Care CEUs

Continuing Education for Nursing Home Administrators

HIV/AIDS

Introduction

According to information provided by the Centers for Disease Control and Prevention (CDC), nearly half of people in the United States with diagnosed human immunodeficiency virus (HIV) are ages 50 and older, which means that nursing homes and assisted living facilities may experience an increase in residents with HIV/AIDS. Due to the potential increase in older adults with HIV/AIDS, health care administrators of nursing homes and assisted living facilities should possess insight into HIV/AIDS, as well as treatment recommendations to safely and effectively care for residents. With that in mind, this course highlights concepts central to HIV/AIDS care, while outlining HIV/AIDS treatment recommendations that may be used to develop treatment protocols and policies and procedures to best serve older adults with HIV/AIDS.

Section 1: HIV/AIDS

A health care administrator of a health care facility notes that three new older adult residents are HIV positive. The health care administrator also notes that there is an overall increase in residents with HIV. The health care administrator begins to consider HIV, AIDS, as well as HIV/AIDS treatment protocols and policies and procedures. The health care administrator is left wondering if older adult residents are receiving the most up to date care they require.

Scenarios like the one presented above are occurring more frequently in the current health care climate. Health care administrators of nursing homes and assisted living facilities are now facing increases in older adult resident populations with HIV/AIDS (note: the term older adult may refer to an individual 65 years or older). With HIV/AIDS rates among older adults expected to rise, it is important for health care administrators to possess insight in HIV/AIDS, as well as HIV testing and evaluation recommendations. This section of the course will provide insight into HIV/AIDS, while highlighting HIV testing and evaluation recommendations. The information found within this section of the course was derived from materials provided by the Centers for Disease Control and Prevention (CDC) unless, otherwise, specified (Centers for Disease Control and Prevention [CDC], 2022).

What is HIV?

- HIV may refer to a retrovirus that infects cells of the human immune system (e.g., CD4-positive, T-cells, and macrophages) and impairs their function, which can lead to immunodeficiency, opportunistic infections (OIs), and acquired immunodeficiency syndrome (AIDS).
- Health care administrators should note the following: the term opportunistic infection (OIs) may refer to an infection or illness that occurs more frequently and is more severe in people with HIV/AIDS; acquired immunodeficiency syndrome (AIDS) may refer to a chronic condition characterized by progressive failure of the immune system.
- Health care administrators should note the following: HIV is a bloodborne pathogen; bloodborne pathogens are infectious microorganisms in blood that can cause disease in humans.

Where did HIV come from?

- Research presented by the CDC suggests that HIV came from a type of chimpanzee in Central Africa; the chimpanzee version of HIV is called simian immunodeficiency virus; it potentially passed to humans when humans hunted chimpanzees and came in contact with their infected blood.

What are the risk factors for HIV infection?

- The risk factors for HIV infection include the following:
    - Having unprotected sex (note: HIV is a sexually transmitted infection [STI]; the term sexually transmitted infection [STI] may refer to an infection that is passed from the infected person to another person through sexual contact);
    - Having another sexually transmitted infection (STI) (e.g., syphilis, herpes, chlamydia, gonorrhoea, and bacterial vaginosis);
    - Engaging in harmful use of alcohol and drugs in the context of sexual behavior;

- Sharing contaminated needles, syringes, and other injecting equipment and drug solutions when injecting drugs;
- Receiving unsafe injections, blood transfusions, and tissue transplantation, as well as medical procedures that involve unsterile cutting or piercing; and
- Experiencing accidental needle stick injuries among health care professionals/employees.

How is HIV transmitted?

- HIV may be transmitted through sex, blood transfusion, and the sharing of contaminated needles. HIV can also be transmitted between a mother and infant during pregnancy, childbirth, and breastfeeding. Specific information regarding the transmission of HIV may be found below.
- Either partner can get HIV during vaginal sex; HIV can enter a person's body during vaginal sex through the delicate tissue that lines the vagina and cervix.
- Vaginal fluid and blood can carry HIV, which can pass through the urethra (opening at the tip of the penis); the foreskin if the penis isn't circumcised; or small cuts, scratches, or open sores anywhere on the penis.
- Vaginal sex is less risky for getting HIV than receptive anal sex.
- Anal sex is the riskiest type of sex for getting or transmitting HIV; the receptive partner is at increased risk for HIV transmission.
- In some cases, oral sex may lead to HIV transmission.
- In rare cases, deep, open-mouth kissing can lead to HIV transmission (note: HIV transmission may occur if both partners have sores or bleeding gums; HIV cannot be transmitted through saliva).
- Individuals are at high risk for getting HIV if they share needles, syringes, or other drug injection equipment.
- Individuals who inject drugs are also at risk for getting HIV if they engage in risky sexual behaviors (e.g., having sex without protection, such as condoms).

