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Contact Hours: **7**

HIV/AIDS Training for Washington Healthcare Professionals (7 Hours)

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The material presented in this course corresponds to Washington State's HIV/AIDS curriculum manual, KNOW: HIV Prevention Education (7th ed.), and reflects current scientific understanding and updates from the CDC and other government agencies.

LEARNING OUTCOME AND OBJECTIVES: Upon completion of this course, you will have increased your knowledge of HIV/AIDS in order to better care for your patients. Specific learning objectives to address potential learning gaps include:

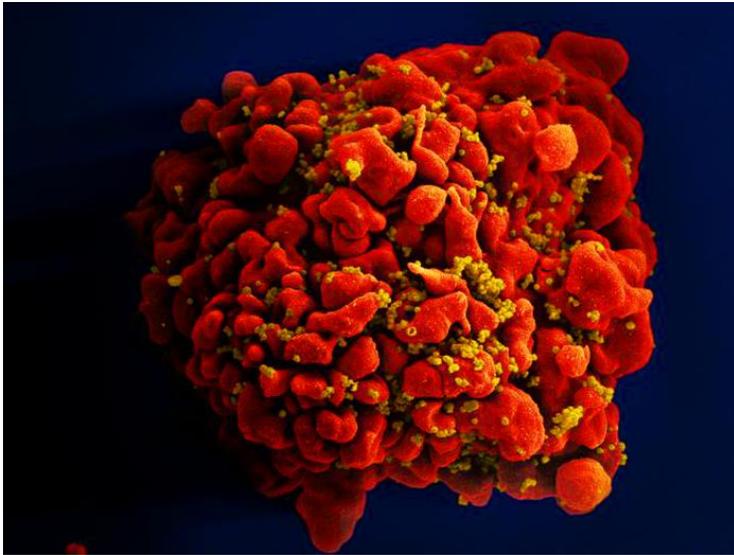
- Discuss the etiology and epidemiology of HIV in the United States and in Washington State.
- Summarize the factors and risks for transmission of HIV in general and among healthcare workers in particular.
- Identify preventive and control measures for HIV/AIDS.
- Discuss accepted procedures and regulations for HIV testing and counseling.
- Describe the clinical manifestations and treatment guidelines for HIV/AIDS.
- Explain confidentiality and legal reporting requirements in Washington State.
- Summarize the psychosocial issues associated with HIV/AIDS.

ETIOLOGY AND EPIDEMIOLOGY OF HIV/AIDS

HIV, the **human immunodeficiency virus**, is a virus that spreads via certain body fluids and specifically attacks the CD4⁺ or **T cells** of the immune system. CD4⁺ T cells are also called *helper T cells*. They are the cornerstones of both inflammatory and regulatory responses of our

immune system. T cells are lymphocytes that are predominantly produced in the thymus and play a key role in the immune system's defense of the body against infection. As time passes, the virus can destroy so many of these specialized cells that the immune system no longer is able to fight off infections and disease.

HIV is unique among many other viruses because the body is unable to destroy the HIV completely, even with treatment. As a result, once a person is infected with the virus, the person will have it for the remainder of their life (CDC, 2019a).



A single T cell (red) infected by numerous, spheroid shaped HIV particles (yellow).
(Source: National Institute of Allergy and Infectious Diseases, 2012.)

After the initial infection and without treatment, the virus continues to multiply, and over a period of time (which can be ten years or longer), common opportunistic infections (OIs) begin to take advantage of the body's very weak immunity. Common OIs can be life-threatening and may include:

- Cryptococcal meningitis
- Toxoplasmosis
- Pneumocystis pneumonia
- Esophageal candidiasis
- Certain cancers, such as Kaposi's sarcoma

Once they have such an opportunistic infection, the person now is considered to have AIDS, **acquired immunodeficiency syndrome**, the most advanced stage of the HIV infection (NIAID, 2019).



Origin and Strains of HIV

DNA analysis has identified the HIV-1 virus as originating in a strain of chimpanzees in Kinshasa, in the Democratic Republic of Congo, around 1920. Chimpanzees were hunted for food, and it is believed that the simian (chimpanzee) version of the virus was most likely transmitted to humans following contact with the animal's infected blood after ingestion of the meat. The simian immunodeficiency virus then mutated into the human form of the virus. HIV has existed in the United States at least since the mid to late 1970s (CDC, 2019a; Avert, 2019a).

HIV, like other viruses, changes over time, resulting in different strains (genetic variants or subtypes) of the virus. There are **two main types of HIV**: HIV-1 and HIV-2. HIV-1 is the most common, while HIV-2 is less common and accounts for fewer infections. The strains of HIV-1 can be classified into four groups: M, N, O, and P. The N, O, and P strains are quite uncommon, while group M is responsible for approximately 95% of all infections worldwide.

In 2020 a new strain of HIV was found for the first time in nearly 20 years. The newly discovered strain is part of group M and has been labelled as sub-type L. This new strain is important, but it does not pose a new public health threat since it occurs rarely and can be effectively treated with existing antiretrovirals (Yamaguchi et al., 2020).

Disease Pathogenesis

HIV is unable to grow or reproduce on its own and depends on a host cell for the raw materials and energy necessary for all the biochemical activities that allow the virus to reproduce. In order to accomplish this, it must locate and bind to a specific type of cell, a CD4⁺ T cell.

CD4⁺ T cells (or T-helper cells) are the cornerstones of both the inflammatory and regulatory responses of the immune system. They are a class of white blood cells that help other lymphocytes (memory B cells) that are responsible for remembering an antigen and producing an antibody to fight it based on stored data following exposure to it in the past.

Once the virus binds to the cell, it then enters the cell and eventually takes control of the cell's DNA and begins to replicate itself. This leaves the T cell unable to perform its vital function as part of the immune system. The new HIV particles are then released from the cell into the bloodstream, where the process begins again in other T cells (Cachay, 2019).

Following transmission of the virus, the individual will typically progress through three stages of the illness.

- **Stage 1: Acute infection** is the earliest stage, when seroconversion takes place, and the person is very contagious.
- **Stage 2: Clinical latency** is a stage that can last for 10 or 15 years, during which time immunosuppression gradually develops. The person may be asymptomatic and can transmit the virus to others.



- **Stage 3: AIDS** is the final, severe stage of HIV infection, at which point the immune system is severely damaged and opportunistic infections or cancers begin to appear.

Epidemiology

HIV/AIDS IN THE UNITED STATES

Approximately 1.1 million people in the United States are living with HIV. From 2010 to 2017, the annual number of new HIV diagnoses decreased 9%. In 2018, there were an estimated 38,000 new HIV infections. Trends varied for different groups of people.

In 2018, 17,032 people in the United States and six dependent areas received a stage 3 (AIDS) diagnosis, and in 2017 there were 16,350 deaths (due to any cause) among adults and adolescents with a diagnosis of HIV (CDC, 2019b; HIV.gov, 2020a).

Gay and bisexual men are the population most affected by HIV. In 2018, they accounted for 69% of all HIV diagnoses:

- HIV diagnoses among Black/African American gay and bisexual men remained stable.
- HIV diagnoses among White gay and bisexual men decreased 19%.
- HIV diagnoses among Hispanic/Latino gay and bisexual men increased 27%.

Heterosexuals and people who inject drugs also continue to be affected. In 2018:

- Heterosexuals accounted for 24% of HIV diagnoses, with men accounting for 7% and women for 16%.
- People who inject drugs accounted for 7% of HIV diagnoses, men 4% and women 3%.

By race/ethnicity, Blacks/African Americans and Hispanics/Latinos are disproportionately affected by HIV.

- Blacks/African Americans comprise 13% of the population and accounted for 42% of new diagnoses.
- Hispanics/Latinos comprise 18% of the population and accounted for 27% of new HIV diagnoses.

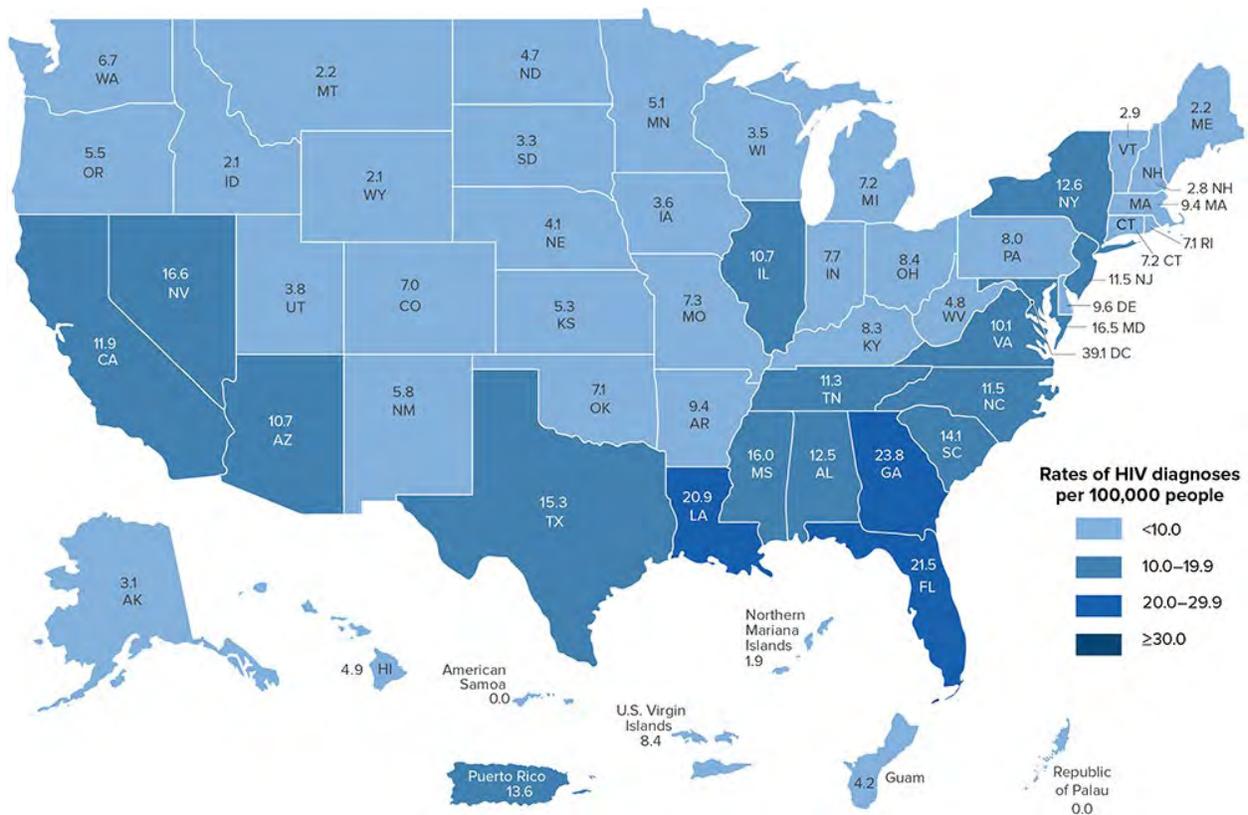
HIV DIAGNOSES BY RACE/ETHNICITY, 2018

- 43% Black/African American
- 26% Hispanic/Latino
- 26% White
- 2% Asian



- <1% American Indian/Alaska Native
- <1% Native Hawaiian/Other Pacific Islander
- 3% Multiple races
(CDC, 2019b)

Across U.S. states and regions, there was an uneven distribution of new HIV diagnoses in 2018. The South had the highest percentage (51%), followed by the West (20%), the Northeast (16%), and the Midwest (13%).



Rates of new HIV diagnoses per 100,000 people, 2018. (Source: CDC, 2019b.)

HIV/AIDS IN WASHINGTON STATE

In 2018, an estimated 13,417 people in Washington State were living with the diagnosis of HIV, with 7,023 of those living in King County. Eighty-eight percent of these people were receiving medical care, and 81% were virally suppressed.

Washington State reported that there were 402 new HIV diagnoses in 2018, with 229 (54%) of these occurring among King County residents, which was the largest one-year increase since 2002. Of these 402 new diagnoses, 310 were male and 88 were female. The largest number was among those ages 25 to 34. Of note, there were no diagnoses among the pediatric population ages 13 and under.



Increase in people who inject drugs: The increase in diagnosis among King County residents has been attributed to a 400% increase in the number of new HIV diagnoses among persons who inject drugs. The number of new diagnoses in persons with other risks, including men who have sex with men and men who do not inject drugs, remained stable.

Homelessness among those with HIV: The increase in HIV among persons who inject drugs is concentrated among those who are homeless, and many of them are women who exchange sex. It is estimated that 11% of King County residents diagnosed with HIV were homeless in the past year.

Men who have sex with men: The diagnosis rate among men who have sex with men (MSM) has declined by more than 50% over the last ten years. However, MSM, including MSM who inject drugs, continue to make up the majority of new HIV infections in Washington State.

People of color: Black and Latinx populations are disproportionately affected by HIV. Foreign-born Black persons have the highest rate of new HIV diagnosis, although the majority of them may have acquired HIV prior to arrival in the United States.

Mortality rates among persons with HIV in the state have been stable at 1 per 100 over the past five years (WSDOH, 2019).

TRANSMISSION AND INFECTION CONTROL

Transmission Routes

HIV is a weak virus that cannot survive without a human host and is not spread by casual contact. In order for HIV transmission to occur, there must be an HIV source, sufficient dose and virulence of the virus, and access to the bloodstream of another person.

Under certain conditions, HIV has been able to survive in dried blood at room temperature for up to 5 or 6 days, although the concentrations will be low to negligible. Once exposed to air and the fluid it is contained in begins to dry, HIV becomes damaged and inactive. Once inactive, it is no longer infectious.

HIV is transmitted from one person to another only through contact with certain body fluids, and transmission is only possible if these fluids come in contact with mucous membranes or damaged tissue, or are directly injected into the bloodstream (e.g., from a needle or syringe). Mucous membranes are located in the rectum, the vagina, the opening of the penis, and the mouth (USDHHS, 2020; CDC, 2019e).

HIV can only be transmitted through the following body fluids:

- Blood
- Semen



- Preseminal fluids
- Rectal fluids
- Vaginal fluids
- Breast milk

In addition, any bodily fluid visibly contaminated with blood should be considered capable of transmitting HIV. These may include:

- Cerebrospinal fluid
- Amniotic fluid
- Pleural fluid
- Synovial fluid
- Peritoneal fluid
- Pericardial fluids

Unless blood is visibly present, HIV **cannot be transmitted by:**

- Saliva
- Sputum
- Sweat
- Tears
- Feces
- Nasal secretions
- Urine
- Vomitus

Other than those described above, HIV **cannot be transmitted by:**

- Air
 - Water
 - Closed-mouth kissing
 - Insects
 - Pets
 - Sharing food or drinks
- (Waseem, 2019; CDC, 2019e)

SEXUAL CONTACT

Anal sex is the riskiest type of sex for infection by or transmission of HIV. Receptive anal sex is a greater risk than insertive anal sex. The receptive partner's risk of getting HIV is very high



because the lining of the rectum is thin and may allow HIV to enter the body during anal sex from body fluids that carry HIV, including semen or preseminal fluid.

The insertive partner is also at risk because HIV can enter the body through the urethra; the foreskin if the penis is not circumcised; or small cuts, scratches, or open sores anywhere on the penis. There is evidence that circumcision may decrease the risk for an insertive partner, but there is no evidence that it benefits the receptive partner (CDC, 2019b).

In extremely rare instances, HIV has been transmitted through oral sex. For the most part, there is little to no risk of getting HIV from oral sex, but transmission of HIV is theoretically possible if an HIV-positive man ejaculates into his partner's mouth during oral sex (CDC, 2019e).

INJECTION DRUG USE

HIV can live in blood inside a used needle for up to 42 days depending on the temperature and other factors. Sharing injection needles, syringes, and other paraphernalia with an HIV-infected person can send HIV (as well as hepatitis B and C viruses and other bloodborne diseases) directly into the user's bloodstream. Paraphernalia with the potential for transmission include the syringe, needle, "cooker," cotton, and/or rinse water (sometimes called "works") (CDC, 2019e).

BLOOD TRANSFUSION

Due to careful donor selection criteria, it is very rare for HIV to be transmitted through a blood transfusion. However, despite the precautions, it may still occur. Theoretically there are three reasons; however, only the first has been documented to have occurred:

1. Donations may be collected during the window period of infection, which is the interval of time after the donor becomes infected with HIV and before the development of positive findings on laboratory testing.
2. Infection may occur from variant strains of HIV that may escape detection by current screening assays.
3. Testing or clerical errors may occur.
(Silvergleid, 2019)

TATTOOING, BODY PIERCING, AND BLOOD-SHARING ACTIVITIES

There are no known cases in the United States of anyone becoming infected with 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 become infected by 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, 2020e).



MOTHER-TO-CHILD TRANSMISSION

The use of HIV medications and other strategies have led to a lowered incidence of mother-to-child transmission of HIV to 1% or less in the United States and Europe. When women with HIV who are pregnant take HIV medications to reduce the risk of perinatal transmission, and when started early, mother-to-child transmission prevention is effective.

However, despite continued use of HIV medicines after childbirth, a woman with HIV can still transmit HIV to her child while breastfeeding. In the United States, infant formula is a safe and available alternative to breast milk, and it is for these reasons that women with HIV in the United States should not breastfeed their babies (USDHHS, 2020).

Additionally, babies should not eat food that was prechewed by a person with HIV, as the only known cases of HIV transmission by eating food that has been prechewed by a person with HIV are among infants (CDC, 2019e).

| ESTIMATED PER-ACT* PROBABILITY OF ACQUIRING HIV FROM AN INFECTED SOURCE | |
|--|---------------------------|
| Type of Exposure | Risk per 10,000 Exposures |
| Parenteral | |
| Blood transfusion (with infected blood) | 9,250 |
| Needle-sharing during injection drug use | 63 |
| Percutaneous (needle-stick) | 23 |
| Sexual | |
| Receptive anal intercourse | 138 |
| Insertive anal intercourse | 11 |
| Receptive penile-vaginal intercourse | 8 |
| Insertive penile-vaginal intercourse | 4 |
| Receptive oral intercourse | Low |
| Insertive oral intercourse | Low |
| Other | |
| Biting | Negligible |
| Spitting | Negligible |
| Throwing body fluids (including semen or saliva) | Negligible |
| Sharing sex toys, razors, toothbrushes | Negligible |
| * There may be a relatively small chance of acquiring HIV when engaging in a risk behavior with an infected partner <i>only once</i> ; but, if <i>repeated many times</i> , the overall likelihood of becoming infected after repeated exposures is much higher. | |
| (CDC, 2019b) | |



At Risk Populations and Behaviors

HIV can infect anyone. However, there are certain groups at higher risk for HIV because of specific risk factors and behaviors.

