, the infected person may be symptom-free and unaware of the infection, but the viral load is the highest it will ever be because the body's defenses have not yet responded. It is at this time that the person is at high risk of transmitting HIV to others. This interval of time is often referred to as the **window period**—the time before the immune system produces antibodies that can be detected by HIV testing.
Eventually, the body's immune response will begin to reduce the level of virus in the body and become relatively stable. This is referred to as the **clinical latency stage**, also referred to as "asymptomatic HIV infection" or "chronic HIV infection." During this period, the person experiences no symptoms, or only mild ones. Once infected, however, the person remains infectious for life (Sax, 2016b; USDHHS, 2016a).

What is AIDS?

AIDS (acquired immunodeficiency syndrome) is a disease in which the body's immune system breaks down and is unable to fight off certain infections, known as "opportunistic infections," and other illnesses that take advantage of a weakened immune system. When a person is infected with HIV, the virus enters the body and lives and multiplies primarily in the white blood cells. These are the immune cells that normally protect us from disease. The hallmark of HIV infection is the progressive loss of a specific type of immune cell called T-helper or CD4 cells. As the virus grows, it damages or kills these and other cells, weakening the immune system and leaving the individual vulnerable to various opportunistic infections and other illnesses, ranging from pneumonia to cancer. The U.S. Centers for Disease Control and Prevention (CDC) defines someone as having a clinical diagnosis of AIDS if they have tested positive for HIV and meet one or both of these conditions: They have experienced one or more AIDS-related infections or illnesses; the number of CD4 cells has reached or fallen below 200 per cubic microliter of blood (a measurement known as T-cell count). In healthy individuals, the CD4 count normally ranges from 450 to 1200.

How quickly do people infected with HIV develop AIDS?

In some people, the T-cell decline and opportunistic infections that signal AIDS develop soon after infection with HIV. Most people remain asymptomatic for 10 to 12 years, a few for much longer. As with most diseases, early medical care can help prolong a person's life.

How many people are affected by HIV/AIDS?

In June 1981, CDC developed an investigative team to identify risk factors and to develop a case definition for national surveillance and prepared reports that identified all of the major risk factors

for acquired immunodeficiency syndrome (AIDS). The first recognized case of AIDS in the U.S. was reported in 1981.

In 1985, HIV antibody testing became available for the first time. The original purpose of this blood test was to screen the nation's blood supply so individuals would not become infected with HIV from a transfusion.

The Joint United Nations Programs on HIV/AIDS (UNAIDS) estimates that there are now over 40 million people living with HIV or AIDS worldwide. Most of them do not know they carry HIV and may be spreading the virus to others. Here in the U.S., more than one million people have HIV Infection or AIDS, or roughly one out of every 250 people. At least 40,000 Americans become newly infected with HIV each year, and it is estimated that half of all people with HIV in the US have not been tested and do not know they are carrying the virus.

Since the beginning of the epidemic, AIDS has killed more than 30 million people worldwide, including more than 500,000 Americans. AIDS has replaced malaria and tuberculosis as the world's deadliest infectious disease among adults and is the fourth leading cause of death worldwide. Over 13 million children have been orphaned by the epidemic.

At risk population

Nationally, HIV/AIDS takes a heavy toll on people of all ethnicities, genders, ages, and income levels. However, men who have sex with other men is the population most affected by HIV. Other important groups at risk for HIV include blacks, women and children, seniors, incarcerated populations, commercial sex workers, and transgender people. Each of these groups has unique needs for outreach and education on prevention and treatment of HIV infection

Men who have sex with men (MSM)

Gay, bisexual, and other MSM comprised only 2% of the population in 2013, but they made up 55% of those living with HIV and 54% of those diagnosed with AIDS in the United States. They also accounted for 83% of the estimated new HIV diagnoses among males ages 13 and older and 67% of all estimated new diagnoses. A study completed in 2016 estimated there are 4.5 million gay and bisexual men in the United States. Of these, 15% are living with HIV, and of that percentage, 1 in 7 are estimated to be unaware of their infection (CDC, 2016f).