- In rare cases, biting can lead to HIV transmission. This rare type of HIV transmission can occur through contact between broken skin, wounds, or mucous membranes and blood or body fluids from a person who has HIV.
- Health care administrators should note that the U.S. blood supply and donated organs and tissues are thoroughly tested; it is very unlikely that an individual would get HIV from blood transfusions, blood products, or organ and tissue transplants.
- Any health care professional/employee who has reasonably anticipated contact with blood or other potentially infectious materials (OPIM) (e.g., semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, and amniotic fluid) during performance of his or her job duties is considered to have occupational exposure and to be at risk for potential HIV infection (Occupational Safety and Health Administration [OSHA], 2022).
- Health care professionals/employees working in a health care facility may be exposed to bloodborne pathogens (e.g., HIV) in a variety of different ways including the following: coming into contact with patients' blood; coming into contact with OPIM; coming into contact with a patient's mucous membrane or non-intact skin; coming into contact with hazardous medical waste; through a sharps injury; through a needlestick injury; and/or when securing medical catheters (note: a sharps injury may refer to a stab wound or related wound that is caused by a scalpel, needle, and/or by another sharp object; a needlestick injury may refer to a wound that is caused by a needle that accidently punctures the skin) (OSHA, 2022).
- Health care administrators should note the following: standard precautions can help prevent the transmission of HIV and other bloodborne pathogens; health care professionals and other employees should use gloves, goggles, and other barriers when anticipating contact with blood or body fluids; individuals should wash their hands and other skin surfaces immediately after contact with blood or body fluids; health care professionals should be careful when handling and disposing of sharp instruments during and after use; health care professionals should use safety devices to prevent needle-stick injuries; health care professionals should dispose of used syringes or other sharp instruments in a sharps container (OSHA, 2022).

- Health care administrators should note that sharp safety can help prevent the transmission of HIV and other bloodborne pathogens; sharp safety may refer to the practice(s) of adequately handling devices and/or objects with sharp points or edges that can puncture or cut the skin to help prevent injury from such devices and/or objects (OSHA, 2022).

- Health care administrators should note the following: engineering and work practice controls should be used to eliminate or minimize employee HIV exposure; where occupational exposure remains after institution of such controls, personal protective equipment (PPE) should also be used; employers should provide handwashing facilities which are readily accessible to employees; employers should ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other PPE; employers should ensure that employees wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials; shearing or breaking of contaminated needles is prohibited; bending, recapping, or needle removal must be accomplished through the use of a mechanical device or a one-handed technique; immediately or as soon as possible after use, contaminated reusable sharps should be placed in appropriate containers until properly reprocessed; appropriate sharps containers should be puncture resistant; appropriate sharps containers should be leak proof on the sides and bottom; all procedures involving blood or other potentially infectious materials should be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances (note: personal protective equipment (PPE) may refer to equipment designed to protect, shield, and minimize exposure to hazards that may cause injury, illness, and/or disease) (OSHA, 2022).

- If a health care professional and/or other employee is exposed to HIV at work, he or she should report the exposure to the appropriate person, and see a doctor or visit an emergency room right away; health care professionals caring for personnel who were potentially exposed to HIV can call the PEPline (1-888-448-4911) for advice on managing the exposure.

- Individuals potentially exposed to HIV may require post-exposure prophylaxis (PEP) (note: post-exposure prophylaxis [PEP] may refer to a prophylaxis strategy

used to prevent HIV after a possible exposure; PEP is recommended when occupational exposures to HIV occur).