MEN WHO HAVE SEX WITH MEN

Gay, bisexual, and other men who have sex with men are the population most affected by HIV in the United States. Gay and bisexual men ages 13 to 34 make up 64% of new HIV diagnoses among all gay and bisexual men. Most gay and bisexual men get HIV from having anal sex without protection (not using a condom or taking medicine to prevent or treat HIV) (CDC, 2019c).

RACIAL AND ETHNIC MINORITIES

In the United States, some racial and ethnic groups are more affected than others relative to their percentage of the population. Because there are higher rates of HIV in these communities, this raises the risk of new infections with each sexual or injection drug use encounter. Additionally, a range of social, economic, and demographic factors—such as stigma, discrimination, income, education, and geographic region—affect risk for HIV. These factors help to explain why African Americans have worse outcomes on the HIV continuum of care, including lower rates of linkage to care and viral suppression (HIV.gov, 2020b; CDC, 2020b).

PERSONS WHO INJECT DRUGS

The prescription opioid and heroin crisis has led to an increase in the number of persons who inject drugs, placing new populations at risk for HIV. This crisis has disproportionately affected those living in nonurban areas, where HIV prevalence rates historically have been low. These are areas that have limited services available for HIV prevention and treatment as well as for substance use disorder treatment.

A high-risk behavior among this population is sharing drug paraphernalia such as needles, syringes, and other drug injection equipment. In cities with high levels of HIV infection, 40% of new PWID (those who have been injecting for 5 years or less) reported sharing syringes. During the decade between 2005 and 2015, syringe sharing declined 34% among Black/African American PWID and declined 12% among Hispanic/Latinx PWID, but syringe sharing did not decline among White PWID. It has been found that PWID under age 30 are more likely to share syringes than older PWID.

These persons may also engage in risky sexual behaviors. This may include having sex without protection, having sex with multiple partners, or trading sex for money or drugs. It has been found that young PWID are more likely than older PWID to have sex without a condom, have more than one sex partner, and have sex partners who also inject drugs (CDC, 2020c).



PERSONS WHO EXCHANGE SEX FOR MONEY OR NONMONETARY ITEMS

The risk of HIV is high among individuals who exchange sex for money or other items, and many of them have a history of homelessness, unemployment, incarceration, mental health issues, violence, and emotional/physical/sexual abuse by clients, intimate partners, and the police. All of these complicate screening and treating this population (Weibel, 2018).

Some transgender persons may be involved in this behavior because of discrimination and lack of economic opportunities, with the goal of generating income for rent, drugs, medicines, hormones, and gender-related surgeries (CDC, 2019b).

PEOPLE WHO MISUSE ALCOHOL OR DRUGS

People who misuse alcohol or drugs are at an increased risk for acquiring or transmitting HIV. These substances are more likely to put them at risk by affecting the choices made about sexual behavior. A person who is inebriated might have more sexual partners, sex with someone they do not know, sex without using a condom, or more difficulty using a condom in the correct manner every time they have sex. They may also be more likely to share needles and other drug equipment. Drugs such as methamphetamine, poppers, and ecstasy are linked to having more sexual partners or sex without a condom (CDC, 2019b).

INCARCERATED PERSONS

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 infections among inmates in state and federal prisons is more than five times greater than the rate among people who are not incarcerated, and most incarcerated people with HIV acquired it before entering a correctional facility (CDC, 2018a).

Prisoners are at high risk for HIV transmission related to engaging in high-risk sexual behaviors, being raped, using drugs and sharing needles, and tattooing with homemade and unsterile equipment. Overcrowding as well as stress, drugs, and violence weaken the immune system, making people living with HIV more susceptible to the development of opportunistic infections (Avert, 2017).

HIV testing programs are not systematically implemented in correctional facilities, which is partly the result of the need for resource allocation. Additionally, the rapid turnover among this population makes it difficult to test inmates for HIV and help them gain access to treatment. Inmates also have concerns about disclosing their high-risk behaviors for fear of being stigmatized (CDC, 2017; Weibel, 2018).

OLDER ADULTS

According to the CDC, in 2016 nearly half of the people in the United States and dependent areas living with diagnosed HIV were aged 50 and older. The number of older adults living with HIV is increasing because many people diagnosed with HIV at a younger age are growing older,



and life-long treatment with HIV medications is helping them live longer and healthier lives. However, thousands of older people are also newly diagnosed with HIV every year.

Many risk factors for HIV are the same for adults of any age, but some age-related factors can put older adults at risk for HIV infection, such as age-related thinning and dryness of the vagina in older women. In addition, women who are no longer concerned about pregnancy may be less likely to use a condom when engaged in sexual activities.

Older people are less likely to get tested for HIV, as the signs and symptoms of HIV infection may be mistakenly attributed to aging or age-related conditions. For this and other reasons related to stereotyping and stigma, HIV is more likely to be diagnosed at an advanced stage in many older adults (USDHHS, 2020).

WOMEN AND GIRLS

HIV diagnoses among women have declined in recent years; however, more than 7,000 women received an HIV diagnosis in the United States and dependent areas in 2017, making up 19% of all new HIV diagnoses. The majority of these women acquired HIV through heterosexual contact, and the highest percentage was among Black/African American women. One in 9 women with HIV are unaware they have it, and because many women may be unaware of their male partner's risk factors for HIV, they may not use condoms or take HIV prevention medications.

In general, receptive sex is riskier than insertive sex, which means that women have a higher risk for acquiring HIV during vaginal or anal sex than their sex partners, with receptive anal sex being the riskiest behavior.

Women who have been sexually abused may be more likely to engage in risky sexual behaviors such as exchanging sex for drugs, having multiple sex partners, or having sex without using a condom (CDC, 2020d).

INFANTS AND CHILDREN

HIV can be passed from mother to child anytime during pregnancy, childbirth, and breastfeeding. In 2017, the CDC reported there were 73 new diagnoses of perinatal HIV in the United States, the greatest number of which were among Black/African American children. It is notable that perinatal diagnoses have decreased 41% since 2012. By 2017 in the United States, 11,915 people were living with HIV they acquired through perinatal transmission, and over 1,800 of them were children under the age of 13.

Women with HIV may not know they are pregnant, how to prevent or safely plan a pregnancy, or what they can do to reduce the risk of transmitting HIV to their unborn child. The risk of transmitting HIV to the baby is much higher if the mother does not remain on HIV treatment throughout pregnancy and childbirth or if HIV medications are not provided to the baby. The risk is also higher if the woman acquires HIV while she is pregnant.



In addition, social and economic factors, especially poverty, may make it harder for some women with HIV to access healthcare and remain on treatment (CDC, 2019d).

TRANSGENDER PERSONS

Transgender persons are people whose gender identity or expression is different from their sex assigned at birth. The CDC reported in 2017 that the percentage of transgender people who received a new HIV diagnosis was three times the national average, with over half occurring among Black/African American persons.

Certain behaviors and socioeconomic factors increase the risk for this population, including having multiple sex partners, anal or vaginal sex without protection, and sharing needles or syringes to inject hormones or drugs. Additional factors include commercial sex work, mental health issues, incarceration, homelessness, unemployment, and high levels of substance misuse compared to the general population.

Transgender persons are also placed at increased risk for HIV related to stigma, discrimination, social rejection, exclusion, violence, and lack of family support, all of which affect healthcare, education, employment, and housing (CDC, 2019c).

Other Factors Affecting Transmission Risk

Many other factors, alone or in combination, affect the risk of HIV transmission.

HIGH VIRAL LOAD

Viral load refers to the amount of HIV copies present in one milliliter of blood in someone who is HIV positive. Viral load is one of the **most important determinants** for HIV transmission.

When a person acquires the virus, it replicates in the blood. Initially a person's viral load is typically high, and shortly after acquiring the virus, the load will drop as the immune system starts to fight the virus. Without treatment, however, the viral load will rise again as the virus starts to destroy CD4⁺ T cells.

As the viral load rises, the more copies of the virus there will be in the blood. The higher the number of copies found in the blood, the higher the number that will be present in other bodily fluids, such as vaginal fluid and semen.

The risk of HIV sexual transmission rises when the viral load is above 1,500 copies/ml. HIV-positive people who are taking HIV medicines and are virally suppressed are much less likely to transmit HIV. However, having a low or undetectable viral load (<40 to 50 copies/ml) does not eliminate the chance of infecting partners (Korobchuk et al., 2019; CDC, 2020f; Avert, 2020).



OTHER SEXUALLY TRANSMITTED DISEASES/INFECTIONS (STDs/STIs)

People who have a sexually transmitted disease (also called *sexually transmitted infection [STI]*) may be at an increased risk of acquiring or transmitting HIV. Some of the most common STDs include gonorrhea, chlamydia, syphilis, trichomoniasis, human papillomavirus (HPV), genital herpes, and hepatitis.

One reason for this is that the behaviors that put people at risk for one infection often put them at risk for others. When a person with HIV acquires another STD such as gonorrhea or syphilis, it is likely they were having sex without using condoms. Also, STDs and HIV tend to be linked, and when someone gets an STD, it indicates they may have acquired it from someone who may be at risk for other STDs as well as HIV.

People with HIV are more likely to shed HIV when they have urethritis or a genital ulcer, and in a sexual partner, a sore or inflammation caused by an STD may allow infection that would have normally been stopped by intact skin. Even STDs that cause no breaks or open sores can increase the risk by causing inflammation that increases the number of cells that can serve as targets for HIV.

Both syphilis and HIV are highly concentrated among men who have sex with men, and men who have syphilis are at a very high risk of being diagnosed with HIV in the future. HIV is more closely linked to gonorrhea than chlamydia (common among young women), and herpes simplex (HSV-2) is commonly associated with HIV. Studies have shown that persons infected with herpes are at three times higher risk for acquiring HIV infection (CDC, 2019e; CDC, 2019f).

LACK OF CIRCUMCISION

HIV acquisition rates are higher among uncircumcised males. This may be related to a high density of HIV target cells in the male foreskin. It has been demonstrated that circumcision reduces the risk of female-to-male HIV transmission by 50% to 60%. However, circumcision in men with HIV does not appear to decrease the risk of HIV transmission to the female partner, and the effectiveness of circumcision in men who have sex with men has not been demonstrated (Cohen, 2019).

Prevention and Risk Reduction Methods

HIV is preventable. Nevertheless, new infections continue to occur despite the knowledge available about how the virus is transmitted and the means to prevent its transmission or acquisition. These include:

- **Sexual abstinence:** Not having oral, vaginal, or anal sex is the only 100% effective option to prevent the sexual transmission of HIV.
- **Limiting the number of sex partners:** The more sex partners one has, the more likely one of them has poorly controlled HIV or has a partner with an STI.



- **Condom use:** Using condoms correctly and every time when engaging in sexual activity will reduce HIV transmission risk.
- **HIV testing:** It is recommended that individuals get screened for HIV and that they know the HIV status of their partner(s).
- **Screening and treating for STIs:** Given the shared risk factors for HIV and other STIs, it is recommended that people at risk for HIV get screened and treated for STIs.
- **Stopping injection drug use:** Or, if unable to stop injecting drugs, using only sterile drug injection equipment and rinse water and never sharing equipment with others. (AHF, 2019)

CONDOMS AND THEIR CORRECT USE

A male condom is a thin layer of latex, polyurethane (plastic), polyisoprene (synthetic rubber), or natural membrane (i.e., lambskin) worn over the penis during sex. A female condom is a thin pouch made of synthetic latex called nitrile and is designed to be worn in the vagina during sex.

Latex condoms provide the best protection against HIV. Polyurethane or polyisoprene condoms are good options for people with latex allergies, but plastic ones break more often than latex ones.

Natural membrane (such as lambskin) condoms have small holes in them and **do not block HIV and other STDs** (CDC, 2019a).

Both women and men may need instruction in the correct use of condoms:

- Use latex or polyurethane condoms.
- Put on a condom before having sex.
- Read the package and check the expiration date.
- Make sure there are no tears or defects.
- Use water-based or silicone-based lubricant to prevent breakage.
- Do not use nonoxynol-9 (a spermicide), as this can cause irritation.
- Do not use oil-based products (e.g., baby oil, lotion, petroleum jelly, cooking oil) due to risk of breakage.
- Do not use more than one condom at a time.
- Do not reuse a condom.
- Store condoms in a cool, dry place.
- Do not store condoms in a wallet (due to risk of heat and friction damage).



Correct application of a male condom includes:

- Before any genital contact, place the condom on the head of the erect (hard) penis. If uncircumcised, pull back the foreskin first.
- Pinch air out of the tip of the condom.
- Unroll the condom all the way down to the base of the penis.
- After sex but before pulled out, hold the condom at the base, then pull out while holding the condom in place.
- Carefully remove the condom, check for breakage, and throw it in the trash.
(CDC, 2019a)

ANTIRETROVIRAL-BASED STRATEGIES

In addition to behavioral strategies, antiretroviral-based strategies have proven highly effective in preventing and reducing HIV transmission.

In infected persons, antiretroviral therapy medications prevent HIV from multiplying, reduce the viral load, and allow the immune system to recover and produce more CD4⁺ T cells. The main goal is to reduce the person's viral load to an undetectable level that effectively decreases to zero the risk of transmitting HIV to others (USDHHS, 2020).

Women with HIV should take HIV medications during pregnancy and childbirth to reduce the risk of transmitting HIV to their babies. Newborn babies also receive HIV medications for 4 to 6 weeks after birth, which reduces the risk of infection from any HIV that may have entered the baby's body during childbirth (CDC, 2019d).

In uninfected persons, pre-exposure prophylaxis (PrEP) is medication taken daily to prevent HIV infection. The FDA has approved certain medications (e.g., Truvada, Descovy) for daily use and each medication has its own recommended use. Studies have shown that, when taken daily, PrEP reduces the risk of HIV infection from sex by about 99% and reduces the risk among people who inject drugs by 74% to 84%. It is much less effective when not taken consistently (CDC, 2019i).

Eligibility criteria for HIV pre-exposure prophylaxis is based on self-reported behavioral markers associated with high risk of acquiring HIV. People without HIV who are at risk and who should be assessed for PrEP include:

- Sexually active gay and bisexual men
- Sexually active heterosexual men and women
- Sexually active transgender persons
- Persons who inject drugs



- Persons who have been prescribed postexposure prophylaxis (PEP) and report continued risky behavior or have used multiple courses of PEP (CDC, 2019j)

Postexposure prophylaxis (PEP) involves taking a combination of three antiretroviral medications after being potentially exposed to HIV to prevent becoming infected. Exposure may occur due to a broken condom during sex, when sharing needles and works to prepare drugs, following a sexual assault, or through occupational exposure.

To be effective, PEP must be started within 72 hours after a recent possible exposure to HIV and must be taken once or twice daily for 28 days. It is effective in preventing HIV when taken correctly, but it is not 100% effective. Therefore, the person is advised to continue to use condoms with sex partners and to use safe injection practices when taking PEP (CDC, 2019h).

OCCUPATIONAL EXPOSURE

Based on the most recent data, since 1985 there have been 58 confirmed and 150 possible cases of occupationally acquired HIV infection among healthcare workers. Since 1999, only one confirmed case has been reported (CDC, 2019g).

Risk for occupational HIV transmission varies by the type of exposure and is increased when the source has a high viral load, the volume is large, and the exposure is deep. Healthcare personnel at highest risk of transmission are those who have been inoculated percutaneously with blood from a source patient with HIV who is not on suppressive antiretroviral therapy and/or has a detectable viral load.

Among those working in healthcare, nurses have reported the most frequent blood and body exposures, followed by physicians who are residents or fellows, attending physicians, non-lab technologists, respiratory therapists, and certified nursing assistant/home health aides (Zachary, 2019).

Reducing Occupational Exposure to Bloodborne Pathogens

Washington Administrative Code (WAC) 296-823 mandates that the rules for Safety Standards be followed for occupational exposure to bloodborne pathogens as adopted under the Washington Industrial Safety and Health Act of 1973 (Chapter 49.17 RCW) and as enforced by the Department of Labor and Industries Division of Occupational Safety and Health.

EXPOSURE CONTROL PLAN (ECP)

Under WAC 296-823, each employer covered must develop an exposure control plan containing at least the following elements:

- A written “exposure determination” that includes those job classifications and positions in which employees have potential for occupational exposures



- The procedure for evaluating the circumstances surrounding exposure incidents, including, including maintenance of a sharps injury log
- The infection control system used in the workplace
- Universal precautions or other at-least-as-effective infection control systems used
- Documentation of consideration and implementation of appropriate, commercially available safer medical devices designed to eliminate or minimize occupational exposure
- An update at least annually and whenever changes occur that affect occupational exposure

ADHERENCE TO STANDARD PRECAUTIONS

Employee prevention control in the healthcare setting involves following **Standard Precautions** at all times for all patients, assuming that blood and other body fluids are potentially infectious. These precautions include:

- Routine use of barriers (such as gloves and/or goggles) when anticipating contact with blood or body fluids
- Washing hands and other skin surfaces immediately after contact with blood or any other body fluids
- Careful handling and disposing of sharp instruments during and after use

BLOODBORNE PATHOGENS STANDARD TRAINING

In 1991, the Occupational Safety and Health Administration (OSHA) introduced and published the Occupational Exposure to Bloodborne Pathogens Standard, designed to protect workers in healthcare and related occupations from risk of exposure to bloodborne pathogens such as HIV and HBV. In Washington State, all new employees or employees being transferred into jobs involving tasks or activities with potential exposure to blood or other potentially infectious material (OPIM) must receive training in accordance with WAC 296-823-120 prior to taking on those tasks.