People who inject drugs (PWID)

HIV prevalence among PWID is 28 times higher than among the rest of the population. On average, 1 in 10 new HIV infections are the result of sharing needles and syringes. A needle used by a person infected with HIV can introduce HIV infection into the bloodstream of the next person who uses it, and sterile syringes are not always readily available.
Three countries account for nearly half of all people who inject drugs globally—China, Russia, and the United States. Despite the high risk, these individuals are among those with the least access to HIV prevention, treatment, and healthcare because drug use is often criminalized and stigmatized. Injection drug use can cause other diseases and complications, such as other

bloodborne and sexually transmitted infections, viral hepatitis, skin infections and abscess formation, infections of the heart, as well as overdose and death.

African Americans

African Americans are the racial/ethnic group most affected by HIV in the United States. Gay and bisexual men account for more than half of the estimated new HIV diagnoses among African Americans.
Although the number of HIV diagnoses among African American women has declined nationwide, it is still high compared to women of other races/ethnicities.

Women and Children

Globally, HIV remains the leading cause of death among women of reproductive age. In the United States, about 1 in 4 people living with HIV are women. In 2014 women made up 19% of the estimated 44,073 new HIV diagnoses in the United States. Of these, 87% were attributed to heterosexual sex and 13% to injection drug use. During 2013, an estimated 1,859 women died from HIV or AIDS.

Older Adults

People aged 55 and older accounted for over one quarter of all Americans living with diagnosed or undiagnosed HIV infection in 2013. Older adults are more likely to be diagnosed with HIV infection later in the course of their disease because healthcare providers may not always test older people for HIV infection. As a result, treatment is started later, resulting in more immune system damage.
Older adults with HIV infection also face challenges in preventing other diseases because age and HIV increase the risk for cardiovascular disease, thinning of the bones, and certain types of cancer. They must also be concerned about interactions between medications used to treat common age-related conditions such as hypertension, diabetes, elevated cholesterol, and obesity and those used to treat HIV.

Incarcerated Populations

More than 2 million people in the United States are incarcerated in federal, state, and local correctional facilities on any given day. The rate of diagnosed HIV infection among inmates in state and federal prisons is more than five times greater than the rate among the general population. Most inmates with HIV acquire it in their communities before they are incarcerated.
Among the jail population, African American men are five times as likely as white men and twice as likely as Hispanic/Latino men to be diagnosed with HIV; and African American women are more than two times as likely to be diagnosed with HIV as white or Hispanic/Latina women.
Many prison inmates engage in high-risk behaviors before being incarcerated, including unprotected sexual intercourse, drug and alcohol abuse, and unregulated tattooing, behaviors that often continue inside prisons.

Commercial Sex Workers

The mathematical reality that sex workers have hundreds of partners each year makes this population a critical element in the spread of HIV throughout the wider community. However, few large-scale studies have been done among commercial sex workers in the United States. The illegal and often criminalized nature of exchange sex makes it difficult to gather data, and this places barriers to the development of targeted HIV prevention efforts.

The CDC reported in 2016 that many socioeconomic and structural factors are involved in sex work. These individuals may have a history of homelessness, unemployment, incarceration, mental health problems, violence, emotional/physical/sexual abuse, and drug use. They are stigmatized, marginalized, and criminalized, and a lack of legal protection leaves sex workers open to abuse, violence, and rape, creating an environment that can facilitate HIV transmission. Many women and girls in the United States as well as around the world are trafficked into the commercial sex industry to function as sex slaves.

Persons who regularly engage in sex as a source of income are at highest risk. These include escorts; people who work in massage parlors, brothels, and the adult film industry; exotic dancers and state-regulated prostitutes (in Nevada); and men, women, and transgender persons who participate in survival sex (basic needs for daily living).

Some transgender persons may turn to the exchange of sex because of discrimination and lack of economic opportunities. They may exchange sex to generate income for rent, drugs, medicines, hormones, and gender-related surgeries.

Transgender People

Transgender is an inclusive term for persons whose gender identity, expression, or behavior differs from the norms expected from their birth sex. Gender identity refers to a person's internal understanding of his or her gender. Gender expression refers to people's outward presentation of their gender. Transgender women are people who are assigned male at birth but identify as being women. Transgender men are people who are assigned female at birth but identify as being men.