- PEP must be started within 72 hours (three days) after potential HIV exposure. Additional PEP recommendations may be found below.
    - Determine the HIV status of the exposure source patient to guide the need for HIV PEP, if possible.
    - Initiate PEP medication regimens as soon as possible after occupational exposure to HIV and continue them for a 4-week duration.
    - PEP medication regimens should contain three (or more) antiretroviral medications for all occupational exposures to HIV.
    - Expert consultation is recommended for any occupational exposures to HIV.
    - Provide close follow-up for exposed employees that includes counseling, baseline and follow-up HIV testing, and monitoring for drug toxicity; follow-up appointments should begin 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 of exposed employees, HIV testing may be concluded at four months after exposure; if a newer testing platform is not available, follow-up HIV testing is typically concluded at six months after an HIV exposure.

What are the symptoms of HIV?

- HIV symptoms can include the following: fever, chills, rash, night sweats, muscle aches, sore throat, fatigue, and swollen lymph nodes.
- Health care administrators should note the following: within two to four weeks after infection with HIV, about two-thirds of individuals will have a flu-like illness, which is the body's natural response to HIV infection; symptoms of the flu-like illness may include: fever, chills, rash, night sweats, muscle aches, sore throat, fatigue, swollen lymph nodes, and mouth ulcers (note: some individuals may not experience HIV symptoms).

- Health care administrators should also note the following AIDS symptoms: rapid weight loss; recurring fever; profuse night sweats; extreme and unexplained tiredness; prolonged swelling of the lymph glands in the armpits, groin, or neck; diarrhea that lasts for more than a week; sores of the mouth, anus, or genitals; pneumonia; red, brown, pink, or purplish blotches on or under the skin or inside the mouth, nose, or eyelids; memory loss, depression, and other neurologic disorders.

What are the stages of HIV?

There are three stages of HIV (note: HIV treatment can help prevent HIV progression).

- Acute HIV infection is stage 1 of a HIV infection. During the acute stage of HIV infection, individuals will have a large amount of HIV in their blood and are very contagious; individuals may experience a flu-like illness.
- Chronic HIV infection is stage 2 of a HIV infection. The chronic stage is also called asymptomatic HIV infection or clinical latency. HIV is still active and continues to reproduce in the body. Individuals may not experience HIV symptoms or "get sick" during stage 2, but individuals can transmit HIV. Without HIV treatment, stage 2 may last a decade or longer, or may progress faster.
- AIDS is the final stage of a HIV infection. AIDS is the most severe stage of HIV infection. Individuals with AIDS can have a high viral load and may easily transmit HIV to others. Additionally, individuals with AIDS typically have damaged immune systems, and are vulnerable to opportunistic infections (OIs) or other serious illnesses. Without treatment, individuals can typically live with AIDS for approximately three years.

Is HIV a sign of abuse in older adult populations?

- Yes, HIV can be a sign of abuse in older adult populations. More specifically, if an older adult tests positive for HIV it can be a sign of sexual abuse. Sexual abuse may refer to any forced or unwanted sexual interaction with an individual (i.e., a sexual interaction with an individual that occurs without the individual's consent). Examples of sexual abuse include: unwanted sexual contact (e.g., touching; foundling; grabbing), unwanted sexual intercourse, rape, coerced nudity (e.g., one individual persuades or threatens another individual to get nude in front of him

or her), forcing an individual to look at pornographic materials, photographing an individual while he or she is nude and/or partially nude, and sexual harassment (note: the term sexual harassment may refer to any act characterized by unwelcomed and/or inappropriate sexual remarks/behavior).

- Health care administrators should note that sexual abuse may be one of the most underreported types of older adult abuse because victims of sexual abuse may be reluctant to report or talk about any kind of sexual abuse; older adult abuse may refer to an intentional act or failure to act that causes or creates a risk of harm to an older adult. Health care administrators should also note the following signs of sexual abuse: unexplained bruising on the legs or thighs, unexplained bruising around the genitals, bite marks on the body and/or around the genitals, bleeding from the genitals and/or anus, ripped clothes and/or undergarments, vaginal infections, and the presence of what appear to be a newly acquired sexually transmitted infection (STI) (e.g., HIV).

How is HIV diagnosed?

HIV is diagnosed by a health care professional. HIV diagnosis is typically based on the results of a HIV test. Health care administrators should note that there are three tests that may be used to determine if an individual is HIV positive. Specific information regarding the three types of HIV tests may be found below.

- **Antibody test** - an antibody test looks for antibodies to HIV in the blood or oral fluid; most rapid tests and the only HIV self-test approved by the U.S. Food and Drug Administration (FDA) are antibody tests. Typically, antibody tests that use blood from a vein can detect HIV sooner than tests done with blood from a finger stick or with oral fluid.