Mandated bloodborne pathogens training is to be provided by a qualified trainer and must include:

- Providing and making sure personal protective equipment is worn when there is risk for an occupational exposure, including gloves, masks, eye protection, and face shields
- Using appropriate equipment and safer medical devices to eliminate or minimize occupational exposure
- Handling contaminated sharps and reusable sharps properly and safely



- Minimizing splashing, spraying, splattering, and generation of droplets
- Making sure items are appropriately labeled
- Making sure employees wash their hands
- Prohibiting food, drink, and other personal activities in the work area
- Making sure the worksite is maintained in a clean and sanitary condition
- Handling regulated waste properly and safely
- Prohibiting pipetting or suctioning by mouth
- Placing specimens in an appropriate container
- Examining and labeling contaminated equipment

Full details for training requirements are found in the Washington Occupational Exposure to Bloodborne Pathogens, Chapter 296-823 WAC. (See “Resources” at the end of this course.)

EMPLOYER PROTOCOL FOR MANAGING OCCUPATIONAL EXPOSURES

If a healthcare worker experiences an HIV exposure in the workplace, the person should follow the employer’s protocol, which is based on guidelines issued by the U.S. Public Health Service (Kuhar et al., 2018).

- Clean the exposed area as recommended.
- Report the exposure to the department or individual responsible for managing exposure.
- Obtain medical evaluation as soon as possible.
- Discuss with a healthcare professional the extent of the exposure, treatment, and follow-up.

OSHA’s Bloodborne Pathogens Standard (29 CFR 1910.1030) requires employers to make immediate confidential medical evaluation and follow-up available for workers who have an exposure incident.

Management of exposure requirements include:

- A confidential medical evaluation and follow-up to be completed at no cost to the employee
- Testing the blood of the source person
- Providing the results of the source person’s blood tests to the exposed employee as well as the healthcare professional evaluating the employee



- Determining appropriate postexposure management (WA L&I, 2018)

(See also “Resources” at the end of this course.)

WASHINGTON STATE POSTEXPOSURE REQUIREMENTS

Washington State Department of Labor & Industries, Chapter 296-823 WAC, Occupational exposure to bloodborne pathogens (2018) postexposure requirements, include:

- Make a confidential medical evaluation and follow-up available to employees who experience an exposure incident.
- Test the blood of the source person.
- Provide the results of the source person’s blood test to exposed employee.
- Collect and test the blood of the exposed employee.
- Provide information to the healthcare professional evaluating the employee.
- Obtain and provide a copy of the healthcare professional’s written opinion on postexposure evaluation to the employee.

POSTEXPOSURE PROPHYLAXIS

The 2018 updated U.S. Public Health Services guidelines for management of occupational exposures to HIV and recommendations for postexposure prophylaxis include:

- Determine HIV status of exposure source patient.
- Start PEP medication as soon as possible after occupational exposure and continue for a 4-week period.
- Include three or more antiretroviral drugs in PEP medication regimens.
- Provide close follow-up, beginning within 72 hours of an HIV exposure.
- If a newer 4th generation combination HIV p24 antigen-HIV antibody test is utilized for follow-up HIV testing, conclude HIV testing in 4 months post exposure; if not, conclude HIV testing in 6 months post exposure.

PEpline

Information regarding the most current PEP regimen is available to any clinician from the **Post-Exposure Prophylaxis Hotline (PEpline): 888-448-4911.**



The National Clinician Consultation Center provides free consultation and advice based on established guidelines and the latest medical literature on occupational exposure management to clinicians, including:

- Assessing the risk of exposure
 - Determining the appropriateness of prescribing PEP
 - Selecting the best PEP regimen
 - Providing follow-up testing
- (NCCC, 2020)

Preventing Transmission in the Home Care Environment

Healthcare professionals and other caregivers who care for HIV patients at home or in home-like settings are also at risk of exposure to HIV and other bloodborne pathogens. Nurses, nursing assistants, personal care assistants, and family members may experience percutaneous injuries and other exposures to blood and body fluids during care of an HIV-infected person.

Medical procedures contributing to percutaneous injuries in home care include injecting medications, performing fingersticks and heelsticks, and drawing blood. Other contributing factors include sharps disposal, contact with waste, and patient handling.

Healthcare workers should follow Standard Precautions and the Bloodborne Pathogen Standard when working in patients' homes and other home-like settings.

GLOVES AND HANDWASHING

Gloves (latex, vinyl, or nitrile in the case of latex allergy) should be worn whenever a caregiver anticipates contact with any body substance (blood/OPIM) or nonintact skin.

When a task is completed, gloves should be carefully removed by pulling them off inside-out, one at a time, avoiding contact with any potentially infectious material. Gloves should be changed and hands washed as soon as possible. Never rub the eyes, mouth, or face while wearing gloves. Disposable gloves should never be washed and reused. Correct handwashing is critically important.

CLEANING BLOOD/OPIM FROM SURFACES

Wear appropriate gloves when cleaning blood from **skin surfaces**. Use sterile gauze or other bandages and follow normal first-aid techniques to stop any bleeding. After applying a bandage, remove the gloves slowly so that fluid particles do not splatter or become aerosolized. Hands should be cleaned using either soap and water or an alcohol-based hand sanitizer as soon as possible.



On vinyl **floors**, pretreat body fluid spills with full-strength liquid disinfectant or detergent; then wipe up with either a mop and hot soapy water or appropriate gloves and paper towels. Dispose of paper towels into a well-marked plastic bag or heavy-duty container. Broken glass should be swept up using a broom and dustpan (never bare hands).

Use a disinfectant (such as 1 part household bleach freshly mixed with 10 parts water) to disinfect the area where the spill occurred. If a mop was used for cleaning, soak it in a bucket of hot water and disinfectant for the recommended time. Empty the mop water into the toilet, not the sink. Sponges and mops used to clean up body fluid spills should not be rinsed in the kitchen sink or in a location where food is prepared.

On **carpeting**, pour dry kitty litter or another absorbent material onto the spill to absorb the body fluid. Carefully pour full-strength liquid detergent onto the carpeting and leave it there for the amount of time indicated in the manufacturer's instructions. Using sturdy rubber gloves, blot the spill with paper towels until it is absorbed. Vacuum normally afterward. Dispose of debris, paper towels, or soiled kitty litter in a sealed plastic bag placed inside another plastic garbage bag.

CLOTHING AND OTHER LAUNDRY

Clothes, washable uniforms, towels, or other laundry stained with blood/OPIM should be washed and disinfected before further use. If possible, have the patient remove the clothing. If necessary, use appropriate gloves to assist with removing the clothes.

If the washing machine is not close by, transport the soiled items in a sturdy plastic bag. Then place the items in the washing machine and soak or wash them in cold, soapy water to remove any blood from the fabric. (Hot water will permanently set blood stains.)

Use hot water for a second washing cycle and include detergent, which will act as a disinfectant. Dry the items in a clothes dryer. Wool clothing or uniforms may be rinsed with cold, soapy water then dry cleaned to remove and disinfect the stain.

DIAPER CHANGES

Use a new pair of gloves to change diapers. Remove gloves carefully and wash hands immediately. 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 used in the kitchen should not be used to clean body fluid spills or bathrooms. All sponges and mops should be routinely disinfected with a fresh bleach solution or other similar disinfectant.



TOILET AND BEDPAN SAFETY

It is safe to share toilets/toilet seats without special cleaning, unless the surface becomes contaminated with blood/OPIM. If this occurs, spray the surface with 1:10 bleach solution. Wearing gloves, wipe the seat dry with disposable paper towels.

Persons 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 these items are thoroughly disinfected after each person's use.

THERMOMETERS

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

PERSONAL HYGIENE ITEMS

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

SAFE AND LEGAL DISPOSAL OF SHARPS

Syringes, needles, and lancets are called *sharps*, and their disposal is regulated. Sharps can carry hepatitis, HIV, and other bacteria and viruses that cause disease. Throwing them in the trash or flushing them down the toilet can pose health risks for others (such as sanitation workers, other utility workers, and the public) from needlesticks and illness. Rules and disposal options vary according to circumstances, so it is essential to check with the local health department to see which option applies to any given situation.

Parents and caregivers should make sure that children understand never to touch a found needle or syringe but to immediately ask a responsible adult for help.

Safe disposal of syringes found in parks and other public locations should follow these guidelines:

- Do not pick up a found syringe or needle with bare hands. Use gloves and tongs, shovel, or a broom and dustpan to pick it up. Hold the needle away from the body.
- Do not break the needle off from the syringe.
- Place used sharps and syringes in a safe container with at least a one-inch opening and a lid that will seal tightly, such as an empty plastic laundry detergent container or glass bottle or jar. If a glass jar is used, place it in 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. Do not flush needles or syringes down the toilet.

- Tape the container shut for added safety and label it with the warning: “SHARPS, DO NOT RECYCLE!” Place it well out of reach of children.
- Call the local health department to determine what disposal sites are available.

Anyone with an accidental needlestick requires prompt assessment by a medical professional. Testing for HIV, HCV, and HBV may be recommended. If someone finds and handles a syringe but no needlestick occurs, testing for HIV is not necessary.

SAFE FOOD PREPARATION

Kitchens can harbor bacteria that may prove life threatening to a person with HIV/AIDS due to their compromised immune system. Use the following precautions during food preparation and cleanup:

- Wash hands thoroughly before preparing food.
- Use a clean spoon to taste food, and wash the spoon after using it once.
- Avoid unpasteurized milk, raw eggs or products that contain raw eggs, cracked or nonintact eggs, and raw fish. Cook all meat, eggs, and fish thoroughly to kill any organisms that may be present. Wash fruits and vegetables thoroughly.
- Disinfect countertops, stoves, sinks, refrigerators, door handles, and floors regularly. Use window screens to keep out insects.
- 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. Avoid wood cutting boards if possible. Disinfect cutting boards frequently.
- Keep kitchen garbage in a leak-proof, washable receptacle that is lined with a plastic bag. Seal the garbage liner bags and change bags frequently.

PET CARE

Certain animals can pose hazards for people with compromised immune systems. These animals include turtles, reptiles, birds, puppies and kittens under the age of eight months, wild animals, and pets without current immunizations or with illnesses of unknown origin. Pet cages and cat litter boxes can harbor infectious organisms that may become aerosolized. Pets can also spread disease by licking a person’s face or open wounds.



- All pet care should be followed by thorough handwashing.
- Cats' claws and dogs' nails should be kept trimmed.
- Latex or nitrile gloves should be worn to clean up any pet urine, feces, vomit, or OPIM. The soiled area should be cleaned with a fresh 1:10 bleach solution.
- Pet food and water bowls should be washed regularly in warm, soapy water and rinsed clean.
- Cat litter boxes should be emptied out regularly and washed at least monthly.
- Fish tanks should be kept clean. Heavy latex gloves that reach to the upper arms, such as "calf-birthing" gloves, can be purchased from a veterinarian for immunocompromised individuals to wear to clean a fish tank.
- Pets should not be allowed to drink from the toilet or eat other animal feces, any type of dead animal, or garbage.
- Cats should be restricted to indoors. Dogs should be kept indoors or on a leash.

Many communities have volunteer groups and veterinarians who will assist people with HIV to take care of their pets, if needed.

HIV TESTING AND COUNSELING

About 1 in 7 people in the United State who have HIV **do not know** they are infected and are not aware of their risk. HIV infection goes undiagnosed in over 50% of HIV-positive 13- to 24-year-olds.

The only way people can know they are infected with HIV is if they get tested. People who are aware of their positive status can then receive treatment that can help them to remain healthy for many years, and the sooner they begin treatment following diagnosis, the more they can benefit. People who test negative for HIV can also be prepared to make more informed decisions about matters of sex, drug use, and healthcare. Those who are HIV-negative and are at very high risk, may begin HIV pre-exposure prophylaxis (PrEP), which is highly effective for prevention of HIV (HIV.gov, 2018; NIH, 2020a).

SOCIAL BARRIERS TO TESTING

Some of the social barriers that prevent accessing HIV testing and antiretroviral therapy include gender inequality and harmful gender norms that are rooted in cultural practices and laws, the influence of masculine ideology on risk-tasking behaviors, stigma, racism, and homophobia. Discrimination, stigma, and homophobia remain prevalent against racial/ethnic and sexual minorities, people who inject drugs, and HIV-positive individuals, which often



discourages them from seeking testing, prevention, and treatment services. Language barriers and concerns about immigration status present additional challenges in accessing HIV testing, prevention, and treatment (Weibel, 2018).

CDC and Washington State Testing Recommendations

Washington State and the CDC recommend that **everyone between the ages of 13 and 64** get tested for HIV at least once as part of routine healthcare and that people with certain risk factors be tested quarterly or at least annually.

Repeat testing may be done many times. If an individual has tested negative for HIV in the past and answers any of the following questions affirmatively since that previous test, **repeat HIV testing** should be done:

- Are you a man who has had sex with another man?
- Have you had sex (anal or vaginal) with an HIV-positive partner?
- Have you had more than one sex partner?
- Have you injected drugs and shared needles or works with others?
- Have you exchanged sex for drugs or money?
- Have you been diagnosed with, or sought treatment for, another sexually transmitted disease?
- Have you been diagnosed with or treated for hepatitis or tuberculosis?
- Have you had sex with someone who could answer “yes” to any of the above questions or someone whose sexual history you do not know?

(HIV.Gov, 2018; WA DOH, 2020a)

TESTING MEN WHO HAVE SEX WITH MEN

CDC recommends that clinicians screen asymptomatic gay, bisexual, or men who have sex with men (MSM) at least annually. Furthermore, clinicians should consider the benefits of more frequent screening (e.g. once every 3 or 6 months) for individual MSM at increased risk for HIV infection (CDC, 2019o).

TESTING PREGNANT WOMEN

The chance that HIV infection will be transmitted from an HIV-infected pregnant woman to her child can be reduced to 1% or less if the mother’s HIV status is known and she receives treatment. Since 1975 the CDC has recommended that all pregnant women be tested for HIV. Despite this recommendation, however, many women still do not get tested for HIV during pregnancy for a variety of personal reasons.



There are two ways to approach pregnant women about HIV testing:

- **Opt-in:** Pregnant women are given pre-HIV test counseling, and they must agree to receive an HIV test, usually in writing.
- **Opt-out:** Pregnant women are told that HIV testing will be included in the standard group of prenatal tests and that they may decline the test. Unless they decline it, they will receive the test.

Evaluations of both approaches have led the CDC to recommend universal opt-out HIV testing for all pregnant women early in every pregnancy. A second test in the third trimester is recommended in certain geographic areas or for women who are known to be at high risk for becoming infected. The CDC also recommends HIV testing at labor and delivery for women without a prenatal test result (CDC, 2020g).

TESTING SEXUAL ASSAULT VICTIMS

Anyone who has been sexually assaulted should have an HIV antigen test, which can detect infection sooner than standard antibody testing. They should also be started on postexposure prophylaxis (PEP) within 3 days of exposure (HIV.gov, 2018).

Types of HIV Tests

There is no HIV test that can detect HIV immediately after infection. The time between acquiring HIV and when a test can accurately detect it is called the *window period*. This period varies from person to person and also depends on the type of HIV test (HIV.gov, 2018).

ANTIBODY TESTS

Most HIV tests, including most rapid tests and home tests, look for antibodies produced by the immune system. Most people will develop detectable antibodies within 3 to 12 weeks of infection, and so the soonest an antibody test can detect infection is 3 weeks. These tests are usually done with **blood** from a fingerstick or with **oral fluid**, and results are ready in 30 minutes or less.

Oral testing uses a specially treated pad placed into the mouth and gently rubbed between the lower cheek and gum. The pad collects oral mucosal transudate (OMt), which contains HIV antibodies in an HIV-infected person. (It does not test for HIV in saliva.) OMt testing is an alternative to blood testing and is able to detect infection one month or more later than blood-based tests due to the lower concentration of antibodies in oral fluid than in blood.

Urine HIV antibody tests use the urine ELISA and urine Western Blot technique to detect HIV antibodies and are FDA-licensed as an alternative to blood testing (CDC, 2019k).



ANTIBODY-ANTIGEN COMBINATION (FOURTH-GENERATION) TESTS

This type of testing (ELISA test or EIA/enzyme immunoassay) is the most accurate and reliable and looks for both HIV antibodies and part of the virus itself, the p24 antigen. The antigen can be detected before antibodies appear, and combination tests are recommended as the first test to be done in a laboratory setting.

Most laboratories use an immunoassay for detecting the HIV p24 antigen and antibodies to HIV-1, followed by a confirmatory immunoassay to distinguish between HIV-1 and HIV-2. Results take several days to be available.

Most people will make enough antigens and antibodies for fourth-generation or combination tests to accurately detect infection in blood drawn from a vein 2 to 6 weeks after infection. Antigen/antibody tests done with blood from a fingerstick can take longer to detect (up to 90 days) after an exposure (CDC, 2019k).

There are no antigen/antibody tests available for use with oral fluid.

HIV-1/HIV-2 DIFFERENTIATION IMMUNOASSAY (FIFTH GENERATION) TEST

The HIV-1/HIV-2 differentiation immunoassay detects the same biomarkers as the combination tests but can also distinguish between HIV-1 and HIV-2. This is a rapid laboratory-based test typically used to confirm a positive fourth-generation combination assay. Test results can be obtained generally in under 20 minutes.

NUCLEIC ACID TEST (NAT)

This test looks for HIV RNA or DNA in the blood, not the antibodies to the virus. This test is very expensive and is not routinely used for screening people unless they have recently had a high-risk exposure or a possible exposure with early symptoms of HIV infection.

Nucleic acid testing is also used for **infants and children younger than 18 months**. The HIV antibody-only and antigen/antibody combination tests used for adults and older children are not reliable in infants and young children, as they will detect the transplacentally acquired antibody maternal HIV antibodies that persist for many months following birth. It is essential to establish the diagnosis of HIV infection in this population because infected infants have a high morbidity and mortality if treatment is delayed.