Among 3.3 million HIV testing events reported to the CDC in 2013, the highest percentages of newly identified HIV positives were among transgender persons. Transgender women are 49 times more likely to be living with HIV than the general population, and in the United States black/African American transgender women are more likely to have HIV than transgender women of other races/ethnicities.

How is HIV transmitted?

A person who is infected carries the virus in certain body fluids, including blood, semen and vaginal secretions. The virus can be transmitted only if such HIV-infected fluids enter the bloodstream of another person. This kind of direct entry can occur (1) through the linings of the vagina, rectum, mouth, and the opening at the tip of the penis; (2) through intravenous injection with a syringe; or (3) through a break in the skin, such as a cut or sore. Usually, HIV is transmitted through unprotected sexual intercourse (either vaginal or anal) with someone who is HIV infected.

Sexual Contact

Women are at greater risk of HIV infection through vaginal sex than men, although the virus can also be transmitted from women to men. Anal sex (whether male-male or male-female) poses a high risk mainly to the receptive partner, because the lining of the anus and rectum are extremely thin and filled with small blood vessels that can be easily injured during intercourse. Although rare, HIV transmission between women who have sex with women can occur. In 2012 a case was reported that was supported in 2014 by phylogenetic (evolutionary history) analysis of a couple who had unprotected sex during a six-month monogamous relationship. The couple reported having unprotected oral and vaginal contact routinely and using insertive sex toys that were shared between them but with no other persons. They also reported having unprotected sexual contact during the menses of either partner (Chan et al., 2014).

Health professionals need to remember that sexual identity and gender preference do not always predict behavior and that women who identify as lesbian may still be at risk for HIV through unprotected sex with men or injection drug users.

Transfusion

Transmission of HIV through blood transfusion has been uncommon in the United States since 1985 and in other countries where blood is screened for HIV antibodies. Donor screening, blood testing, and other processing methods have reduced the risk of transfusion-caused HIV transmission. Also, other measures are used to screen possible donors. For example, donors are questioned about whether they have any signs and symptoms of HIV or HIV risk factors.
The risk of transmission is estimated conservatively to be 1 in 1.5 to 2 million. Rare cases of HIV infection from transfusion have still been reported, however, most recently in 2008.

Tattooing, Body Piercing, and Blood-Sharing Activities

There are no known cases in the United States of anyone getting HIV from tattooing, body piercing, or blood-sharing activities such as “blood brothers/sisters” rituals or ceremonies where blood is exchanged or unsterilized equipment contaminated with blood is shared.
There is, theoretically, a potential risk, especially during the time period when healing is taking place. It is also possible to get HIV from a reused or not properly sterilized tattoo or piercing needle or other equipment, or from contaminated ink. The risk is very low but increases when the person doing the procedure is not properly trained and licensed (CDC, 2016p).

Pregnancy and Breastfeeding

Mother -to- child transmission of HIV is the spread of HIV from an infected woman to her child during pregnancy, childbirth or breastfeeding. Since the early 1990s, however, infections through perinatal transmission have declined by more than 90%. Today, if a woman takes HIV medications exactly as prescribed throughout pregnancy, labor, and delivery and provides HIV medicines to her baby for four to six weeks, the risk of transmission can be 1% or less. In some instances, a cesarean delivery can also prevent HIV transmission. In the U.S., HIV is spread mainly by having sex or sharing injection drug equipment, such as needles, with someone who has HIV.

Biting

Biting poses little risk of HIV transmission unless 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). However, bites can transmit other infections and should be treated immediately by thorough washing of bitten skin with soap and warm water and disinfection with antibiotic skin ointment.

Unprotected oral sex with someone who is HIV infected.

There are far fewer cases of HIV transmission attributed to oral sex than to either vaginal or anal intercourse, but oral-genital contact poses a clear risk of HIV infection, particularly when ejaculation occurs in the mouth. This risk is increased when either partner has cuts or sores, such as those caused by sexually transmitted-diseases (STDs), recent tooth-brushing, or canker sores, which can allow the virus to enter the bloodstream. Sharing needles or syringes with someone who is HIV infected. Laboratory studies show that infectious HIV can survive in used needles for a month or more. That is why people who inject drugs should never reuse or share syringes; water, or drug preparation equipment. This includes needles or syringes used to inject illegal drugs such as heroin, as well as steroids.