- **Antigen/antibody test** - an antigen/antibody test looks for both HIV antibodies and antigens. Antigen/antibody tests are recommended for testing done in labs and are common in the U. S. An antigen/antibody test involves drawing blood from a vein.

- **Nucleic acid test (NAT)** - a NAT looks for the actual virus in the blood; a health care professional should draw blood from the vein and send the sample to a lab for testing. A NAT can tell if a person has HIV or how much virus is present in the blood (HIV viral load test); a NAT can detect HIV sooner than other types of tests; a NAT should be considered for people who had a recent HIV exposure or a

possible HIV exposure and have early symptoms of HIV and who tested negative with an antibody or antigen/antibody test.

- Health care administrators should note the following: HIV tests cannot detect HIV immediately after infection because of the window period, which is the time between HIV exposure and when a test can detect HIV in the body; the window period depends on the type of HIV test; a NAT can usually detect HIV the soonest (about 10 to 33 days after exposure).

What are the recommendations for laboratory testing for the initial assessment and monitoring of people with HIV?

Specific recommendations for laboratory testing for the initial assessment and monitoring of people with HIV may be found below. Health care administrators should consider updating and/or developing treatment protocols and/or policies and procedures for their health care organizations that reflect such recommendations. The information found below was derived from materials provided by the U.S. Department of Health and Human Services (U.S. Department of Health and Human Services, 2022).

- Several laboratory tests are important for the initial evaluation of people with HIV upon entry into care. Some tests should be performed before and after initiation or modification of antiretroviral therapy (ART) to assess the virologic and immunologic efficacy of ART and to monitor for laboratory abnormalities that may be associated with antiretroviral (ARV) drugs.

- Health care professionals should consider carrying out a HIV antigen/antibody test when a patient enters into care, and if HIV diagnosis is not confirmed.

- Two surrogate markers should be used to monitor people with HIV: plasma HIV RNA (viral load) to assess level of HIV viremia, and CD4+ T lymphocyte cell count (or CD4 count) to assess immune function.

- Standard (reverse transcriptase and protease) genotypic drug-resistance testing should be used to guide selection of an ARV regimen; if transmitted integrase strand transfer inhibitor (INSTI) resistance is a concern or for people who acquired HIV after taking long-acting cabotegravir as pre-exposure prophylaxis, testing also should include the integrase gene.

- A viral tropism assay should be performed before initiation of a CCR5 antagonist or at the time of virologic failure that occurs while a patient is receiving a CCR5 antagonist.
- A viral tropism assay should be performed before initiation of a CCR5 antagonist or at the time of virologic failure that occurs while a patient is receiving a CCR5 antagonist. HLA-B*5701 testing should be performed before initiation of abacavir (ABC) to reduce the risk of a hypersensitivity reaction, and HLA-B*5701-positive patients should not be prescribed ABC.
- Patients should be screened for hepatitis B and hepatitis C virus infections before initiating ART and, if indicated, periodically after ART initiation, because treatment of these co-infections may affect the choice of ART and likelihood of drug-induced hepatotoxicity.
- Health care professionals should monitor a patient's CD4 count every three months if the CD4 count is <300 cells/mm^3.
- Health care professionals should monitor a patient's CD4 count every six months during the first two years of ART, if the CD4 count is ≥ 300 cells/mm^3.
- Health care professionals should monitor a patient's CD4 count every three to six months if ART initiation is delayed.

What are the recommendations for the baseline evaluation of individuals with HIV entering into care?

Specific recommendations for the baseline evaluation of individuals with HIV entering into care may be found below. Health care administrators should consider updating and/or developing treatment protocols and/or policies and procedures for their health care organizations that reflect such recommendations. The information found below was derived from materials provided by the U.S. Department of Health and Human Services (U.S. Department of Health and Human Services, 2022).

- Every patient with HIV entering into care should have a complete medical history, physical examination, and laboratory evaluation and should be counseled regarding the implications of HIV infection.