There are no nucleic acid tests available for use with oral fluid. Most people will have enough HIV in their blood for a nucleic acid test to detect infection 1 to 4 weeks after infection. The results of NAT may take several days to be available (CDC, 2019k; Gillespie, 2019a).



| HIV SCREENING TESTS | |
|--|---|
| Test Category | Test |
| Antibody tests | <ul style="list-style-type: none"> • Vironostoke HIV-1 Microelisa • Genetic System HIV-1/2 |
| Rapid antibody tests | <ul style="list-style-type: none"> • OraQuick Advance for blood and saliva • Uni-gold Recombigen • INSTI HIV-1/HIV-2 |
| Antibody/antigen combination tests (4th generation) | <ul style="list-style-type: none"> • Determine HIV 1/2 Ag/Ab Combo • ARCHITECT HIV Ag/Ab Combo |
| HIV-1/HIV-2 differentiation immunoassay (5th generation) | <ul style="list-style-type: none"> • Bio-Rad Geenius HIV1/2 confirmation assay • Bio-Rad Multispot HIV-1/HIV-2 |
| Nucleic acid test | <ul style="list-style-type: none"> • Aptima HIV-1 RNA Qualitative Assay |
| (CDC, 2020g) | |

Testing Sites

HIV tests are generally available in many places, including:

- Healthcare providers' offices
- Health clinics or community health centers
- STD/STI or sexual health clinics
- Local health departments
- Family planning clinics
- VA medical centers
- Substance abuse prevention or treatment programs
- Many pharmacies
- Some community-based organizations that extend the reach of state and local health departments
- Home testing kits available in pharmacies or online
(HIV.gov, 2018)

These sites can connect people to HIV care and treatment if they test positive or can discuss the best HIV prevention options if they test negative.



HIV Test Funding

HIV screening is covered by health insurance without a co-pay, as required by the Affordable Care Act. If an individual does not have health insurance, some testing sites may offer free tests (HIV.gov, 2018).

Medicare Part B covers an HIV screening once per year if the person meets one of these conditions:

- The person is age 15 to 64.
- The person is younger than 15 or older than 65 and at increased risk for HIV.

Medicare also pays for HIV screening up to three times during a woman's pregnancy (Medicare.gov, 2020).

In Washington State most insurance plans and Washington Medicaid (Apple Health) cover the cost of an HIV test. Many organizations throughout the state offer HIV testing and counseling for free or reduced cost for those who cannot afford it, do not have health insurance, or do not have a healthcare provider (WA DOH, 2020a).

WHO CAN COLLECT BLOOD SPECIMENS?

In Washington State, three categories of healthcare professionals are authorized to collect blood specimens through fingerstick and venipuncture:

- **Licensed healthcare professionals** whose scope of practice allows it (physicians and nurses). RNs and LPNs are allowed to perform blood collection activities while under the direction of a licensed physician.
- **Certified healthcare assistants** may perform rapid test fingerstick with a supervisor who is not physically present but who must be available for consultation. For venipuncture, the supervising licensed healthcare professional must be on the premises.
- **Sexually Transmitted Disease Case Investigators** are authorized to perform venipuncture or skin puncture for the purpose of withdrawing blood for use in sexually transmitted disease test upon specific authorization from a physician.
(WA DOH, 2018)

Testing Approaches and Reporting Results

There are three approaches by which HIV testing is implemented and carried out. They include:

- **Point-of-care** testing is done onsite where the patient is receiving services. Most rapid HIV testing is done in nonclinical settings. The results of these rapid tests are often provided in less than one hour or even within minutes.



- **Home** testing is an effective method for reaching people who are not otherwise getting tested.
- **Laboratory-based** testing involves testing done in an approved laboratory, with the person returning at a later date for the test result and counseling.

HIV test results are reported as negative, positive, or indeterminate.

A **negative** test result means the person is unlikely to be infected with HIV. However, if the HIV test is done following a recent potential HIV exposure and the result is negative, testing should be done again after the window period. If the result of an HIV test within 3 months following a potential HIV exposure is negative, repeat testing should be done again in 3 months for confirmation. Diagnosing a recently acquired HIV infection is important because this is the period when viral levels are high and the person is most likely to transmit HIV to someone else.

If the test results are **positive**, a follow-up test will be conducted for confirmation.

- If the test was a rapid screening test, the testing site will arrange a follow-up test.
- If the test was a self-test kit used at home, a positive HIV test result must always be confirmed by additional HIV testing performed in a healthcare setting.
- If the blood was tested in a laboratory, the laboratory will automatically conduct a follow-up test on the same sample to rule out a false positive.

If the follow-up test is also positive, the person is diagnosed with HIV infection.

An **indeterminate** result occurs when the test results are not clearly positive or negative. The final result usually depends on the person's risk of having HIV. The most important HIV-related cause of an indeterminate test result is a recently acquired infection. Persons with high risk for HIV may be in the early stages of infection, and follow-up testing will be positive. Sometimes a person can have an indeterminate result for unknown reasons, and follow-up testing will be negative.

False-positive test results can occur due to technical issues associated with the test or biological causes. Technical issues include:

- Specimen mix-up
- Mislabeling
- Improper handling
- Misinterpretation of a visually read rapid test result



Biological causes include:

- Participation in an HIV vaccine study
- Autoimmune disorders
- Other medical conditions

False-negative screening results are more likely to occur with antibody-only tests than with the combination antigen/antibody test. Most false-negative results are due to the window period following acquisition of the HIV infection before antibodies are detectable. The use of combination antigen/antibody assays has reduced, but not eliminated, the possibility of a false-negative result (CDC, 2020h; Sax, 2019a).

HIV Counseling

HIV counseling is a very important step in the testing process. It begins a process of forming a relationship with a patient, development of medical records, collection of surveillance information, and the delivery of related services. Counseling and risk assessment should be client-focused but counselor-driven.

For individual testing, the CDC no longer supports extensive pretest and post-test counseling. Instead, both the CDC and Washington State require that individuals who are tested for HIV receive an **individualized risk assessment**. Healthcare providers and other persons providing pretest or post-test counseling shall assess the individual's risk of acquiring and transmitting HIV by evaluating information about the individual's possible risk behaviors and unique circumstances, and as appropriate, recommend counseling that is individualized to meet the patient's needs.

If test results are negative, counseling efforts should focus on avoiding future exposure to HIV through safer sex practices and not sharing needles. If results are positive, counseling should focus on preventing transmission of the virus to others and referring the patient to resources for treatment, education, and support.

Pre- and post-test counseling can be done by both medical and nonmedical personnel. Pretest counseling can be done in person, by prerecorded video, or pamphlet, and takes less than 20 minutes. The following describes the guidelines for both pre- and post-testing counseling (WA DOH, 2018).

PRETEST COUNSELING

There are four steps to be taken when providing pretest counseling:

Step 1

- Introduction by counselor and description of their role
- Brief overview of the counseling session, including how long it will take



- Description of the test process
- Information about how and when test results will be returned
- Obtain agreement to proceed with the testing

Step 2

- More in-depth explanation of the test process, including:
 - Type of test being performed
 - Sample that will be collected (blood or oral)
 - Time until test results are ready
- Explanation of the significance of HIV-negative and HIV-positive test results, including:
 - Need for retesting if negative
 - Need for follow-up testing if positive
 - Possibility of an invalid result

Step 3

- Distribution of test kit information booklet

Step 4

- Collecting the specimen and conducting the test

(WA DOH, 2018)

POST-TEST COUNSELING

Post-test counseling is provided for patients who test both negative and positive for HIV.

These steps are to be followed **for those testing negative**:

1. Explore the patient's reaction to the result. Even patients who receive a negative HIV test result may experience a range of emotions.
2. Discuss the need for retesting based on the window period of the test used and the patient's risk.
3. Emphasize key risk-reduction strategies that can help the patient remain HIV negative:
 - Reducing the number of sex partners
 - Discussing PrEP with their healthcare provider
 - Getting tested and treated for other STDs/STIs and encouraging partners to do the same
 - Using condoms



For those testing positive on confirmatory testing for HIV infection, at least one individual, in-person counseling session should be provided, which involves delivering the test results to the patient and developing a plan of care, treatment, and prevention based on the results. Specific steps include:

1. Explore the patient's reaction to the result. Most patients are ready to hear the results of their test, but a short check-in allows the patient to control this process and offers a chance for them to ask any additional questions. It is essential to confirm the patient's readiness to receive the results and to allow time for emotional reactions by remaining silent after giving the news. Offering an empathetic comment can give the patient an opportunity to talk about their emotions.
2. Advise on accessing care and treatment for HIV.
3. Explore health benefits status (i.e., how care may be paid for).
4. Discuss linkage to care options and make referrals if appropriate.
5. Discuss disclosure and inform the patient about partner notification services.
6. Emphasize key risk-reduction strategies for preventing transmission:
 - Getting tested together with partners
 - Using condoms consistently and correctly
 - Reducing the number of sex partners
 - Encouraging sex partners to be tested
 - Provide condoms

(WA DOH, 2018)

Assertive efforts should be made to contact persons with positive results who do not telephone or return for their results.

WASHINGTON STATE COUNSELING REQUIREMENTS

- Pretest counseling is not required.
- Post-test counseling is required for HIV positive tests results and HIV diagnosis.
- The name and locating information of those testing positive must be provided to the local health officer for follow-up and post-test counseling.
- Anonymous testing is available at designated testing sites.
- Notification to sexual and needle-sharing partners of possible HIV exposure is required.

(CHLP, 2020b)



Risk Assessment and Harm Reduction Strategies

A patient's individual HIV risk can be determined through risk screening based on self-reported behavioral risk and clinical signs or symptoms. Behavioral risks include injection drug use or unprotected intercourse with a person at increased risk for HIV. Clinical signs and symptoms include those suggestive of HIV infection and other STIs.

RISK ASSESSMENT QUESTIONS

Behavioral risks can be identified either through open-ended questions by the provider or through screening questions (i.e., a self-administered questionnaire). An example of an open-ended question is: "What are you doing now or what have you done in the past that you think may put you at risk of HIV infection?"

Common risk assessment questions include:

- How do you identify your gender (male, female, trans, other)?
- What is your preference for a sexual partner (male, female, trans, other)? Have you ever had an HIV or STD/STI test in the past, and if so, was it within the last year?
- Since your last HIV/STD test have you:
 - Had unprotected anal or vaginal sex?
 - Had vaginal or anal sex with a person who is HIV positive?
 - (If female) Had vaginal or anal sex with a person whom you know is a man who also has sex with men?
 - Exchanged sex for drugs, money, or something you needed?
 - Had vaginal or anal sex with a person who injects drugs?
 - Used injection drugs, and if so, did you share injection equipment?

(HIV Alliance, 2020)

RISK REDUCTION COUNSELING AND INTERVENTION STRATEGIES

Risk reduction counseling and harm reduction strategies can reduce behaviors that result in higher risk of HIV infection. Studies have shown that such counseling decreases the risk of sexually transmitted diseases, including HIV. Risk reduction counseling can range from brief prevention messages, to high-intensity behavioral discussions tailored to the person's risk, to group-based strategies.

- Continue to advise consistent condom use as a crucial element of prevention. For women who are unable to convince their partners to use a condom, assess other barrier methods. (Female condoms are also impervious to viruses, including HIV; however, there is limited clinical data regarding their efficacy.)



- Recommend screening and treatment of STDs in those at risk for HIV due to the shared risk factors for both and the association of other STDs with HIV infection.
- For those who have high ongoing risk for HIV infection, recommend that they receive daily pre-exposure prophylaxis (PrEP).
- For patients who have had a mucosal or parenteral exposure to HIV within the prior 72 hours, recommend postexposure prophylaxis with an antiretroviral regimen.

For people who inject drugs, risk reduction interventions can include:

- Voluntary opioid substitution therapy and needle exchange programs. Opioid substitution has been found to decrease illicit opioid use, injection use, and sharing injection equipment.
- Needle exchange or supervised injection programs. Such programs are found to decrease needle reuse and sharing and to increase safe disposal of syringes and more hygienic injection practices.

For couples in which one is HIV infected and the other uninfected:

- Counsel about and recommend the initiation of antiretroviral treatment. Pre-exposure prophylaxis for the uninfected partner may be indicated until the partner with HIV has achieved a stable viral suppression on ART. This usually requires six months of treatment.
- When the infected partner has achieved viral suppression, the risk of HIV transmission is negligible, but the use of condoms should continue in order to reduce risk of STD transmission and in case there is a failure in viral suppression.

Strategies for **preventing mother-to-child transmission:**

- ART for pregnant women
- PEP (postexposure prophylaxis) for the infant

(Cohen, 2019)

CLINICAL MANIFESTATIONS AND TREATMENT OF HIV AND AIDS

The course between infection with HIV and the development of full-blown AIDS can be steep or gradual and may take as long as a decade or more. If the infection is untreated, the average time from HIV infection to a diagnosis of AIDS can be 8 to 10 years. However, early detection and appropriate medical treatment may extend the lives of those infected and reduce the rates of HIV transmission (Sax & Wood, 2019).



Stages of HIV Infection and Clinical Manifestations

Without treatment, HIV infection advances in stages, progressively worsening over time. There are three stages of HIV infection, each with unique manifestations.

STAGE 1: ACUTE HIV INFECTION

Acute HIV infection is the earliest stage and generally develops within 2 to 4 weeks following infection. During this phase of the HIV infection, large amounts of HIV are being produced, there is a reduction in the CD4⁺ T cell count, and seroconversion takes place. **Seroconversion** is the transition from infection with HIV to the detectable presence of HIV antibodies in the blood. When seroconversion occurs, the results of an HIV antibody test change from HIV negative to HIV positive. When people have an acute HIV infection, they have a large amount of virus in their blood and are very contagious; however, they are often unaware that they are infected because they may not feel sick at all.

Eventually, this process stabilizes, and the person's immune response begins to bring the amount of virus in the body back down to a stable level. The CD4⁺ T cell count then begins to rise, although it may not return to its levels before the infection.

During this stage people may experience a flu-like illness, which can last for a few weeks. Symptoms may be very mild and hardly noticed, and up to 60% of people with early HIV infection will be asymptomatic. The constellation of symptoms is referred to as **acute retroviral syndrome**. The most common findings include:

- Constitutional symptoms, which are seen in a vast majority of symptomatic patients, include fever (100.4 °F to 104 °F), fatigue, and myalgias/arthralgias.
- Neurologically, a frequent complaint is a headache often described as retroorbital pain exacerbated by eye movement. A more severe and unusual manifestation is a syndrome recognized as aseptic meningitis with severe headache, signs of meningitis, photophobia, and abnormal findings on cerebrospinal fluid analysis.
- Skin rash (generalized macular or maculopapular) occurring 48 to 72 hours after the onset of fever and persisting for 5 to 8 days may be seen most often on the upper thorax, collar region, and face but can also involve the scalp and extremities.
- Oropharyngeal symptoms are frequently seen, including sore throat with pharyngeal edema and hyperemia.
- Painful mucocutaneous ulcerations, one of the most distinctive manifestations of acute infection, may be found in the mouth, anus, penis, or esophagus.
- Nontender lymphadenopathy that primarily involves axillary, cervical and occipital nodes may develop during the second week of the illness. Mild hepatosplenomegaly may also occur.



- Gastrointestinal symptoms are common and include nausea, diarrhea, anorexia, and weight loss. More serious problems include pancreatitis and hepatitis.
- Respiratory complaints, other than cough, are uncommon during this stage and only rare instances of pneumonitis of unknown etiology with cough, dyspnea, and hypoxia. (USDHHS, 2020; Sax, 2019b)

STAGE 2: CLINICAL LATENCY (CHRONIC HIV INFECTION)

Following acute infection when the body loses the battle with HIV, the symptoms go away and the person will move into the second stage, referred to as the *chronic infection* or *clinical latency* phase. During this phase the virus continues to multiply at very low levels, there is a steady decline in the CD4⁺ cell count, and immunosuppression gradually develops.

People in this stage may not feel sick or have any symptoms. Without antiretroviral therapy, people can remain in this stage for 10 or 15 years, but some will move through it more quickly. Most people have few to no symptoms prior to the development of severe immunosuppression. During this stage the person can also transmit the virus to others.

Some patients with chronic HIV infection develop other comorbidities at younger ages as compared to uninfected persons, which is believed to be due to chronic inflammation and immune system activation. These comorbidities may include cardiovascular disease, osteoporosis, cognitive dysfunction, and certain malignancies (HIV.gov, 2019a; USDHHS, 2020).

CHRONIC HIV INFECTION AND INFLAMMATION

In the early stages of infection, the activation of the immune system and accompanying inflammation do not seem to control the infection, and even with HIV therapy, inflammation continues. Chronic HIV infection is associated with relatively high levels of inflammation and is thought to result in patients experiencing a type of premature aging that significantly affects the quality of life due to an increase in a range of health problems, including:

- Cardiovascular disease
- Degenerative conditions of the brain, such as Alzheimer's and Parkinson's diseases
- Type 2 diabetes
- Inflammatory diseases of the digestive tract (e.g., Crohn's disease)
- Osteopenia, osteoporosis, and fractures
- Arthritis
- Psoriasis

(CATIE, 2017; Nasi et al., 2017)



STAGE 3: AIDS

AIDS (acquired immunodeficiency syndrome) is the final, severe stage of HIV infection. At this point HIV has severely damaged the immune system, and certain “opportunistic” infections or cancers that normally do not cause illness in a person with a healthy immune system begin to appear. People are diagnosed with AIDS when their CD4⁺ cell count drops below 200 cell/mm³ or when they begin to develop these opportunistic infections or cancers. As a result of improved antiviral treatment, most people with HIV in the United States today do not develop AIDS.

Once a person is diagnosed with AIDS, they have a high viral load and can transmit the virus easily to others. Without treatment, people with AIDS typically survive about three years (USDHHS, 2020). With serious opportunistic infection and without treatment, however, life expectancy is reduced to about one year (CDC, 2020a).