Other types of needles, such as those used for body piercing and tattoos, can also carry HIV infection. Also during pregnancy, childbirth, or breast-feeding (mother-to-infant transmission), any woman who is pregnant or considering becoming pregnant and thinks she may have been exposed to HIV even if the exposure occurred years ago should seek testing and counseling. Mother-to-infant transmission has been reduced to just a few cases each year in the U.S. Women are tested for HIV, and those who test positive are provided with drugs to prevent transmission and counseled not to breast-feed.

How is HIV not transmitted?

HIV is not an easy virus to pass from one person to another. It is not transmitted through food or air (for instance by coughing or sneezing). There has never been a case where a person was infected by a household member, relative, co-worker, or friend through casual or everyday contact such as sharing eating utensils and bathroom facilities, or hugging and kissing. (Most scientists agree that while HIV transmission through deep or prolonged "French" kissing may be possible, it would be extremely unlikely.) Here in the U.S., screening the blood supply for HIV has virtually eliminated the risk of infection through blood transfusions (and you cannot get HIV from giving blood at a blood bank or other established blood collection center). Sweat, tears, vomit, feces, and urine do contain HIV, but have not been reported to transmit the disease (apart from two cases involving transmission from feces via cut skin). Mosquitoes, fleas, and other insects do not transmit HIV.

How can I reduce HIV risk of becoming infected with HIV through sexual contact?

HIV infection is preventable. For example, screening of blood and blood products for HIV has reduced the risk of HIV transmission with transfusion to 1:1.5 to 2 million (Kleinman, 2016). Mother-to-baby transmission has dropped to a rate of less than 1% (CDC, 2016p). Following Standard Precautions in healthcare has unquestionably prevented thousands, if not millions, of cases of HIV/AIDS in the United States. But, because the virus is transmitted through behaviors that many people find pleasurable—sexual activity and injection drug use—prevention is difficult.
Prevention of HIV/AIDS saves money as well as lives. The CDC estimates that the average cost of

lifetime treatment for one person with HIV infection was $379,668 in 2010 dollars (CDC, 2015c). The CDC recommends that anyone with HIV/AIDS use prevention strategies even if his or her partner is also HIV infected. The partner may have a different strain of the virus that could behave differently in each individual or that could be resistant to different anti-HIV medications.
Prevention of HIV begins with education and counseling about sexual practices and injection drug use. People unable to “just say no” need basic, practical, how-to information.

If you are sexually active, protect yourself from HIV infection by practicing safer sex. Whenever you have sex, use a condom or "dental dam" (a square of latex recommended for use during oral-genital and oral anal sex). When used properly and consistently, condoms are extremely effective. But remember, use only latex condoms (or dental dams). Lambskin products provide little protection against HIV. Use only water based lubricants. Latex condoms are virtually useless when combined with oil- or petroleum-based lubricants such as Vaseline or hand lotion. (People with latex allergies can use polyethylene condoms with oil based lubricants.) Use protection each and every time you have sex. If needed, consult a nurse, doctor, or health educator for guidance on the proper use of latex barriers.

How can I avoid acquiring HIV from a contaminated needle?

If you are injecting drugs of any type, including steroids, do not share syringes or other injection equipment with anyone else. (Disinfecting previously-used needles and syringes with bleach can reduce the risk of HIV transmission.) If you are planning to have any part of your body pierced or getting a tattoo, be sure to see a qualified professional who uses sterile equipment.

Syringe services programs (SSPs) have been one effective part of risk reduction efforts for persons who inject drugs (PWID). The basic service offered by SSPs allows PWID to exchange used needles and syringes for new, sterile needles and syringes. As of March 2014, there were 204 SSPs known to be operating in the United States. SSPs prevent the spread of HIV and hepatitis and serve as a bridge to other services such as drug treatment. Evidence of their effectiveness is overwhelming.
Up until 2009 there was a federal ban on funding SSPs. In 2009 Congress removed a 21-year prohibition on the use of federal funds to support SSPs. Two years later, Congress reimposed the ban. The Consolidated Appropriations Act of 2016 prohibits the use of federal funds to purchase sterile needles or syringes for the purposes of hypodermic injection of any illegal drug. It does, however, allow for federal funds to be used for other aspects of SSPs based on evidence of a demonstrated need (experiencing or at risk for a significant increase in hepatitis infections or an HIV outbreak due to injection drug use) by state or local health departments and in consultation with the CDC.