- The goals of the initial evaluation should be to confirm the diagnosis of HIV infection, obtain appropriate baseline historical and laboratory data, ensure patient understanding about HIV infection and its transmission, and initiate care.
- The initial evaluation should also include a discussion about the benefits of antiretroviral therapy (ART) for the patient's health and to prevent HIV transmission, as well as strategies to optimize care engagement and treatment adherence.
- Health care professionals should use the information obtained in the baseline evaluation to define treatment management goals and plans.
- Health care professionals should perform the following laboratory tests: HIV antigen/antibody testing (if prior documentation is not available or if HIV RNA is below the assay's limit of detection); CD4 T lymphocyte (CD4) cell count; plasma HIV RNA (viral load); complete blood count; chemistry profile, including glucose, blood urea nitrogen and creatinine, liver enzymes and bilirubin, urinalysis, and serologies for hepatitis A, B, and C viruses; serum lipids (if random levels are abnormal, fasting lipids should be obtained); HLA-B*5701 test (if abacavir is being considered); drug-resistance testing; and for patients who have HIV RNA levels <1,000 copies/mL, viral amplification for drug- resistance testing should be performed.
- For previously treated patients who present for an initial evaluation with a new health care professional, it is critical to obtain a complete ARV history (including drug-resistance testing results, if available), preferably through the review of past medical records. A complete immunization history (including for SARS-CoV-2) should also be obtained; newly diagnosed patients should also be asked about any prior use of ARV agents for prevention of HIV infection.
- The baseline evaluation should include consideration for the patient's readiness for ART, including an assessment of substance use (including tobacco use), social support, mental health, medical comorbidities, economic factors (e.g., prior food instability), medical insurance status and adequacy of coverage, and other factors that are known to impair adherence to ART and increase the risk of HIV transmission; once evaluated, health care professionals should manage these factors accordingly.
- The baseline evaluation should include a discussion of risk reduction and disclosure to sexual and/or needle-sharing partners, especially with untreated

patients who are still at high risk of HIV transmission; individuals with HIV should be informed that maintaining a plasma HIV RNA of <200 copies/mL, including any measurable value below this threshold, with ART prevents sexual transmission of HIV to their partners.

Section 1 Summary

HIV may refer to a retrovirus that infects cells of the human immune system (e.g., CD4-positive, T-cells, and macrophages) and impairs their function, which can lead to immunodeficiency, OIs, and AIDS. HIV may be transmitted through sex, blood transfusions, and the sharing of contaminated needles. HIV symptoms can include the following: fever, chills, rash, night sweats, muscle aches, sore throat, fatigue, and swollen lymph nodes. HIV is diagnosed by a health care professional. HIV diagnosis is typically based on the results of a HIV test. Health care administrators should consider updating and/or developing treatment protocols and/or policies and procedures for their health care organizations that reflect recommendations for laboratory testing for the initial assessment and monitoring of people with HIV, and recommendations for the baseline evaluation of individuals with HIV entering into care.

Section 1 Key Concepts

- Any health care professional/employee who has reasonably anticipated contact with blood or OPIM (e.g., semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, and amniotic fluid) during performance of his or her job duties is considered to have occupational exposure and to be at risk for potential HIV infection.
- Health care professionals caring for personnel who were potentially exposed to HIV can call the PEPline (1-888-448-4911) for advice on managing the exposure.
- Individuals potentially exposed to HIV may require PEP.
- Some individuals may not experience HIV symptoms.
- HIV can be a sign of abuse in older adult populations; if an older adult tests positive for HIV it can be a sign of sexual abuse.
- HIV tests cannot detect HIV immediately after infection because of the window period, which is the time between HIV exposure and when a test can detect HIV

in the body; the window period depends on the type of HIV test; a NAT can usually detect HIV the soonest (about 10 to 33 days after exposure).

Section 1 Key Terms

Older adult - an individual 65 years or older

Human immunodeficiency virus (HIV) - a retrovirus that infects cells of the human immune system and impairs their function, which can lead to immunodeficiency, opportunistic infections (OIs), and acquired immunodeficiency syndrome (AIDS)

Opportunistic infection (OI) - an infection or illness that occurs more frequently and is more severe in people with HIV/AIDS

Acquired immunodeficiency syndrome (AIDS) - a chronic condition characterized by progressive failure of the immune system

Bloodborne pathogens - infectious microorganisms in blood that can cause disease in humans

Sexually transmitted infection (STI) - an infection that is passed from the infected person to another person through sexual contact

Urethra - opening at the tip of the penis

Sharps injury - a stab wound or related wound that is caused by a scalpel, needle, and/or by another sharp object