Signs and symptoms of some of opportunistic infections and cancers include:

- Generalized lymphadenopathy found on physical exam; nodes are mostly symmetrical, moderately enlarged, mobile, painless, rubbery, and located in the cervical, submandibular, occipital, and axillary chains
- Invasive cervical cancer with metastasis
- Candidiasis of the bronchi, trachea, esophagus, mouth, and vagina; and hairy leukoplakia (irregular white patches that may look like hair) on the tongue
- Seborrheic dermatitis and bacterial folliculitis
- Shingles (herpes zoster), a painful rash on one side of the face or body due to reactivation of the virus in a person with a past history of chickenpox
- Coccidioidomycosis, a commonly acquired fungal infection prevalent in hot, dry regions and that can cause pneumonia
- Cryptococcosis, a fungus that enters through the lungs that causes pneumonia and can spread to the brain, causing swelling
- Cryptosporidiosis, a diarrheal disease that causes abdominal cramps and severe, chronic watery diarrhea
- Cytomegalovirus, a common herpes virus, that is transmitted in body fluids such as saliva, blood, urine, semen, and breast milk and that causes diseases affecting many parts of the body, resulting in pneumonia, gastroenteritis, encephalitis, and retinitis leading to blindness if not treated immediately
- Histoplasmosis, a fungal infection that causes symptoms similar to influenza or pneumonia



- Isosporiasis, a parasite that enters the body through contaminated food or water and that causes diarrhea, fever, headache, abdominal pain, vomiting, and weight loss
- Kaposi's sarcoma, a cancer that causes capillaries throughout the body to grow abnormally and appears as firm pink or purple raised or flat spots on the skin; it is life-threatening when it infects internal organs such as the lung, lymph nodes, or intestines
- Lymphomas, such as Hodgkin lymphoma, of the lymph nodes and other lymphoid tissue in the body, such as the bone marrow, spleen, tonsils, adenoids, and thymus
- *Mycobacterium avium* complex (MAC) or *M. kansasii* infections
- *Pneumocystis jirovecii* (formerly *Pneumocystis carinii* pneumonia), a fungal lung infection that causes difficulty breathing, high fever, and dry cough
- Progressive multifocal leukoencephalopathy, a brain and spinal cord disease that causes loss of muscle control, paralysis, blindness, speech problems, and altered mental state; progresses rapidly and may be fatal
- Recurrent pneumonias most commonly caused by *Streptococcus pneumoniae*
- Tuberculosis (TB), which is the most common opportunistic infection in resource-limited countries and the leading cause of death among people with AIDS; can manifest with cough, fatigue, weight loss, fever, and night sweats; can occur in the lungs as well as other parts of the body, including the larynx, lymph nodes, brain, kidney, or bones
- Wasting syndrome, the involuntary loss of more than 10% of body muscle weight while having had diarrhea or weakness and fever for more than 30 days (CDC, 2019)

Other complications resulting from HIV infection can include:

- HIV-associated neurocognitive disorders (HAND) can range from mild symptoms of behavioral changes and reduced mental functioning to severe dementia causing weakness and inability to function.
- HIV-associated nephropathy (HIVAN) causes progressive acute renal failure due to direct HIV infection of renal epithelial cells and is closely associated with individuals of African descent (96% to 100%).
- Liver diseases are becoming increasingly significant sources of morbidity and mortality in HIV-infected patients, especially in those who also have hepatitis B or hepatitis C infection, and are the leading causes of non-AIDS-related death in those with HIV. (Sax & Wood, 2019; Mayo Clinic, 2020; Kasper & Sterling, 2017)



Less commonly, people with HIV/AIDS may develop the following **cancers**:

- Angiosarcoma, which begins in the lining of the blood vessels
- Anal cancer
- Liver cancer
- Mouth and throat cancers
- Lung cancer
- Testicular cancer
- Penile cancer
- Colorectal cancer
- Skin cancers, including basal cell carcinoma, squamous cell carcinoma, and melanoma (ASCO, 2019)

| CLINICAL STAGES OF HIV INFECTION | |
|---|---|
| Stage | Description |
| Stage 1: Acute HIV infection | <ul style="list-style-type: none"> • Occurs within 2–4 weeks after infection • Symptoms similar to the flu • Large amounts of virus produced • Seroconversion occurs with detectable antibodies within 3 weeks in majority of infected people • Body brings virus back down to low levels |
| Stage 2: Clinical latency (chronic HIV infection) | <ul style="list-style-type: none"> • Virus continues to multiply at very low levels • Asymptomatic or only mild symptoms • Can extend for 10 or 15 years • Associated with high levels of inflammation and comorbidities |
| Stage 3: AIDS | <ul style="list-style-type: none"> • Immune system is severely damaged • CD4⁺ cell count drops below 200 cells/mm³ • Development of opportunistic infections • Development of various types of cancers • Development of neurocognitive disorders • Development of nephropathy or liver diseases |



HIV INFECTION AMONG CHILDREN

Signs and symptoms of HIV among the pediatric population include:

- Unusually frequent occurrences of common childhood bacterial infections, such as otitis media, sinusitis, and pneumonia, which can be more severe than they are in immunologically healthy children
- Recurrent fungal infections, such as candidiasis, that do not respond to standard antifungal agents, suggesting lymphocytic dysfunction
- Recurrent or unusually severe viral infections, such as disseminated herpes simplex or zoster infection or cytomegalovirus retinitis, seen with moderate-to-severe cellular immune deficiency
- Growth failure, failure to thrive, or wasting, which may indicate HIV infection when other common metabolic and endocrine disorders do not appear to be the etiologies and may signify disease progression or underlying malnutrition
- Failure to attain typical milestones, suggesting developmental delay, particularly impairment in the development of expressive language, which may indicate HIV encephalopathy
- Loss of previously attained milestones, which may signify a CNS insult due to progressive HIV encephalopathy or opportunistic infection
- In older children, behavioral abnormalities (e.g., loss of concentration and memory), which may indicate HIV encephalopathy
(Rivera, 2020)

Patient Management and Care

Optimal care of people with HIV/AIDS includes antiviral therapies, health maintenance, and referral to support services in addition to an emphasis on prevention of transmission to uninfected partners.

HIV/AIDS SELF-MANAGEMENT

Those with HIV/AIDS require medical intervention as well as behavioral interventions. The Institute for Healthcare Improvement (IHI, 2020) notes that it is extremely important that patients with HIV/AIDS play a major role in managing their own condition. Each patient has unique desired outcomes and needs that require appropriate interventions. Each patient should be given basic information about HIV/AIDS and its treatment; assistance with self-management skill building; and ongoing support from the healthcare team, family, friends, and community.



The IHI recommends that self-management include:

- Collaborative goal setting
- Monitoring of symptoms
- Lifestyle modifications to improve overall health and well-being, such as healthy diet, regular exercise, and smoking cessation
- Strict adherence to prescribed dosage and frequency of antiretroviral medications
- Good communication with the healthcare team, family members, and others
- Involvement in ongoing problem-solving to overcome potential barriers

Patients with HIV are faced with many emotional and physical challenges because of the disease and warrant sensitivity by the healthcare team to assist in dealing with them. Evidence-based techniques should be utilized to emphasize patient empowerment, collaborative goal setting, and problem-solving to help reduce barriers to self-management activities.

CASE MANAGEMENT

Case management is a formal and professional service with the goal of linking people with chronic conditions such as HIV/AIDS and multiple service needs to primary medical healthcare, treatment, and social services, working to ensure that they receive timely, coordinated assistance to enhance their ability to function independently. The overall objectives of case management are to:

- Assess and determine each person's needs as well as related strengths and challenges
- Develop and implement a service plan that builds on those strengths and overcomes those challenges
- Assist patients to gain and maintain access and adherence to medical care and treatment
- Provide linkage to the continuum of resources and services aimed at assisting the patient to achieve and maintain stability across many life domains
- Promote knowledge and skill-building to enhance patients' confidence in caring for their disease and the many systems involved in their disease management
- Promote viral suppression for the purpose of reducing transmission of HIV

In Washington State, the Department of Health contracts with agencies to help connect people living with HIV with health services and resources (see "Resources" at the end of this course). Case managers assess the needs of the patient and their support system (including family and others) and arrange, coordinate, monitor, evaluate, and advocate for multiple services to meet the individual's needs and assist in addressing barriers while providing services that affirm the right



to privacy, confidentiality, respect, nondiscrimination, dignity and self-determination. Washington State DOH requires the following assessments to be completed:

- Primary medical care
- Oral health care
- Medical nutrition services
- Medication/adherence
- Home health care
- Entitlement program benefits
- Mental health services
- Substance abuse treatment
- Physical mobility/activities of daily living
- Housing
- Social/emotional support
- Employment/re-employment
- Medical Transportation needs
- Legal issues (HIV-related, justice involvement, immigration)
- Linguistic services
- Knowledge of HIV disease; prevention and transmission of HIV and STD
- Tobacco use
- Sexual and reproductive health
- Affected family/household members
- Food insecurity/meal programs
(WA DOH, 2017)

Antiretroviral Therapy (ART)

Antiretroviral therapy is the daily use of a combination of medications to treat HIV. ART does not cure HIV but transforms it into a manageable chronic condition and has led to dramatic decreases in morbidity and mortality. These medications:

- Reduce the amount of HIV in the body
- Reduce the risk of HIV transmission
- Prevent HIV from advancing to AIDS
- Protect the immune system



ART is recommended to be offered to **all HIV-infected patients**, including infants and children, including asymptomatic individuals, regardless of their immune status. For most patients, ART should be initiated soon after an initial diagnosis is made. Initiating ART at the first visit improves outcomes and adherence to care (USDHHS, 2020).

TYPES OF ANTIRETROVIRAL MEDICATIONS

There are seven drug classes of antiretroviral medications whose actions are based on the following seven-step life cycle of HIV, as described in the table below:

| CLASSES OF ANTIRETROVIRAL MEDICATIONS | |
|---|--|
| Step in HIV Life Cycle | Medications Acting on That Step |
| 1. Binding to receptors on the CD4 ⁺ T cell | CCRS antagonists, post-attachment inhibitors |
| 2. Fusion of the HIV and CD4 ⁺ T cell | Fusion inhibitors |
| 3. Reverse transcription to convert HIV RNA into HIV DNA, which migrates into the nucleus of the cell | Non-nucleoside reverse transcriptase inhibitors, nucleoside reverse transcriptase inhibitors |
| 4. Integration or insertion of HIV DNA into the CD4 ⁺ T cell DNA in the nucleus | Integrase inhibitors |
| 5. Replication by the HIV-infected cell DNA of HIV building blocks | No medications available that act on this step |
| 6. Assembly of new HIV building blocks into immature HIV | No medications available that act on this step |
| 7. Budding and maturation | Protease inhibitors |

For most people, an ART regimen consists of a combination of these various classes of medications.

| ART MEDICATIONS | |
|---|--|
| Drug Class | Generic Name (Brand Name) |
| Nucleoside reverse transcriptase inhibitors (NRTIs): inhibit transcription of viral RNA into DNA | <ul style="list-style-type: none"> • Abacavir (Ziagen) • Emtricitabine (Emtriva) • Lamivudine (Epivir) • Tenofovir disoproxil fumerate (Viread) • Zidovudine (Retrovir) |
| Non-nucleoside reverse transcriptase inhibitors (NNRTIs): inhibit transcription of viral RNA into DNA | <ul style="list-style-type: none"> • Doravirine (Pifeltro) • Efavirenz (Sustiva) • Etravirine (Intelence) • Nevirapine (Viramune, Viramune XR) • Rilpivirine (Edurant) |



| | |
|--|---|
| Protease inhibitors (PIs): inhibit the final step of budding and maturation | <ul style="list-style-type: none"> • Atazanavir (Reyataz) • Darunavir (Prezista) • Fosamprenavir (Lexiva) • Ritonavir (Norvir) • Saquinavir (Invirase) • Tipranavir (Aptivus) |
| Fusion inhibitors (FIs): inhibit the binding and fusion with a CD4 ⁺ cell | <ul style="list-style-type: none"> • Enfuvirtide (Fuzeon) |
| Integrase strand transfer inhibitors (INSTIs): inhibit the process of insertion of HIV DNA into the cell | <ul style="list-style-type: none"> • Dolutegravir (Tivicay) • Raltegravir (Isentress, Isentress HD) |
| Chemokine receptor antagonists (CCR5 antagonists): inhibit binding and fusion | <ul style="list-style-type: none"> • Maraviroc (Selzentry) |
| Entry inhibitors (CD4-directed post-attachment inhibitors): block HIV from attaching to the cell's coreceptors and entering the cell | <ul style="list-style-type: none"> • Ibalizumab-uiyk (Trogarzo) |
| (USDHHS, 2020; Fletcher, 2018) | |

These medications are also found in **combination forms** that include two or more of the HIV medications from one or more drug classes (e.g., Truvada, Combivir). In addition, there are pharmacokinetic enhancers (e.g., cobicistat/Tybost) that are used to increase the effectiveness of an HIV medication (Fletcher, 2018).

DOLUTEGRAVIR AND PREGNANCY

The CDC reports there is an increased risk of neural tube defects associated with exposure to antiretroviral regimens that include dolutegravir (DTG) at conception and should be avoided in nonpregnant women of childbearing potential who are sexually active or have been sexually assaulted and who are not using an effective birth control method, and in pregnant women early in pregnancy (Kuhar et al., 2018).

ANTIRETROVIRAL THERAPY SIDE EFFECTS

Today's HIV medications have fewer side effects, fewer people experience them, and they are less severe than in the past. Side effects can differ from person to person and depend on the type of medication. Some side effects can occur at the start of taking a medication and may last only a few days or weeks, while other side effects can begin later and last longer. Some of the more **common side effects of ART** include:

- Loss of appetite
- Nausea and vomiting



- Diarrhea
- Sleep disturbances
- Fatigue
- Headache
- Rash
- Dizziness
- Mood changes, depression and anxiety

Other **less common side effects** include:

- Hypersensitivity or allergic reactions
- Bleeding
- Bone loss
- Heart disease
- Lipodystrophy (loss or gain of fat in certain body areas)
- Hyperglycemia and diabetes
- Lactic acidosis
- Kidney, liver, or pancreas damage
- Numbness, burning, or pain in hands or feet due to neurologic problems

Having other medical conditions and taking other medications may increase the risk of side effects or cause drug interactions (USDHHS, 2020).

INITIATING ART

ART should be initiated as soon as possible after a diagnosis is made. But even initiation of ART in patients who already have an acute, AIDS-associated opportunistic infection or malignancy can improve immune function and potentially enhance the successful treatment of the infection.

Because of metabolic disorders that can occur in HIV-infected patients, lipid and fasting glucose or hemoglobin A1C levels should be drawn to establish a baseline prior to initiation of ART, with more frequent monitoring warranted in patients who have abnormal results.

It is extremely important to discuss strategies for optimizing engagement in care, continuous access to ART, and adherence to the prescribed regimen. The lack of adherence or intermittent access to ART can result in treatment failure and the emergence of drug-resistant mutations that can compromise future treatment options. Drug resistance occurs more frequently in those patients who initiate therapy later in the course of HIV infection than in those who begin ART earlier.



ADHERENCE ISSUES

Several clinical, behavioral, and social factors have been associated with poor adherence. These factors include untreated major psychiatric disorders, neurocognitive impairment, substance use disorder, unstable housing, unfavorable social circumstances, patient concerns about side effects, and poor adherence to clinic visits (USDHHS, 2020; Sax, 2018).

Because some people may fail to engage in care between their initial HIV diagnosis and the time ART is prescribed, it has been proposed that rapid ART initiation on the same day that the patient receives the HIV diagnosis may increase engagement in care and reduce the time during which the person awaiting test results can transmit HIV. Studies are underway as to whether this strategy improves long-term care engagement and virologic suppression (USDHHS, 2020).

Adolescents and Adherence

Compared to adults, adolescents have shown significantly lower levels of ART adherence and viral suppression, as well as high rates of viral rebound following initial viral suppression. Recently, more adolescents have been prescribed once-daily regimens, which has increased the rate of viral suppression but has no significant impact on adherence.

Because adolescents often have psychosocial and other barriers to adherence, these should be carefully assessed when considering ART initiation. To enhance the benefit of ART for adolescents, a multidisciplinary care team should provide psychosocial and adherence support to this population (USDHHS, 2020).

Persons Who Use Substances and Adherence

When choosing ART regimens for persons who use substances such as alcohol or other drugs, clinicians must consider the potential barriers to adherence, comorbidities that could impact care (such as advanced liver disease resulting from alcohol use or hepatitis), potential drug-drug interactions, and possible adverse events associated with medications. Adherence should be discussed during multiple nonjudgmental evaluations.

For such patients, it is recommended that simplified ART regimens be considered to aid in adherence to ART. Such regimens should be simple to take (such as a once-a-day, single-tablet regimen) and have the lowest possible risk of hepatotoxicity.

Adherence counseling should emphasize the benefits of ART use and that reducing substance use may improve adherence to ART (USDHHS, 2020).

ART MONITORING

Patients who are on antiretroviral therapy require ongoing monitoring to assess for adherence and therapeutic response and to identify adverse events related to the chronic administration of these toxic medications.



Following initiation of ART, a patient follow-up within one or two weeks assesses for adverse effects and adherence. Adherence may be difficult to assess, as patients are found to often exaggerate adherence. Present-day therapies, however, are more potent, have a higher genetic barrier to resistance, and a long serum half-life, which allows for less stringent adherence compared with earlier HIV medications. Once patients are clinically stable on their ART regimen, they should be reassessed every 3 to 6 months.

Routine **laboratory monitoring** includes:

- Complete blood count with differential
- Blood urea nitrogen and creatinine
- Liver function tests
- Lipid and glucose levels
- Urinalysis

HIV RNA testing is done two weeks following initiation and then every 4 to 8 weeks until the viral level falls below the limit of assay detection. Thereafter, viral load is measured every 3 to 6 months to confirm ongoing viral suppression. A CD4⁺ T cell count should be obtained 3 months after initiating ART and every 3 to 6 months thereafter (Sax, 2018).