Detailed HIV prevention information for drug users who continue to inject is available from the CDC's National Prevention Information Network at 1-800-458-5231 or online.

Biomedical Interventions
Antiretroviral-based strategies of treatment have been proven to be highly effective in reducing HIV infection.

Postexposure Prophylaxis (PEP)

Postexposure prophylaxis is a three-drug antiretroviral-based regimen that may be taken if a person thinks an exposure to HIV occurred:

- During sex (e.g., a condom broke)
- While sharing needles and works to prepare drugs
- Due to sexual assault
- At work

PEP can reduce the risk of HIV when administered correctly, but not by 100%. To be effective, PEP must begin within 72 hours of exposure and must be taken twice daily for 28 days (USDHHS, 2016e).

Preexposure Prophylaxis (PrEP)

For persons who are not infected with HIV, preexposure prophylaxis using antiretroviral medications is an evidence-based way to prevent new infections among those at greatest risk. Determining risk is accomplished by assessing sexual risk and drug-using behaviors over the last six months, which include:

- Those in an ongoing sexual relationship with an HIV-positive partner
- Gay or bisexual men who are not in a monogamous relationship with a recently tested, HIV-negative partner, and who have either had anal sex without a condom or been diagnosed with a STI
- Heterosexual men or women who are not in a monogamous relationship with a recently tested, HIV-negative partner, and who do not always use condoms with partners whose HIV status is unknown and who are at a high risk of HIV infection

PrEP involves taking an HIV medication (Truvada, a combination of the two HIV medications tenofovir and emtricitabine) on a daily basis, which can lower the risk of getting HIV from sex by more than 90% and from injection drug use by more than 70% (USDHHS, 2016f).

Treatment as Prevention (TasP)

TasP uses antiretroviral treatment (ART) to decrease the risk of HIV transmission. ART reduces the HIV viral load in the blood, semen, vaginal fluid, and rectal fluid to a very low (undetectable) level, thereby reducing the risk of onward HIV transmission.

There is growing evidence of the benefits of HIV treatment as a prevention method. In one landmark study, it reduced HIV transmission to HIV-negative partners by 96%, and this finding has been verified by a number of follow-up studies. These findings contribute to the idea of the strategy to "test and treat," which involves increasing testing and treatment coverage in order to decrease community viral load and the rate of new HIV infections.

Such treatment has been used since the mid-1990s in the prevention of HIV transmission from mother to child (AVERT, 2017).

Male Circumcision

Research has documented that male circumcision significantly reduces the risk of contracting HIV and other STIs through penile-vaginal sex. Studies have shown circumcised men had a 50% to 60%

lower incidence of HIV infection compared with uncircumcised men. Circumcision of HIV-infected men, however, may not decrease the risk of HIV transmission to a female partner (Cohen, 2016).

Prevention Research

Research is ongoing to find additional ways to reduce the risk of acquiring HIV.

Contraceptives and HIV
One concern that is being investigated is the probability that the injectable contraceptive Depo-Provera (depot medoxyprogesterone acetate, or DMPA) increases women's risk of acquiring HIV. The latest data strengthens those concerns; however, there remains the question as to why this may be so (AVAC, 2016).

Microbicides
Microbicides are compounds that can be applied inside the vagina and/or rectum to reduce the risk of HIV infection through sexual exposure. They can be formulated as creams, gels, films, vaginal and rectal suppositories, and intravaginal rings that release an active ingredient over a few weeks or months.
Currently there are no licensed microbicides available; however, a vaginal ring containing the antiretroviral drug dapivirine is undergoing trials for the prevention of HIV infection in women. Studies to date have found the ring is safe and reduced rates of HIV acquisition by about one third (USDHHS, 2016g).