Needlestick injury - a wound that is caused by a needle that accidently punctures the skin

Sharp safety - the practice(s) of adequately handling devices and/or objects with sharp points or edges that can puncture or cut the skin to help prevent injury from such devices and/or objects

Personal protective equipment (PPE) - equipment designed to protect, shield, and minimize exposure to hazards that may cause injury, illness, and/or disease

Post-exposure prophylaxis (PEP) - a prophylaxis strategy used to prevent HIV after a possible exposure

Sexual abuse - any forced or unwanted sexual interaction with an individual

Sexual harassment - any act characterized by unwelcomed and/or inappropriate sexual remarks

Older adult abuse - an intentional act or failure to act that causes or creates a risk of harm to an older adult

Section 1 Personal Reflection Question

How can health care administrators prevent HIV transmission through occupational exposure, and among residents.

Section 2: HIV/AIDS Treatment

This section of the course highlights specific HIV/AIDS treatment recommendations. Health care administrators should consider updating and/or developing treatment protocols and/or policies and procedures for their health care organizations that reflect such recommendations. Health care administrators should note that the HIV/AIDS treatment recommendations found below are divided into specific categories. The information found within this section of the course was derived from materials provided by the U.S. Department of Health and Human Services unless, otherwise, specified (U.S. Department of Health and Human Services, 2022).

Initiation of Antiretroviral Therapy

- Antiretroviral therapy (ART) is recommended for all persons with HIV to reduce morbidity and mortality and to prevent the transmission of HIV to others.
- Initiate ART immediately (or as soon as possible) after HIV diagnosis in order to increase the uptake of ART and linkage to care, decrease the time to viral suppression for individual patients, and improve the rate of virologic suppression among persons with HIV.
- When initiating ART, it is important to educate patients regarding the benefits of ART and to deploy strategies to optimize care engagement and treatment adherence.
- Once initiated, ART should be continued, with the following key treatment goals: maximally and durably suppress plasma HIV RNA; restore and preserve

immunologic function; reduce HIV-associated morbidity and prolong the duration and quality of survival; and prevent HIV transmission.

Initial Combination Antiretroviral Regimens for People with HIV

- Health care professionals should note the following: more than 30 antiretroviral (ARV) drugs in eight mechanistic classes are U.S. Food and Drug Administration (FDA)-approved for treatment of HIV infection; these eight classes are nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), integrase strand transfer inhibitors (INSTIs), a fusion inhibitor, a CCR5 antagonist, a CD4 T lymphocyte (CD4) post-attachment inhibitor, and a gp120 attachment inhibitor; in addition, two drugs, ritonavir (RTV) and cobicistat (COBI) are used as pharmacokinetic (PK) enhancers (or boosters) to improve the PK profiles of PIs and the INSTI elvitegravir (EVG).
- Health care professionals should note the following: the initial ARV treatment regimen for a person with HIV generally consists of two NRTIs, usually abacavir/lamivudine (ABC/3TC) or either tenofovir alafenamide/emtricitabine (TAF/FTC) or tenofovir disoproxil fumarate/emtricitabine (TDF/FTC), plus a drug from one of three drug classes: an INSTI, an NNRTI, or a boosted PI; as shown in clinical trials, this strategy for initial treatment has resulted in suppression of HIV replication and CD4 count increases in most people with HIV; additional data now supports the use of the two-drug regimen dolutegravir/lamivudine (DTG/3TC) for initial treatment of some people with HIV.
- For people with HIV who do not have a history of using long-acting cabotegravir (CAB-LA) as pre-exposure prophylaxis (PrEP), the following regimens are recommended:
    - Bictegravir/tenofovir alafenamide (TAF)/emtricitabine (FTC);
    - DTG/abacavir/3TC - only for individuals who are HLA-B*5701 negative and without chronic hepatitis B virus (HBV) coinfection;
    - DTG plus (TAF or tenofovir disoproxil fumarate [TDF])[b] plus (FTC or 3TC);
    - DTG/3TC - except for individuals with HIV RNA >500,000 copies/mL, HBV coinfection, or when ART is to be started before the results of HIV

genotypic resistance testing for reverse transcriptase or HBV testing are available.