ART COMPLICATIONS

Adverse effects have been reported with all antiretroviral drugs, but newer regimens are associated with few serious and intolerable effects. The focus of patient management today is on individualized therapy to avoid long-term adverse effects. There are several factors that predispose patients to adverse effects, including:

- Concomitant use of medications with overlapping and additive toxicities
- Comorbid conditions that increase the risk of or exacerbate adverse effects, such as alcoholism or viral hepatitis
- Borderline or mild renal dysfunction, which increases risk of nephrotoxicity
- Drug-drug interactions
- Genetic factors that predispose patients to hypersensitivity reaction, neuropsychiatric toxicity QT interval prolongation, or hyperbilirubinemia

ART-associated adverse effects range from acute and potentially life-threatening to chronic and insidious. **Common and/or serious adverse effects** include:

- Bleeding events
- Bone marrow suppression



- Calculi (nephrolithiasis and cholelithiasis)
- Cardiac events (e.g., myocardial infarction, stroke)
- Decreases in bone mineral density
- Diabetes mellitus/insulin resistance
- Dyslipidemia
- Gastrointestinal effects (e.g., nausea, diarrhea)
- Hepatic effects
- Hypersensitivity reaction
- Insulin resistance
- Icterus (jaundice)
- Lactic acidosis
- Lipodystrophy
- Neuropsychiatric issues (e.g., suicidal ideation, depression, ataxia, encephalopathy)
- Rash
- Renal effects
(USDHHS, 2020)

INDICATIONS FOR CHANGING MEDICATIONS

On occasion, assessments find that the current regimen requires changing. Common reasons for changing the regimen include:

- Failure of the medication(s) to suppress viral load
- Adverse effects related to toxicity
- Intolerance to the medications
- Inconvenience or preference, such as frequency of dosing, pill burden, requirements for co-administration with food
(Sax, 2018)

DRUG RESISTANCE

HIV drug resistance is caused by mutations to the virus's genetic structure that are slightly different from the original virus. As the virus multiplies in the body, it sometimes mutates. This can occur while a patient is taking HIV medications, leading to the development of drug-resistant HIV. Once drug resistance develops, the medications that controlled a patient's HIV are no longer effective. HIV treatment failure results, and the person can transmit the virus to another individual, who will then have reduced treatments available.



Drug-resistance testing is done after HIV is diagnosed but before the person starts taking HIV medications. Drug resistance testing results help determine which HIV medications are or are not to be included in the patient's first HIV regimen.

Once HIV treatment is started, a viral load test is used to monitor whether the medications are controlling the patient's HIV. If testing indicates that the person's HIV regimen is not effective, drug-resistance testing is repeated. These test results can identify whether drug resistance is the problem, and if so, they can be used to select a new regimen (USDHHS, 2020).

PAYING FOR HIV TREATMENT

Poverty limits access to healthcare, HIV and STD testing, and ART. Those who cannot afford the basic life necessities are more prone to enter circumstances that increase risk for HIV infection, such as exchange of sex for money or goods. Poverty is a key risk factor in becoming HIV infected, and individuals living below the poverty line are twice as likely to be HIV-infected as those in the same community who are living above the poverty line. HIV infection is also more common among those who are unemployed and have less than a high school education (Weibel, 2018; CDC, 2019m).

The average monthly wholesale price for the various HIV medications in the United States can range from \$54 to \$10,896, and the undiscounted lifetime medical costs, including ART medications, for an individual who acquires HIV at age 35 years is \$597,300, with 60% of the costs attributable to ART. Both private insurance programs and government programs offer coverage for HIV medical visits and antiviral medications; however, in some cases high deductibles and copayments make it difficult for individuals with low incomes to afford HIV treatment (USDHHS, 2020).

In Washington State, the **Early Intervention Program (EIP)** is the state's AIDS drug assistance program. EIP provides services to help eligible persons with HIV obtain the medications and assistance with insurance premium payments they need to improve and maintain their health. EIP offers the following services:

- Pays for certain HIV-related prescription medications and, for those with insurance, may pay for formulary-covered medications that insurance does not cover
- Helps patients get an identification number and a pharmacy card, which allows them to obtain medication from a contracting pharmacy, in most cases for a small monthly fee
- Provides assistance in obtaining insurance and Medicaid eligibility
- Provides assistance with insurance premium payments and co-pays on HIV-related medications and office services

(WA DOH, 2020c)

(See also "Resources" at the end of this course.)



ART AND ALTERNATIVE AND COMPLEMENTARY THERAPIES

In addition to the medical care patients with HIV infection receive from their providers, many use alternative and/or complementary therapies to improve their immune systems and to address symptoms and/or side effects from the medications taken to treat HIV. Many people report positive results from using alternative therapies; however, there is not enough research on their effectiveness. Some common therapies include:

- Yoga
- Massage
- Acupuncture
- Aromatherapy
- Relaxation techniques (e.g., meditation, visualization)
- Herbal medicines
(VA, 2019)

(Caution: St. John's wort interacts with the liver and can alter the action of some HIV-medications.)

Managing Coexisting Infections

Infections that are commonly found in patients who are HIV-positive include a number of other STIs, tuberculosis, and hepatitis. Coexisting infections may increase the risk of transmission of HIV and make its treatment more complex.

TUBERCULOSIS

Tuberculosis (TB) is an opportunistic infection that often occurs in people with weakened immune systems. When HIV weakens the immune system, the risk for contracting tuberculosis increases. Worldwide, TB is one of the leading causes of death among people with HIV. In the United States, where HIV medications are widely used, fewer people with HIV contract tuberculosis. TB, however, still affects many people in this country, especially those who were born outside the United States.

Tuberculosis is an airborne disease that usually affects the lungs, but the bacteria can attack any part of the body and, if untreated, cause death. Once in the body, the bacteria remain inactive or become active. Inactive TB is referred to as “latent” and TB disease as “active.”

In those with **latent TB**, the bacteria do not grow and do not result in any symptoms. During the latent period, TB cannot be transmitted to others. Latent TB is more likely to advance to active tuberculosis in people with HIV and may cause HIV to worsen. With **active TB disease**, the bacteria are growing and lead to having symptoms. It is during this period that bacteria can be spread to others.



The **clinical manifestations** of tuberculosis in HIV-infected persons are influenced by the degree of immunosuppression and can include:

- Persistent cough with hemoptysis
- Chest pain
- Fatigue
- Loss of appetite
- Weight loss
- Fever
- Night sweats

HIV-infected patients with advanced immunosuppression are at increased risk for extra-pulmonary TB and disseminated TB, with virtually any site in the body being involved. Disseminated TB can present as an acute fulminant illness (TB septic shock) in patients who are also infected with HIV, which can result in death. In contrast, active TB may be subclinical in some patients with advanced immunosuppression with no symptoms and a normal chest X-ray (Libman & Pollack, 2020; Pozniak, 2019).

Patients with HIV/TB coinfection are treated for both diseases. Studies have shown that starting antiretroviral therapy early (e.g., within 4 weeks after the start of TB treatment) reduces progression to AIDS and death. Some patients with coexisting HIV and TB infection, however, may develop a paradoxical response (immune reconstitution inflammatory syndrome [IRIS]) when starting antiretroviral therapy. This response has been attributed to a stronger immune response to the tuberculosis bacteria, resulting in fever, worsening pulmonary infiltrates, and lymphadenopathy (Herchline, 2020).

TUBERCULOSIS TESTING

All patients with HIV should be screened for tuberculosis via PPD testing or interferon gamma testing unless they have a prior documented history of TB or a positive screening test. A chest X-ray to rule out active TB should be performed in patients with a positive screening test and in those who are close contacts of the person with infectious TB (regardless of the results of the screening test). Both groups should be treated for latent tuberculosis once active disease has been excluded (Libman & Pollack, 2020; USDHHS, 2020).

Tuberculosis Treatment

In general, tuberculosis treatment is the same for people with and without HIV. TB medications are used to prevent latent TB from advancing to active TB and to treat TB diseases. The choice of TB medicines and the length of treatment will depend on whether the patient has latent or active TB. Taking certain HIV and TB medicines at the same time can increase the risk of drug-drug interactions and side effects (Libman & Pollack, 2020; USDHHS, 2020).



Initial treatment of TB begins with a four-drug regimen of isoniazid, rifampin, pyrazinamide, and either ethambutol or streptomycin, and once the TB isolate is known to be fully susceptible, ethambutol or streptomycin are discontinued.

HIV-infected patients with coexisting tuberculosis should start treatment for TB as soon as possible, finish the medication regimen, and take the drugs exactly as prescribed. Drug-resistant TB can develop when a patient is not treated with the right drugs or does not take the drugs the right way. TB that is resistant to drugs is harder to treat and can lead to death.

Healthcare providers should prescribe the shortest regimens whenever possible, as patients are more likely to finish shorter treatment regimens. The most effective way to ensure that medications are being taken as prescribed is through the use of patient-centered care, which may include supervision known as “directly observed therapy” (DOT) (CDC, 2020i).

VIRAL HEPATITIS

Because hepatitis B and C infections are transmitted in the same ways as HIV, people with HIV infection in the United States are often also affected by chronic viral hepatitis. About 1 in 10 people living with HIV are coinfecting with hepatitis B virus (HBV), and about 1 in 4 are coinfecting with hepatitis C virus (HCV). In the United States, increases in injection behaviors have resulted in the rise of hepatitis infection and more individuals at risk for HIV/HCV coinfection.

Hepatitis progresses more quickly in those infected with HIV, causing more liver-related health problems. It is a major cause of non-AIDS-related deaths among people living with HIV. There are conflicting findings, however, as to whether HCV infection has a deleterious effect on the course of HIV infection. HCV replication may result in generalized immune activation, which is associated with shorter survival in patients with HIV.

Hepatitis B and C are both spread:

- By sharing needles, syringes, and other injection equipment
- Sexually
 - HBV is more likely than HCV to be sexually transmitted.
 - Sexual transmission of HCV is most likely to happen among gay and bisexual men who are living with HIV.
- Mother to child
 - HIC/HCV coinfection increases the risk of passing on hepatitis C to the baby. (HIV.gov, 2019b; Libman & Pollack, 2020)



HEPATITIS TESTING

All patients who are first diagnosed with HIV should be screened for hepatitis A, B, and C infection. People living with HIV who have ongoing risk factors for hepatitis B or C infections should be tested annually. The following tests are recommended:

- Hepatitis A virus (HAV) IgG antibody: A positive result indicates a current or past infection.
- Hepatitis B surface antigen (HBsAG): A positive or reactive test result means the person is infected with HBV.
- Hepatitis B surface antibody (HBsAb): A positive or reactive test result indicates the person is protected against HBV either due to receiving the hepatitis B vaccine or by having successfully recovered from a past hepatitis B infection.
- Antibody to hepatitis B core antigen (Anti-HBc or HBcAb): A positive or reactive test result indicates a past or current hepatitis B infection.
- Hepatitis C antibody: A positive or reactive test result should be followed by confirmatory HCV RNA testing to establish the presence of active infection; in some cases, initial screening with HCV RNA may be indicated.
(Hepatitis B Foundation, 2020; CDC, 2020j)

Hepatitis Treatment

HIV/HBV and HIV/HCV coinfections can be effectively treated in most people, but treatment can be complex. When patients with concomitant HCV are initiated on ART, close laboratory follow-up is necessary, and patients should be educated about symptoms that may suggest liver injury such as jaundice or darkening of urine, right upper quadrant pain, nausea, anorexia, pruritus, and fatigue.

Hepatitis B treatment can delay or limit liver damage by suppressing the virus. Like treatment for HIV, hepatitis B treatment may need to be taken for the patient's lifetime.

Newer treatments for hepatitis C approved in recent years have few side effects and do not require injection. These treatments are able to cure more than 90% of people, including those living with HIV, in 12 to 24 weeks (HIV.gov 2019b; Libman & Pollack, 2020).

Hepatitis Prevention

Hepatitis B vaccine is the best way to prevent infection. People with HIV who do not have active HBV infection should be vaccinated. Currently there is no vaccine for HCV, and the best way to prevent it is by always using new sterile needles or syringes for



injecting drugs and to avoid reuse or sharing of needles or other drug preparation equipment (HIV.gov, 2019b).

HIV AND SEXUALLY TRANSMITTED DISEASES

HIV is an STD. Chlamydia, gonorrhea, human papillomavirus (HPV) infection, and syphilis are some examples of other STDs. Having an STD can make it easier to become infected with HIV because STDs can result in sores or breaks in the skin, which then makes it easier for HIV to enter the body. Having HIV and another STD may increase the risk of HIV transmission.

STDs caused by bacteria or parasites can be effectively cured with medications, but there is no cure for those STDs caused by viruses. Treatment, however, can relieve or eliminate symptoms and help keep the STD under control. Treatment also reduces the risk of transmitting the STD to a partner (NIH, 2020b).

Initial Evaluation of HIV-Infected Patients

Initial evaluation of the patient with HIV includes an assessment of the stage of HIV disease, risk for coinfections, identification of comorbidities associated with HIV infection or treatment, and the selection of an antiretroviral regimen.

MEDICAL HISTORY

A comprehensive medical history is obtained on initial visit with a patient who has been diagnosed with HIV and includes:

History of Infection

- Risk behaviors for HIV infection and approximate date of onset
- History of opportunistic infections
- Knowledge of initial and recent CD4⁺ T cell counts and viral load (RNA) results
- Medical records obtained to confirm treatment history and antiretroviral drug resistance

Medical History

- Coinfections with hepatitis B, hepatitis C, or tuberculosis
- History of cardiovascular risk factors or diseases
 - Hypertension
 - Diabetes mellitus
 - Dyslipidemia
- History of sexually transmitted infections
- Gynecologic and obstetrical history



- Malignancies
- Psychiatric history, particularly depression
- Other comorbidities, such as:
 - Chronic renal insufficiency
 - Peripheral neuropathy
 - Metabolic bone disease
- Medications and allergies
 - Antiretroviral drug history
- Immunization history
 - Pneumococcal
 - Tetanus toxoid
 - Hepatitis A and B
- Social history
 - Ongoing risk factors for HIV transmission
 - Other exposures that may increase risk of other infections or comorbidities
 - Substance use
 - Employment, housing, and insurance status
 - Travel history
 - Smoking history
 - Sexual history
 - Condom use
 - Contraceptive use
- Family medical history

Review of Systems (to assess for constitutional symptoms)

- Fevers
- Night sweats
- Weight loss
- Localized complaints
- HIV-related common symptoms
 - New visual floaters
 - Change in vision



- Candidiasis (thrush)
- Dysphagia (difficulty swallowing)
- Odynophagia (painful swallowing)
- Cough
- Shortness of breath
- Diarrhea
- Skin rash
- Headache
- Inability to concentrate
- Muscle weakness or paresthesia

(Libman & Pollack, 2020)

PHYSICAL EXAMINATION

A complete physical examination is carried out on initial evaluation, including an assessment for findings that are common in the patient with HIV, particularly those with advanced immunosuppression.

- Skin
 - Seborrheic dermatitis
 - Eosinophilic folliculitis
 - Psoriasis
 - Dermatophytosis (superficial fungal disease)
 - Molluscum contagiosum (poxvirus skin infection)
 - Herpes simplex
 - Herpes zoster (shingles)
 - Kaposi's sarcoma
- Body fat and body fat distribution
 - Lipodystrophy
- Oral mucosa
 - Candidiasis
 - Oral hairy leukoplakia
 - Herpetiform lesions (canker sores)
 - Herpes simplex (cold sores)
- Anogenital for evidence of STIs



- Neurological exam, including assessment of cognitive function
- Signs and symptoms of pneumonia
 - Fever
 - Cough
 - Dyspnea
 - Tachypnea
 - Digital clubbing
- Generalized cervical, axillary, or inguinal lymphadenopathy (Libman & Pollack, 2020; Rivera, 2020)

LABORATORY TESTING

Initial laboratory testing includes an assessment of the patient's HIV status and baseline testing for organ function and potential coinfections.

HIV-specific initial laboratory testing includes:

- HIV serology
- CD4+ T cell count and percentage
- Viral load (RNA)
- Drug resistance testing

General blood and urine testing should include:

- Complete blood count and differential
- Renal function tests
- Hepatic function tests
- Glucose and lipid profile
- Urine pregnancy test

Screening for coinfections includes:

- Viral hepatitis
- Tuberculosis with follow-up chest X-ray for positive screening results
- STDs
 - Syphilis
 - Gonorrhea



- Chlamydia
- Trichomonas in women
- Latent cytomegalovirus
- Latent varicella-zoster virus
- Latent toxoplasma
- Screening for HIV-associated neoplasia
 - Cervical cancer
 - Anal cancer
- Bone marrow density testing for postmenopausal women and men aged 50 years and older
- G6PD screening for glucose-6-phosphate dehydrogenase deficiency for patients of African, Asian, or Mediterranean descent, (as certain drugs used in treatments of patients with HIV can precipitate hemolysis in those with deficiency)

Additional testing is done to evaluate for potential adverse reactions and drug activity prior to selection of appropriate antiretroviral agents (Libman & Pollack, 2020).

Ongoing Management of HIV-Infected Patients

Because of antiretroviral therapy, opportunistic infections have become less common, and patients with HIV now have a nearly normal life expectancy. The majority of infected patients die from non-AIDS-related conditions, including cardiovascular disease, renal disease, liver disease, malignancies, and other age-related illnesses. Many of these begin to develop at an earlier age than in uninfected people. In addition, there is a range of long-term complications that might occur for those individuals who in the past were treated with the older antiretroviral drugs.

It is the role of primary healthcare providers to oversee and coordinate the multidisciplinary services necessary for the best health outcomes for HIV-infected patients. Following initial evaluation, follow-up visits depend on the patient's stage of HIV infection, the type of antiretroviral therapy the patient is taking, other comorbidities, and complications.