HIV Vaccine
Researchers are working on and have high hopes that a new HIV vaccine known as HVTN 702 currently under study will provide effective HIV infection prevention. The vaccine is a reformulated version of a vaccine tested four years prior that proved only 31% effective and wore off after a few years. The trial did reveal, however, a previously unknown vulnerability in the virus, and the new vaccine has been revamped to target that vulnerability (NIAID, 2016).

Infection Control

RISKS FOR OCCUPATIONAL EXPOSURE
The acquisition of HIV infection in the workplace is extremely rare. There have been only 58 cases reported in the United States. The most recent confirmed case was reported in 2008 and is the first one reported since 1999.
Healthcare professionals who work in correctional institutions and home care are at higher risk for occupational exposure to HIV and other bloodborne pathogens than those who work in other settings. Other occupational groups with potential exposure to HIV (as well as HBV and HCV) include, but are not limited to:

- Law enforcement
- Fire, ambulance, and other emergency responders
- Morticians and embalmers
- Dental workers
- Ancillary medical facility personnel such as housekeeping, waste management, laundry

staff

Needlestick Injuries and Body Fluid Splashes

Healthcare workers exposed to HIV from a contaminated needlestick have a 0.2% risk of becoming infected, and without prompt antiretroviral treatment, the risk increases with:

- Deep punctures
- Hollow-bore needles
- Visible blood on the needle
- High viral load in the source
- Needle placement in a vein or artery

The risk of acquiring HIV infection following exposure due to splashes with body fluids is thought to be near zero even if the fluid is overtly bloody.

According to the CDC, the risk of infection varies on a case-by-case basis. Factors affecting the risk include:

- Whether the exposure was from a hollow-bore needle or other sharp instrument
- Whether it involved exposure to nonintact skin or to mucous membranes (such as eyes, nose, and/or mouth)
- The amount of blood involved
- The amount of virus present in the source's blood
  (CDC, 2015d)

In Correctional Institutions

The high prevalence of HIV infections in correctional institutions increases the risk of exposure, as does the environment itself. The CDC and the National Institute for Occupational Safety and Health cite these challenges:

- Jails and prisons can be unpredictable work settings.
- Security issues are often a higher concern than infection control.
- Inmates may have a higher rate of bloodborne diseases.

Correctional healthcare workers can be bitten or stabbed during an inmate assault, punctured with a used needle, or splashed in the face with blood. Exposure to bloodborne pathogens can happen in any of these situations.

WORKPLACE STANDARDS

The Occupational Safety and Health Administration (OSHA) publishes the **Occupational Exposure to Bloodborne Pathogens Standard** (29 CFR 1910.1030), designed to protect workers against the health hazards cause by bloodborne pathogens such as HIV and HBV. The standard imposes requirements on employers of workers who may be exposed to blood or other potentially infectious materials (OPIM) such as certain tissues and body fluids (OSHA, 1991).

Twenty-five states and two U.S. territories have OSHA-approved state plans, which are required to be at least as effective as OSHA standards. In the remaining states, OSHA has jurisdiction, with compliance enforced by the Centers for Medicare and Medicaid Services.

In general, the standard requires employers to:

- Establish a written exposure control plan to eliminate or minimize occupational exposures and to update the plan annually
- Implement the use of Standard Precautions (treating all human blood and OPIM as if known to be infectious for bloodborne pathogens)

- Identify and use engineering controls (devices that isolate or remove bloodborne pathogens hazards from the workplace)
- Identify and ensure the use of work practice controls
- Provide personal protective equipment (PPE) and clean, repair, and replace this equipment as needed
- Make available hepatitis B vaccinations to all workers with occupational exposure
- Make available postexposure evaluation and follow-up to any occupationally exposed worker who experiences an exposure incident
- Use labels and signs to communicate hazards
- Provide information and training to workers on occupational exposures
- Maintain worker medical and training records

Legal and Ethical Issues

Confidentiality

Confidentiality is a paramount concern for people with HIV/AIDS. 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 HIV/AIDS. Workplace, housing, and insurance discrimination have been (and, in some areas, continue to be) barriers to disclosure of HIV status and seeking treatment.

All medical records are confidential and must be maintained in a manner that protects that confidentiality, using an approach consistent with state law and, if applicable, the Privacy and Security Rules promulgated by the federal government in the Health Insurance Portability and Accountability Act (HIPAA). Client information must be kept strictly confidential, and records should be managed and stored in a secure manner.