- For people with HIV and a history of using CAB-LA as PrEP, INSTI genotypic resistance testing should be done before the start of ART. If treatment is begun prior to results of genotypic testing, the following regimen is recommended:
    - Boosted darunavir plus (TAF or TDF)[b] plus (FTC or 3TC)—pending the results of the genotype test.
- Patients without prior ART use who wish to begin long-acting intramuscular CAB and rilpivirine (RPV) should first achieve viral suppression on another regimen before switching to CAB and RPV.
- Selection of a regimen for a particular patient should be guided by factors, such as: virologic efficacy, toxicity, pill burden, dosing frequency, drug-drug interaction potential, resistance-test results, comorbid conditions, access, and cost.

Early (Acute and Recent) HIV Infection

- Antiretroviral therapy (ART) is recommended for all people with HIV, including those with early HIV infection. ART should be initiated as soon as possible after HIV diagnosis.
- The goals of ART are to suppress plasma HIV RNA to undetectable levels and to prevent transmission of HIV. Monitoring of plasma HIV RNA levels, CD4+ T lymphocyte counts, and antiretroviral (ARV) drug-related adverse effects should be done as recommended for people with chronic HIV infection.
- A blood sample for genotypic resistance testing should be sent to the laboratory before the initiation of ART.
- ART can be initiated before drug-resistance test results are available. For those without a history of prior use of long-acting cabotegravir (CAB-LA) as pre-exposure prophylaxis (PrEP), one of the following ARV regimens found below is recommended.
    - Bictegravir (BIC)/tenofovir alafenamide (TAF)/emtricitabine (FTC)
    - Dolutegravir (DTG) with (TAF or tenofovir disoproxil fumarate [TDF]) plus (FTC or lamivudine [3TC])

    - Boosted darunavir (DRV) with (TAF or TDF) plus (FTC or 3TC)

- For those with a history of CAB-LA use as PrEP, genotype testing done before the start of ART should include screening for integrase strand transfer inhibitor (INSTI)-resistance mutations.
- A regimen of boosted DRV with (TAF or TDF) plus (FTC or 3TC) is recommended, pending the results of the genotype testing.
- The use of a empiric INSTI-containing regimen is not recommended unless genotype testing does not show evidence of INSTI resistance - because INSTI resistance may be present in those who become infected during and possibly after the use of CAB-LA to help prevent initial HIV infection.

Antiretroviral Therapy to Prevent Sexual Transmission of HIV (Treatment as Prevention)

- All persons with HIV should be informed that maintaining a plasma HIV RNA (viral load) of <200 copies/mL, including any measurable value below this threshold value, with antiretroviral therapy (ART) prevents sexual transmission of HIV to their partners; patients may recognize this concept as Undetectable = Untransmittable or U=U.
- Persons with HIV who are starting ART should use another form of prevention with sexual partners (e.g., condoms, pre-exposure prophylaxis [PrEP] for the HIV-negative sexual partner, sexual abstinence) for at least the first six months of treatment and until a viral load of <200 copies/mL is documented (note: some health care professionals recommend confirming sustained suppression before assuming that there is no further risk of sexual HIV transmission).
- When the viral load is ≥200 copies/mL, additional methods are needed to prevent transmission of HIV to sexual partners until resuppression to <200 copies/mL has been confirmed.
- Persons with HIV who intend to rely upon ART for prevention need to maintain high levels of ART adherence; they should be informed that transmission is possible during periods of poor adherence or treatment interruption.

- At each visit for HIV care, clinicians should assess adherence to ART and counsel patients regarding the importance of ART to their own health as well as its role in preventing sexual HIV transmission.
- Health care professionals should inform patients that maintaining a viral load of <200 copies/mL does not prevent acquisition or transmission of other sexually transmitted infections (STIs).
- Health care professionals should also routinely screen all sexually active persons with HIV for STIs, both for their own health and to prevent transmission of STIs to others.