MONITORING FOR HEMATOLOGIC, RENAL, AND HEPATITIS TOXICITY

Because HIV is associated either directly or secondarily with comorbid conditions such as bone marrow abnormalities and kidney and liver function problems, patients require monitoring for hematologic, renal, and hepatitis toxicity. Monitoring may include:

- Complete blood count with differential every 3 to 6 months
- Basic chemistry, including BUN and creatinine 2 to 8 weeks following initiation of ART and then every 3 to 6 months



- Urinalysis following initiation of ART or change in medication, and annually following that
- Alanine (ALT), aspartate aminotransferases (AST) and total bilirubin 2 to 8 weeks following initiation of ART and then every 3 to 6 months

MANAGEMENT OF CARDIOVASCULAR RISK AND DISEASE

Following baseline screening, dyslipidemia screening is done:

- Annually if the patient is not on ART
- Prior to initiating ART
- Within 2 to 3 months following initiation of a new ART regimen and every 6 to 12 months thereafter

Preventive care involves encouraging lifestyle changes, changing ART medication regimen, or treating with statin drugs.

GLUCOSE INTOLERANCE AND DIABETES MELLITUS

Following baseline screening, monitoring of blood glucose or A1C is performed:

- Annually if not on ART
- Prior to initiating ART
- Within 1 to 3 months after starting a new ART regimen
- Every 3 to 6 months if abnormal
- If normal, every 12 months while on ART

Weight loss is encouraged through diet, exercise, and treatment with oral hypoglycemic drugs and/or insulin if necessary.

NEUROPSYCHIATRIC DISORDERS

Both psychiatric and neurocognitive problems are common among this population, and certain antiretroviral agents are associated with problematic neuropsychiatric effects if the patient has pre-existing psychiatric disorders. Patients are monitored for:

- Symptoms and signs of depression and anxiety
- Substance use
- HIV-associated neurocognitive disorder (HAND)



CHRONIC PAIN

Chronic pain is quite common among those with HIV infection, primarily pain that is neuropathic in origin. Chronic pain in individuals with HIV is strongly associated with mental illness, particularly depression and substance use. The approach to management of chronic pain begins with psychoeducation about the nature of chronic pain, and treatment options should not include the use of opioids. Instead, other modalities are employed, such as physical therapy, cognitive behavioral therapy, or supportive psychotherapy.

FATIGUE

Fatigue is a common, often persistent symptom among individuals with HIV infection. Physiological factors associated with fatigue or the severity of fatigue in HIV-infected patients include liver disease, hypothyroidism, hypogonadism, anemia, and duration of HIV infection. Fatigue interferes with physical, social, and mental functioning, and may also interfere with adherence to ART.

Complaints of fatigue require searching for medical or psychiatric causes (especially hypogonadism), medication review, inquiry into the patient's sleep patterns, and treatment of the underlying cause, when found. Testosterone may help hypogonadal men with fatigue, and moderate exercise is an option for others.

PREVENTION AND LIFESTYLE CHANGES

At each visit patients should be involved in a discussion of sexual practices and prevention counseling. Annual screening for STDs is recommended for patients who are at continued risk and more often for those who are engaged in high-risk behaviors. Smoking has been found to be quite common among patients with HIV, and smoking cessation services should be offered and encouraged.

Immunizations are an important part of preventive care for those with HIV. Inactivated viruses are recommended, and certain live vaccines are considered safe. Vaccines for which HIV is an indication include:

- Pneumococcal vaccine
 - Hepatitis A
 - Hepatitis B
 - Meningococcal vaccination
 - Others if specifically indicated, including:
 - *Haemophilus influenzae b*
 - Varicella
 - Inactivated zoster vaccine for ages 50 or older
- (Hibberd, 2020; Pollack & Libman, 2019; Aberg & Cespedes, 2020)



LEGAL AND ETHICAL ISSUES

Legal standards are set forth in the form of written laws passed by governments. Ethical considerations are based on the principles of right and wrong and guide how laws can be obeyed. These issues include confidentiality and anonymity, informed consent, criminalization laws, disability and discrimination, and HIV reporting requirements.

Confidentiality

Washington law provides severe penalties for anyone who discloses confidential HIV information. Accidental information breaches must be immediately reported to and investigated by the Washington State Department of Health (WA DOH, 2020).

In Washington State, people who perform HIV counseling and testing in public health departments or health districts sign strict confidentiality agreements that regulate the personal information that may be revealed in counseling and testing sessions and test results.

CONFIDENTIAL TESTING

Confidential testing means that the person's name and other identifying information will be attached to the test results, will go into the medical record, and may be shared with the person's healthcare providers and health insurance company. Otherwise, the test results are protected by state and federal privacy laws and can only be released with the individual's permission.

With confidential testing, when an individual tests positive for HIV, the test result and the person's name are reported to the state or local health department to help public health officials better estimate rates of HIV infection in the state. The state health department then removes all personal information about the person and shares the remaining nonidentifying information with the CDC. The CDC does not share this information with anyone else, including insurance companies (HIV.gov, 2018).

In Washington State the following entities are permitted access to HIV test results:

- The person tested
- A person with a release of information from the tested person
- Health officials, in accordance with reporting requirements for diagnosed sexually transmitted diseases
- Facilities that collect blood, tissue, or semen
- Health officials, first responders, or victims of sexual assault who petition the court to order testing
- A person allowed access to information by a court order
- Local law enforcement if health officers have exhausted procedures to stop behaviors that present a danger to the health of the public



- Payers of health claims
- Agencies or guardians responsible for children under the age of 14 with an STD (King Co., 2017)

ANONYMOUS TESTING

Anonymous testing means that nothing ties the test results to the person. When the person takes an anonymous HIV test, they receive a unique identifier that allows the person to obtain the test results. In Washington State, any person authorized to order or prescribe an HIV test for another individual may offer anonymous HIV testing without restriction, however anonymous tests are not available at every location that provides testing (HIV.gov, 2018; WSL, 2018).

PARTNER NOTIFICATION AND SEXUAL ASSAULT CONFIDENTIALITY

In Washington State partner notification is required, and counseling services are provided to HIV-positive people and their sex and/or injection equipment-sharing partners. This service is provided using a variety of strategies to maintain the confidentiality of both the HIV-infected individual and the partners.

HIV-infected people are contacted by either a local health officer or the principal healthcare provider to provide post-test counseling about the importance of notification. They can notify their partners themselves or have public health staff notify their partners. When public health staff notify partners, they do not identify the person who tested positive (WSL, 2019).

Informed Consent

Each state has its own laws regarding informed consent. In Washington State, informed consent specific for HIV testing is not required, making the level of consent the same as it is for testing for other serious diseases. Providers can routinely test for HIV without having to create extra documentation. Washington State also requires all patient information to be kept strictly confidential, and records must be managed and stored in a secure manner (RCW 70.02 and RCW 70.24) (CHLP, 2020a).

MINORS

Minors are persons who do not have the legal rights and responsibilities of an adult. Minors' ability to access HIV testing and pre- and postexposure prophylaxis treatment without parental or guardian consent varies throughout the United States. In all 50 states and the District of Columbia, the CDC finds there is no jurisdiction that explicitly prohibits minors' access to PrEP without parental/guardian consent. In Washington State minors age 14 or older can independently access STD diagnosis and information regarding prevention and both pre- and post exposure prophylaxis treatment (CDC, 2018b; WA DOH, 2018).



HIV Criminalization Laws

In the United States, close to 30 states support laws that prosecute people living with HIV. Some of these laws criminalize HIV transmission if a person does not disclose their HIV-positive status before sex, whether or not the person transmits the virus to another. The maximum sentence for violating an HIV-specific statute is a matter of state law, and some states have a maximum sentence length as high as life in prison (CDC, 2019n, Weibel, 2018).

In 2020, Washington State passed a bill that reformed the state's HIV criminalization law. The bill reduces penalties for HIV exposure from a felony to a misdemeanor that requires specific intent to transmit HIV and for transmission to occur. The bill also removes the requirement for sex offender registration. Before this reform, the law carried a felony conviction (punishable by up to life in prison) for exposure, which required neither intent to transmit nor that transmission occurred.

If a person misrepresents their status to a sexual partner, intends to transmit, and transmission occurs, they are subject to the higher penalty level of gross misdemeanor. This reform retains the felony penalty for people living with HIV who are convicted of transmitting HIV to a child or vulnerable adult. Such a conviction still requires registration as a sex offender (CHLP, 2020b).

Disability and Discrimination

HIV infection and AIDS are medical disabilities, and people living with HIV or AIDS are protected under the federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 against discrimination by:

- Employers
- Places of accommodation (includes businesses that are open to the public)
- State and local government entities

Section 504 prohibits health and human service programs or organizations that receive federal funds or assistance from discriminating against HIV/AIDS patients. These entities may include:

- Hospitals
- Clinics
- Social services agencies
- Drug treatment centers
- Nursing homes
- Doctors' offices
- Dentists' offices
- Daycare providers



- Public pools
- Fitness gyms

The federal Fair Housing Act prohibits discrimination against people living with HIV/AIDS in many different types of dwellings (HIV.gov, 2017).

The Washington State Law Against Discrimination (RCW 49.60) prohibits both public and private employers with eight or more employees, including employment agencies and labor unions, from discriminating against those with either HIV or hepatitis C infection. Nonprofit religious or sectarian organizations are exempt from the law's coverage (Williams, 2018).

Employees who feel they are being discriminated against 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 file an internal grievance. If these remedies do not work, the employee should contact the federal Office for Civil Rights, U.S. Department of Health and Human Services, or the Washington State Human Rights Commission. An aggrieved person can also file directly in state court; a complaint must be filed within 180 days of the alleged discriminatory incident.

HIV Reporting Requirements

Washington State requires all HIV and AIDS cases to be reported. Providers who diagnose a person must submit a confidential case report to the local health department within three days. 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 healthcare provider must then report the case to the health department.

If a person who tests positive for HIV infection fails to return for test results, the healthcare professional must provide the local health officer with the name of the individual and any information that could help locate them. The health officer will follow up to assure that post-test counseling and partner notification assistance are provided.

Laboratories are required to report each test result, including:

- Tests confirming HIV infection
- HIV viral load results, both detectable and undetectable
- T cell lymphocyte results of any value

For each result, the lab must provide the date of collection, name of the requesting healthcare provider, and patient information.

Providers conducting clinical HIV research are exempt from reporting the identity of HIV-positive individuals participating in research projects (WSL, 2019).



PSYCHOSOCIAL AND MENTAL HEALTH ISSUES

Patients with all stages of HIV disease have complex problems that include overlapping medical, psychiatric, and psychosocial comorbidities. There is a great deal of evidence that impairment in mental health leads to negative health outcomes among people living with HIV/AIDS. Mental disorders can be a substantial barrier to adequate engagement and retention in HIV primary care. Many factors contribute to the high comorbidity of HIV and mental health conditions, including significant structural, social, and biological challenges to accessing and adhering to HIV prevention and treatment modalities (Remien, 2018).

Identifying mental health issues among people living with HIV is critical; however, far too often they go undiagnosed and untreated. People may not want to reveal their psychological state to healthcare workers for fear of stigma and discrimination. Healthcare workers may not have the skills or training to detect psychological symptoms and may fail to take the necessary action for further assessment, management, and referral if symptoms are present. Psychosocial concerns should be assessed on a regular basis to identify stressors that may impact patient adherence to medical visits and medications (MHA, 2020).

Psychosocial Impacts

There are a number of significant negative effects on individuals who have been diagnosed with HIV that involve the interrelation between their mental and emotional well-being and their social environment.

ADJUSTING TO THE DIAGNOSIS

Often, the first task for an HIV clinical care team is helping patients and family members cope with the psychosocial impact of the diagnosis. Being diagnosed with any chronic health condition can be extremely stressful, and it is normal to have an emotional reaction when given the diagnosis of HIV. However, when stress becomes prolonged and is not treated, more serious mental health conditions may develop.

There are many stressors that may arise when someone receives a diagnosis of HIV. These might include having trouble getting the services needed, managing HIV medications, disclosing the HIV-positive diagnosis to others, losing contact with family or friends who fail to understand the realities of the disease, and dealing with the stigma that has long been associated with HIV/AIDS (MHA, 2020).

With the advent of highly active antiretroviral therapy, HIV infection is now manageable as a chronic disease in patients who have access to medication and who achieve durable virologic suppression, but mortality remains approximately six times higher in persons with HIV than the general population, and receiving a diagnosis of HIV means accepting the potential for a shorter lifespan (Rathbun, 2019).



FEAR OF DISCLOSURE

At some point people living with HIV must decide whether and to whom to disclose their HIV status. In Washington State, a partner must be notified either by the individual or by public health. Most people disclose their status to their spouse or partner within a short time following diagnosis, and this can strain the relationship. The negative effects may be mitigated by professional couples counseling.

There are also concerns that stigma and fear may deter an individual's dating partner from proceeding further in the relationship, and disclosing to family and friends brings about the potential stress of becoming the subject of gossip among other family members, friends, and acquaintances (CDC, 2020k).

LOSSES AND UNRESOLVED PAST GRIEF ISSUES

There are people who have experienced the loss of many friends from their social network as a result of AIDS, particularly in the earlier days of the epidemic, and grieving may have become an ongoing experience. Today, with antiretroviral drugs, there is now a low rate of progression from HIV to AIDS, and HIV-positive people are no longer primarily dying of AIDS-defining illness.

Unacknowledged grief of same sex partners, lovers, and friends may be an issue if an individual's relationship is not recognized as legitimate beyond a small circle of friends. Today, in the United States, community attitudes have changed, and with society's wider acceptance of homosexuality, more education about HIV, and the legalization of same-sex marriage, this is gradually lessening.

Another common issue an HIV-infected person may have is grief over the loss of a sense of the future. For some who, in the past, were told they would die, there is a sense of sorrow for having not pursued interests because of the perception of a shortened life-expectancy. This can leave the person with feelings of anger and bitterness (GriefLink, 2019).

STIGMA AND DISCRIMINATION

Around the world and in many areas of the United States, homosexuality and use of illegal drugs, both risk factors for HIV infection, continue to be stigmatized. Some hold false beliefs that contribute to stigma, which can include:

- HIV and AIDS are always associated with death.
- HIV is associated with behaviors people disapprove of.
- HIV is only transmitted through sex, a taboo in some cultural groups.
- HIV is the result of irresponsibility or moral faults, and punishment is deserved. (Avert, 2019b)



HIV stigma drives discrimination in all areas of society, including healthcare, education, the workplace, the justice system, families, and communities. Although there have been significant improvements, there continues to be a risk that people who are infected with HIV are more likely to feel stigmatized and isolated. Fearing that their diagnosis will result in the judgmental behaviors of others, rejection, and abandonment, many may hide the true cause of their illness, informing only a few of their family and friends, and sometimes informing no one. This isolation and lack of support increases their emotional and spiritual pain.

HIV-related stigma is often connected with other sources of stigma, including those associated with mental health and/or substance use disorders. For HIV-infected persons with comorbid mental health disorders, there is a double burden of stigma (Mahlaser, 2020). Social stigma associated with both homosexuality and HIV is identified as a stressor that may contribute to a higher suicide rate in HIV-positive individuals (GriefLink, 2019).

Internalized stigma (self-stigma) is as damaging to the mental well-being of people with HIV as stigma from others. Negative self-judgment results in shame, feelings of worthlessness, and blame, affecting the person's ability to live positively and limiting quality of life (Avert, 2019).

END OF LIFE ISSUES

Because of the advancement of effective antiretroviral therapy, the increased life expectancy for persons diagnosed with HIV is contributing to a rapidly aging HIV-infected population with a high prevalence of comorbidities.

For patients with HIV/AIDS who are approaching the end of life, creating advance directives that outline their choices and preferences for care can be difficult. One of the most important decisions is whether and when to discontinue ART. This is particularly difficult and stressful for both the patient and family because it may be seen as “giving up.” With continued treatment the patient may choose palliative care, and if treatment is to be discontinued, the choice for hospice care during the last six months of life recognizes that treatment is no longer of benefit and the disease will run its course (Merlin et al., 2019).

Neuropsychiatric Effects of HIV/AIDS

The term *neuropsychiatric* encompasses a broad range of medical conditions that involve both neurology and psychiatry. There is a high prevalence of neuropsychiatric disorders among those infected with HIV, which may be related to the direct effect of the virus, preexisting psychiatric conditions, personality vulnerabilities, affective disorders, addictions, and responses to social isolation.

HIV itself increases the risk of neuropsychiatric conditions because it causes major inflammation within the body. The entire brain, including the lining, becomes inflamed as a result of the body's immune response, causing irritation and swelling of brain tissue and/or blood vessels, resulting in nontraumatic brain damage over the long term. Having brain damage such as this is a known risk factor for the development of a neuropsychiatric condition.



Because HIV affects the immune system, the person also has an increased risk for other infections that can affect the brain and nervous system and lead to changes in behavior and functioning.

Starting antiretroviral therapy can affect a person's mental health in different ways. Some antiretroviral medications have been known to cause symptoms of depression, anxiety, and sleep disturbance and may make some mental health conditions worse (MHA, 2020; Pieper & Teisman, 2020).

DEPRESSION

Clinical depression is the most commonly known and reported psychiatric disorder among those with HIV, affecting 22% of the population. HIV increases the risk of developing depression through direct damage to subcortical brain areas, chronic stress, worsening social isolation, and intense demoralization. Patients with symptomatic HIV disease are significantly more likely to experience a major depressive episode than those with asymptomatic disease.

Critical "crisis points" are common entry points for the development of depression in HIV-infected people and can include:

- Initial HIV diagnosis
- Disclosing HIV status
- Introduction of new medications
- Recognition of new symptoms and disease progression
- Hospitalization
- Physical illness
- Death of a significant other
- AIDS diagnosis
- Returning to work, going back to school
- Major life events such as relocation, change of jobs, loss of a job, pregnancy or giving birth, end of a relationship
- Making end-of-life and permanent planning decisions
(Lieber, 2020)

A patient with depression may present with the following symptoms:

- Depressed mood
- Loss of pleasure from activities
- Anorexia
- Morning insomnia or hypersomnia



- Difficulty concentrating
- Thoughts of suicide

Depression is common among women with HIV and may be a contributing factor to negative outcomes in this population. It has been found that each additional 365 days of depressive symptoms were associated with a 72% increase in the mortality risk (Aberg & Cespedes, 2020).