Confidential information includes any material, whether oral or recorded in any form or medium, that identifies (or can readily be associated with the identity of) a person and is directly related to their health and care. All information related to an individual's HIV/AIDS status is protected under medical confidentiality guidelines and legal regulations. Recognizing the sensitive nature of these conditions, medical record protection for HIV and AIDS, like those for substance abuse and mental health, are protected more rigorously than other medical information.

Confidentiality of medical information means that any information that can be related to a specific patient may not be disclosed to **anyone** except under specific circumstances. This usually means that the individual signs a release-of-information form, but there are exceptions. The most common circumstances permitting disclosure of confidential patient information are:

- Existence of a separate, signed release-of-information form
- Release to another healthcare provider for related ongoing medical care
- A life-or-death emergency
- Release to a third-party payer (insurance provider)
- Reporting notifiable conditions to the local health jurisdiction or the Department of Health

Consent

Most states have specific policies regarding the consent process; however, no state still requires written consent by law (Bartlett & Sax, 2016). As of 2013, 31 states allow minors to consent to HIV testing and treatment without parental approval, and some states forbid informing the

subject's parents of the test, or of the results, without the subject's permission.
In general, before HIV testing is performed, patients must be explicitly told that HIV testing is recommended and the patient must agree to the testing. HIV testing without informed consent, except in some legally mandated situations, can result in disciplinary action by a healthcare provider's licensing board, fines, suspension or revocation of license, and civil liability for negligence and invasion of privacy.

Disability and Discrimination
People with HIV/AIDS are protected by federal law under the Americans with Disability Act (1990) and Section 504 of the Federal Rehabilitation Act of 1973, as amended. These laws make it illegal to discriminate against someone with AIDS or who has HIV or hepatitis C infection. It is also illegal to discriminate against someone "believed" to have HIV/AIDS, even though that person is not infected. The areas encompassed in the laws include:

- Employment (see below for details)
- Rental, purchase, or sale of apartment, house, or other real estate
- Public places (restaurants, theaters)
- Healthcare, legal services, home repairs, and other personal services available to the general public
- Applying for a loan or credit card, or other credit transaction
- Certain insurance transactions

(**Note:** Federal and state jurisdictions differ.)

Employment Discrimination
Laws protect people diagnosed with HIV/AIDS from employment discrimination, including:

- Employment
- Recruitment
- Hiring
- Transfers
- Layoffs
- Termination
- Salary
- Job assignments
- Leaves of absence, sick leave, any other leave or fringe benefits available by virtue of employment

WORK ENVIRONMENT
Employers are required to provide and maintain a working environment free of discrimination. They must ensure that no harassment, intimidation, or personnel distinction is made in terms and conditions of employment. If a worksite situation poses the threat of discrimination, the employer is required to educate and supervise employees to end the harassment and any use of slurs and/or intimidation. An employer should promptly investigate allegations of discrimination, take appropriate action, and not retaliate against the person who complained.
Employers are responsible for providing reasonable worksite accommodations that will enable a qualified employee or job applicant with a disability to perform the essential tasks of a particular job. Reasonable accommodation means relatively inexpensive and minimal modifications 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 can be 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.

Is there a link between HIV and other STIs?

Having a sexually transmitted infection can increase your risk of acquiring and transmitting HIV. This is true whether you have open sores or breaks in the skin (as with syphilis, herpes and chancroid) or not (as with chlamydia and gonorrhea). Where there are breaks in the skin, HIV can enter and exit the body more easily. Even when there are no breaks in the skin, STIs can cause biological changes that may make HIV transmission more likely. Studies show that HIV-infected individuals who are infected with another STI are three to five times more likely to contract or transmit the virus through sexual contact. Are there other ways to avoid getting HIV through sex? The male condom is the only widely available barrier against sexual transmission of HIV.