Depression is an important factor in adhering to ART, with a high probability that patients with depression are more likely not to stay actively engaged in care and to miss at least one dose of their ART regimen. Treatment for depression helps patients better manage both diseases, enhancing survival rates and quality of life (Mahlasera, 2020).

Depression is a problem in the lives of adolescents and young people living with HIV related to additional challenges such as accessing mental health services, the high cost of medications, disease progression, difficult life events, and fear of parental rejection (Mahlasera, 2020; GriefLink, 2019).

ANXIETY

Anxiety disorders are estimated to be present in up to 40% of HIV-positive patients, but the prevalence of anxiety symptoms without a diagnosed disorder is even higher. Symptoms are twice as common in women as in men and can be prominent when patients are diagnosed with HIV and in response to progression of the illness. Anxiety can increase the likelihood of HIV risk behaviors and ART nonadherence.

The most common anxiety disorders in HIV patients are generalized anxiety disorder and panic disorder. Up to 50% of patients with anxiety disorders have comorbid depression, and alcohol use disorder is also common, especially among women (Hsu et al., 2018).

POSTTRAUMATIC STRESS DISORDER (PTSD)

Patients with HIV infection have a higher exposure to traumatic events than the general population and as a result are at high risk for the development of PTSD. PTSD exacerbates HIV risk behaviors and negatively impacts health outcomes. PTSD resulting from early trauma predisposes individuals to engage in sex or drug behaviors that increase the risk of HIV infection. PTSD often coexists with depression and substance use, both of which are risk factors for HIV (Pieper & Teisman, 2020).

AIDS MANIA

Mania in HIV-infected patients is a syndrome occurring in the late stage of the infection that has been associated with HIV dementia and rapid deterioration. AIDS mania occurs in the absence of a previous family or personal history of bipolar disorder and is characterized by typical manic behaviors, auditory or visual hallucinations and paranoia, and cognitive changes. AIDS mania is associated more with irritability rather than the euphoria associated with bipolar disorder and is also far more chronic.



AIDS mania presents with impulsivity, impaired judgment, and risk taking, all of which can lead to behavior that accelerates HIV disease progression.

In contrast to bipolar mania, AIDS mania usually does not remit if left untreated. The prevalence of AIDS mania has been significantly reduced due to the onset of potent ART but remains a problem among untreated and undertreated individuals (Pieper & Teisman, 2020).

HIV-ASSOCIATED NEUROCOGNITIVE DISORDERS (HAND)

Changes in attention, memory, concentration, and motor skills are common among HIV-infected individuals. When such changes are clearly attributable to HIV infection, they are classified as HIV-associated neurocognitive disorders. HIV-associated neurocognitive disorders have not declined significantly with the advent of combined ART, but milder cognitive deficits without alternative explanation remain common in the setting of HIV infection.

HAND is characterized by the subacute onset of cognitive deficits, central motor abnormalities, and behavioral changes. Cognitive decline is the essential feature in HAND, but many patients have mild deficits that are detectable only by neuropsychological testing and do not reach the criteria necessary for a diagnosis of dementia, which includes the inability to perform the usual activities of daily living.

Depending on the severity and impact on the person's daily functioning, cognitive deficits can be classified into three conditions:

- Asymptomatic neurocognitive impairment (ANI)
- HIV-associated mild neurocognitive disorder (MND)
- HIV-associated dementia (HAD)
(Price, 2017; Johns Hopkins, 2020; Peters & Triesman, 2017)

Although it varies by stage of disease, at least mild HAND occurs in one third to one half of HIV-infected individuals, and 5% of individuals with HIV have signs and symptoms that meet criteria for serious HAND.

Risk factors for HAD include high serum or cerebrospinal fluid HIV viral load, low education level, advanced age, anemia, illicit drug use, and female gender. The dementia is characterized by:

- Impairment in concentration and attention but not in judgment
- Memory deficits
- Mental slowing, apathy, and lack of motivation
- Impaired psychomotor speed and precision

HAD is related to the effect of HIV on subcortical and deep grey matter structures and occurs mainly in patients who are untreated with advanced HIV infection. Unlike other



neurodegenerative diseases (e.g., Alzheimer's disease), deficits occurring in HAD may come and go over time.

Patients with HAD may also have changes in mood that can progress to psychosis with paranoid ideation and hallucinations, and some may develop mania (Price, 2017; Pieper & Teisman, 2020).

Mental Health Interventions

Psychosocial concerns are assessed on a regular basis to identify stressors that may impact the patient's adherence to treatment. Given the strong evidence for the contribution of mental health and behavioral problems to poor HIV health outcomes, it is necessary to integrate mental health screening and mental health treatment into ongoing HIV care.

Interventions range from supportive psychotherapy for grief and loss issues to treatment of specific HIV-associated neuropsychiatric conditions. They may include pharmacology, cognitive and/or behavioral therapy, stress management, motivational interviewing, interpersonal therapy, supportive interventions, and meditation.

Studies have found that the greatest positive effects occur when lengthier and multilevel interventions are used and when they are integrated into community-based healthcare settings. Interventions that include family interactions and peer support, as well as those delivered by mental healthcare professionals, have been found to be the most effective (Remien, 2018).

Issues for Families and Caregivers

The psychological suffering and grief experienced by people with HIV/AIDS is also shared by family members, friends, caregivers, and partners. Partners and families are often the people who provide most of the physical and emotional care for individuals with chronic illness, including HIV. This can be very stressful and lead to tension among members of the family.

Some of the issues that may arise when a family member has been diagnosed with HIV include:

- The diagnosis may reveal behaviors that the person may have wanted to keep private. These might include sexual behaviors or intravenous drug use, which can result in feelings of guilt or blame and can lead to a relationship breakdown.
- Fear of stigma and discrimination may mean that the diagnosis is kept secret. This can prevent immediate family members from the wider support of extended family members or the community.
- A family with a child who is infected with HIV must consider when and how to disclose this information to the child.
- Conflicts may arise in regard to religious or cultural beliefs.



- Parents may find it problematic to discuss sexual behavior and risk with younger children, which can have prevention implications for them later on.
- When a child with HIV reaches adolescence, problems can arise concerning adherence to treatment and safe sexual behavior.
- Members of the family may disagree about the best course of treatment.
- Family members may have to cope with the mental health problems that commonly develop in people who are living with HIV.
(AAMFT, 2019)

RECOMMENDATIONS FOR CAREGIVER SELF-CARE

- Seek support from other caregivers.
- Become educated about HIV, ART, and comorbidities.
- Take care of your own health so you are strong enough to take care of your loved one.
- Accept offers of help and suggest specific things people can do to help you.
- Learn how to communicate effectively with healthcare providers.
- Take respite breaks often.
- Be watchful for signs of depression and get professional help when needed.
- Be aware and open to new technologies that can help caregiving efforts.
- Organize medical information so that it is up to date and easy to locate.
- Make certain that legal documents are in order.
(NFCA, 2017)

Issues Affecting Special Populations

HIV/AIDS takes a heavy toll on all ethnicities, genders, ages, and income levels. However, some populations have been uniquely affected by the epidemic. Some of these populations include men who have sex with men, people who inject drugs, people with hemophilia, women, and people of color.

SEXUAL MINORITIES

Even with the continuing advancements being made in HIV prevention and treatment, men who have sex with men remain the population impacted most by HIV/AIDS. These sexual minorities include people who have sexual contact with persons of the same or both sexes and include gay, bisexual, queer, and transgender men. Transgender women in certain communities also have higher odds of infection. These individuals are disproportionately affected by psychological problems, which may include distress, depression, PTSD, and substance use disorders.



The high prevalence of mental health problems among these groups compared with heterosexual men has been attributed to **sexual minority stress**. Mental health problems are the consequences of distressing environments, including stigma, prejudice, and discrimination. Negative psychological outcomes may include expectations of rejection, hiding and concealing, and problematic coping strategies (Batchelder et al., 2017).

PEOPLE WHO INJECT DRUGS

People with HIV who use injection drugs are a population with extensive psychiatric, psychological, and medical comorbidities, the most significant being major depression. Depression is associated with worsening of addictions and resistance to treatment. Depressed patients often find it difficult to engage in, invest in, and sustain treatment.

Personality factors also contribute to greater risk-taking and increased sensitivity to rewards. These individuals are more likely to engage in high-risk behavior, while greater sensitivity to rewards is associated with increased sensitivity to the reinforcing properties of and decreased sensitivity to the consequences of drug use.

Because of the recent epidemic of prescription and nonmedical opioids, there is an increased number of people who inject drugs, resulting in many more at significant risk for HIV. Where drug use was more common in urban areas, more nonurban and rural areas are now being affected. These were areas formerly at low risk for HIV and often have limited HIV services and substance use disorder treatment programs available.

In addition, people who inject drugs are often viewed as criminals rather than as having a medical issue that requires treatment. Mistrust in the healthcare system may prevent these people from seeking HIV testing and treatment (Weibel, 2018).

ADOLESCENTS WITH PERINATAL HIV INFECTION

In recent years there has been an increasing number of patients with perinatally acquired HIV entering adulthood, and this has provided insight into the obstacles and challenges unique to this population. These are related to being highly ART experienced, the psychosocial stressors of disclosure, and their own sexual and reproductive health. These young people report that anger and blame toward their biological mothers has a tremendous impact on their lives and self-care.

The prevalence of psychiatric and behavioral problems in perinatally HIV-infected children is higher than in the general population, and these comorbidities complicate treatment adherence and retention in care. Nonadherence increases the risk of HIV transmission and is worsened by anxiety surrounding the issue of disclosure to partners (Wang'ongu et al., 2018; Gillespie, 2019).



CONCLUSION

Despite the passage of time and advances in prevention and treatment, HIV/AIDS continues to affect many people around the world. Today's younger people are living in a time when the disease is known to be controllable, and they may have limited knowledge about the history of HIV/AIDS and a lesser sense of urgency or concern about it. However, the public's attitude toward the populations that are currently in the forefront of the epidemic remains one of stigmatization.

In the medical field, research has produced ever more effective drugs that slow the disease but do not stop it, and the cost of these drugs remains beyond the reach of many. No vaccine has proven effective in preventing HIV, and so the epidemic continues to spread, primarily among those high-risk persons living in disadvantaged and marginalized groups: the poor, people of color, people in prison, people who inject drugs, people who exchange sex for money or goods, and men who have sex with men. Many do not realize they are infected and may unknowingly transmit the virus to others.

The key to controlling this epidemic is prevention. Since most HIV infection is the result of sexual transmission, the most important prevention method is to refrain from unprotected sexual intercourse—vaginal, anal, or oral—unless it takes place within a monogamous relationship. The CDC recommends using latex condoms consistently and correctly and, when considering a sexual relationship, avoiding any type of sexual contact with someone who is unknown, is known to have had several sexual partners, or regularly uses syringes to inject drugs. Secondly, HIV is spread among injection drug users by the sharing of needles. Education and intervention must extend to these individuals to discourage the sharing of any type of drug paraphernalia.

Healthcare professionals have a vital role in meeting the goals for elimination of new HIV infections. These are built on the following key strategies:

- Educating patients, families, and communities about prevention
- Diagnosing all individuals with HIV as early as possible
- Treating people with HIV rapidly and effectively to achieve sustained viral suppression
- Preventing new HIV transmissions by using proven interventions, including pre-exposure prophylaxis (PrEP) and advocating for syringe services programs (SSPs)
- Providing compassionate and nondiscriminatory healthcare to those who have contracted this life-impacting disease



RESOURCES

AIDSinfo (USDHHS)
<https://aidsinfo.nih.gov>

Emergency Contraception Hotline
<http://www.not-2-late.com>
888-NOT-2-LATE (888-668-2528)

HIV/AIDS (CDC)
<https://www.cdc.gov/hiv>

HIV.gov
<https://www.HIV.gov>

HIV and AIDS (Office on Women's Health)
<https://www.womenshealth.gov/hiv-and-aids>

HIV hotlines and referrals (CDC)
<https://www.cdc.gov/hiv/library/hotlines.html>

National HIV/AIDS Strategy
<https://www.aids.gov/federal-resources/national-hiv-aids-strategy/overview>

Washington State Resources

AIDS Hotline (WA DOH)
800-272-2437

HIV/STD program (King County)
<http://www.kingcounty.gov/depts/health/communicable-diseases/hiv-std.aspx>

KNOW: An HIV and AIDS Curriculum Manual (7th Edition) (WA DOH)
<https://www.doh.wa.gov/portals/1/Documents/Pubs/410-007-KNOWCurriculum.pdf>

Washington Occupational Exposure to Bloodborne Pathogens, Chapter 296-823 WAC
<https://www.lni.wa.gov/safety-health/safety-rules/chapter-pdfs/WAC296-823.pdf>

Washington State Post-Exposure Requirements, Chapter 296-823-260 WAC
<https://apps.leg.wa.gov/WAC/default.aspx?cite=296-823-160>

Washington State Department of Health Case Management Agencies
<https://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/HIV/ClientServices/CaseManagement>

Washington State Department of Health Early Intervention Program
<https://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/HIV/ClientServices/ADAPandEIP>



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1. Which statement **correctly** describes HIV?
 - a. The body can destroy HIV completely with treatment.
 - b. Once infected with HIV, the person has it for life.
 - c. HIV attacks both red blood cells and the lymphocytes.
 - d. Most HIV infections are caused by the P strain of the virus.

2. The key component of the immune system that HIV attacks is the:
 - a. Memory B cell.
 - b. CD4⁺ T cell.
 - c. N and K cell.
 - d. T 8 cell.

3. The 2018 increase in new HIV diagnoses among King County residents has been attributed to:
 - a. Homelessness among those with HIV.
 - b. Men who have sex with men.
 - c. Foreign-born people of color.
 - d. Persons who inject drugs.

4. In the United States, which behavior carries the greatest estimated risk of acquiring HIV?
 - a. Shared needles during injection drug use
 - b. Receptive anal intercourse
 - c. Getting a tattoo
 - d. Oral sex

5. The population with the highest risk for acquiring HIV is:
 - a. Men who have sex with men.
 - b. Persons who inject drugs.
 - c. Incarcerated persons.
 - d. Transgender persons.



6. One of the **most important** factors influencing the risk of HIV transmission is:
 - a. Exposure to the saliva of an infected host.
 - b. Getting gonorrhea.
 - c. Having a genital ulcer.
 - d. The viral load in the host's blood.

7. Which is a **true** statement about antiretroviral HIV prevention interventions?
 - a. Postexposure prophylaxis (PEP) is 100% effective when taken correctly.
 - b. PEP must begin seven days post exposure and continue for one year.
 - c. Pre-exposure prophylaxis (PrEP) is generally not effective among high-risk persons.
 - d. PrEP has been demonstrated to greatly reduce HIV infection if taken consistently.

8. A Washington State exposure control plan requires that the employer:
 - a. Decrease the risk of occupational exposure to infectious disease to zero.
 - b. Identify individuals who have been exposed and report to the CDC database.
 - c. Fit all employees with full-body protective gear to meet potentially hazardous conditions.
 - d. Establish a procedure for evaluating the circumstances surrounding exposure incidents.

9. Washington State and the CDC recommend which people be tested for HIV at least once?
 - a. Adults age 18 or older if they are sexually active
 - b. Only men who have sex with men and injection drug users
 - c. Everyone between the ages of 13 and 64
 - d. Only men and women who have more than one sex partner

10. Which is a **correct** statement regarding HIV testing?
 - a. If a screening test is positive, additional testing is needed for confirmation.
 - b. Washington State does not offer any HIV test funding.
 - c. There are no HIV tests that produce false-positive or false-negative results.
 - d. In Washington State only a physician is authorized to collect blood specimens for HIV testing.

11. Which is a **correct** statement concerning requirements for HIV counseling in Washington State?
 - a. Pretest counseling is required for all persons tested for HIV.
 - b. Post-test counseling is required for both positive and negative HIV test recipients.
 - c. Post-test counseling is required for all HIV positive results and HIV diagnoses.
 - d. No pre- or post-test counseling is required.



- 12.** The clinical stage of HIV infection in which seroconversion occurs is called:
- Acute infection.
 - Early-stage AIDS.
 - Clinical latency.
 - Middle-stage AIDS.
- 13.** Antiretroviral therapy (ART) is recommended for:
- Only patients who are diagnosed with AIDS.
 - HIV-infected adolescents and adults only.
 - All HIV-infected patients, including infants and children.
 - Only symptomatic patients.
- 14.** Which is a **true** statement about the complications of ART?
- Comorbid conditions increase risk for adverse effects.
 - Genetic factors do not affect predisposition to adverse effects.
 - There are no life-threatening complications related to ART.
 - ART has no impact on neuropsychiatric issues.
- 15.** The type of testing that does **not** tie the test results to the person is called:
- Confidential testing.
 - Anonymous testing.
 - Sexual assault testing.
 - Minor's test results.
- 16.** In Washington State, beginning at what age can a minor independently access HIV testing?
- 16
 - 15
 - 14
 - 13
- 17.** In 2020, Washington State passed a bill reforming the state's HIV criminalization law by:
- Removing all penalties for people convicted of transmitting HIV to another person.
 - Decreasing the penalty for HIV exposure from a felony to a misdemeanor.
 - Adding a requirement for sex offender registration for those who transmit HIV infection.
 - Making sex education mandatory for anyone testing positive for HIV infection.



- 18.** Washington State HIV reporting requirements include:
- a. Notification to the local health officer within two weeks.
 - b. Reporting all HIV testing results, including anonymous tests.
 - c. Reporting all individuals participating in an HIV research project.
 - d. Reporting by laboratories of all tests confirming HIV infection.
- 19.** Neuropsychiatric effects that result from HIV infection are caused by:
- a. Rejection.
 - b. Changing the dosages of antiretroviral medications.
 - c. Depression and anxiety.
 - d. Major inflammation within the body.
- 20.** The most commonly known and reported psychiatric disorder among those with HIV is:
- a. Anxiety.
 - b. Depression.
 - c. PTSD.
 - d. AIDS mania.