Female condoms are fairly unpopular in the U.S. and still relatively expensive, but they are gaining acceptance in some developing countries. Efforts are also under way to develop topical creams or gels called "microbicides" which can be applied prior to sexual intercourse to kill HIV and block other STIs that facilitate HIV infection. Are some people at greater risk of HIV infection than others? HIV does not discriminate. It is not who you are, but what you do that determines whether you can become infected with HIV. Worldwide, sexual intercourse is by far the most common mode of HIV transmission, but in the U.S., as many as half of all new HIV infections are now associated either directly or indirectly with injection drug use, i.e., using HIV-contaminated needles to inject drugs or having sexual contact with an HIV-infected drug user.

In western countries, women are four times more likely to contract HIV through vaginal sex with infected males than vice versa. This biological vulnerability is worsened by social and cultural factors that often undermine women's ability to avoid sex with partners who are HIV infected or to insist on condom use. In the U.S., the proportion of AIDS cases among women more than tripled from 7% in 1985 to 25% in 1999. African American and Hispanic women, who represent less than one-quarter of U.S. women, represent nearly 80% of AIDS cases reported among American women to date. Are young people at a significant risk of HIV infection? Nearly half of the roughly 40,000 Americans newly infected with HIV each year are under the age of 25, approximately two young Americans become infected with HIV every hour of every day, and about 25% of the people now living with HIV in this country became infected when they were teenagers. Statistics show that by the age of 19, at least half of females and 60% of males in this country have engaged in sexual intercourse and two thirds of STDs affect people under age 25. Many young people also

use drugs and alcohol, which can increase the likelihood that they will engage in high-risk sexual behavior. Are there treatments for HIV/AIDS? For many years, there were no effective treatments for AIDS. Today, people in the United States and other developed countries can use a number of drugs to treat HIV infection and AIDS. Some of these are designed to treat the opportunistic infections and illnesses that affect people with HIV/AIDS. In addition, several types of drugs seek to prevent HIV from reproducing and destroying the body's immune system.

Can you tell whether someone else has HIV or AIDS?

You cannot tell by looking at someone whether he or she is infected with HIV or has AIDS. An infected person can appear completely healthy. But anyone infected with HIV can infect other people, even if no symptoms are present.

During early HIV infection, it has been estimated that up to 60% of those infected will report having had no symptoms. However, one study showed that almost all had at least one symptom or sign during the first four weeks of infection that was short-lived, nonspecific, and not likely to have warranted concern outside of the study setting. Such signs and symptoms may include:

- Headache or fever
- Tiredness
- Swollen lymph nodes or sore throat
- Rash
- Muscle and joint pain
- Diarrhea

Most symptoms experienced by those with early HIV infection resolve without treatment. The severity and duration, however, vary greatly from patient to patient (Sax, 2016b). Following this period, the person can remain asymptomatic for many years before the start of **symptomatic AIDS**, which may include:

- Rapid weight loss
- Extreme and unexplained tiredness
- Prolonged swelling of lymph nodes in axillae, groin, or neck
- Night sweats
- Recurring fever
- Diarrhea that lasts for more than a week
- Sores in the mouth, anus, or genitals
- Pneumonia

The average time from HIV acquisition to advanced immunosuppression (AIDS) is 8 to 10 years (Bartlett, 2016).

Should I get tested?

If you think you might have been exposed to HIV, you should get tested as soon as possible. Testing is essential for anyone who has had a potential exposure to HIV. This includes anyone who:

- Has had unprotected anal, vaginal, or oral sex
- Has shared needles or other injection drug preparation equipment
- Exchanges sex for money or drugs
- Has had an occupational exposure

- Has sex with partners whose HIV status is unknown
- Has a partner with any of the above risk factors

It is also recommended that all pregnant women be screened for HIV—including those who present in labor who are untested and whose HIV status is unknown—and be rescreened with each subsequent pregnancy. Here's why: Even in the early stages of infection, you can take concrete steps to protect your long-term health. Many physicians still recommend a "hit early and hit hard" approach to anti-HIV therapy. But even if you don't begin taking medications right away, regular check-ups with a doctor who has experience with HIV/AIDS will enable you (and your family members or loved ones) to make the best decisions about how and when to begin treatment, without waiting until you get sick. Taking an active approach to managing HIV may give you many more years of healthy life than you would otherwise have. If you are HIV positive, you will be able to take the precautions necessary to protect others from becoming infected.