Management of the Treatment-Experienced Patient with Virologic Failure

- Assessing and managing a patient who is experiencing antiretroviral therapy (ART) failure can be complex. Expert advice can be critical and should be sought in many instances.
- Evaluation of virologic failure should include an assessment of ART adherence, drug-drug and drug-food interactions, drug tolerability, HIV-RNA level and CD4 T lymphocyte (CD4) cell count trends over time, ART history, and prior and current drug-resistance test results.
- Drug-resistance testing should be performed while the patient is taking the failing antiretroviral (ARV) regimen or within four weeks of treatment discontinuation of a non-long-acting ARV regimen. If more than four weeks elapsed since non–long-acting ARV regimens were discontinued, resistance testing still can provide useful information to guide therapy, although it may not detect previously selected resistance mutations.
- The goal of treatment for ART-experienced patients with drug resistance who are experiencing virologic failure is to establish virologic suppression (i.e., HIV-RNA levels below the lower limits of detection of currently used assays).
- A new regimen can include two fully active ARV drugs if at least one with a high resistance barrier is included (e.g., dolutegravir or boosted darunavir). If no fully active drug with a high resistance barrier is available, then every effort should be made to include three fully active drugs.

- In general, adding a single ARV drug to a virologically failing regimen is not recommended, because this would rarely result in full viral suppression and, therefore, may risk the development of resistance to all drugs in the regimen.
- For some rare highly ART-experienced patients with extensive drug resistance, maximal virologic suppression may not be possible. In this case, ART should be continued with regimens that are designed to maintain CD4 counts, preserve treatment options, delay clinical progression, and minimize toxicity.
- When it is not possible to construct a viable suppressive regimen for a patient with multidrug-resistant HIV, the health care professional should consider enrolling the patient in a clinical trial of investigational agents or contacting pharmaceutical companies that may have investigational agents available.
- In patients with virologic failure, it is crucial to provide continuous adherence support before and after ARV regimen changes.
- When switching an ARV regimen in a patient with hepatitis B virus (HBV)/HIV coinfection, the patient should remain on an ARV agent that is active against HBV and has a high resistance barrier to HBV in order to avoid HBV rebound and hepatocellular damage.
- Discontinuing or briefly interrupting therapy may lead to a rapid increase in HIV RNA, a decrease in CD4 count, and an increase in the risk of clinical progression. Therefore, this strategy is not recommended in the setting of virologic failure.

Management of the Treatment-Experienced Patient with Poor CD4 Cell Recovery and Persistent Inflammation Despite Viral Suppression

- Persistently low CD4 T lymphocyte (CD4) cell counts and immune activation are each associated with increased AIDS- and non-AIDS-related morbidity and mortality among individuals with antiretroviral therapy (ART)-mediated viral suppression.
- Adding antiretroviral (ARV) drugs to a suppressive ARV regimen (ART intensification) does not improve CD4 cell recovery or reduce immune activation and, therefore, is not recommended.

- In individuals with viral suppression, switching ARV drug classes does not consistently improve CD4 cell recovery or reduce all relevant markers of immune activation and is not recommended.
- Interleukin-2 is not recommended to increase CD4 cell counts and/or decrease immune activation, because clinical trial data demonstrated no clinical benefit.
- Other interventions designed to increase CD4 cell counts and/or decrease immune activation are not recommended outside of a clinical trial, because no current interventions have been proven to decrease morbidity or mortality during ART-mediated viral suppression.
- Efforts to decrease morbidity and mortality during ART-mediated viral suppression should focus on addressing modifiable risk factors for chronic disease (e.g., encouraging smoking cessation, a healthy diet, and regular exercise; treating hypertension and hyperlipidemia).
- Monitoring markers of immune activation and inflammation is not recommended, because no intervention targeting immune pathways has proven to improve the health of individuals with HIV, and many blood markers that predict morbidity and mortality fluctuate within individuals.

Hepatitis B Virus/HIV Coinfection

- Before initiation of antiretroviral therapy (ART), all patients who test positive for hepatitis B surface antigen (HBsAg) should be tested for hepatitis B virus (HBV) DNA using a quantitative assay to determine the level of HBV replication.
- Because emtricitabine (FTC), lamivudine (3TC), tenofovir disoproxil fumarate (TDF), and tenofovir alafenamide (TAF) have activity against both HIV and HBV, an antiretroviral (ARV) regimen for patients with both HIV and HBV should include (TAF or TDF) plus (3TC or FTC) as the nucleoside reverse transcriptase inhibitor (NRTI) backbone of a fully suppressive ARV regimen.
- In people with HBV/HIV coinfection, using 3TC or FTC as the only drug in a regimen with HBV activity is not recommended, because HBV resistance to these drugs can emerge.
- If TDF or TAF cannot be safely used, the alternative recommended HBV therapy is entecavir, in addition to a fully suppressive ARV regimen. Entecavir has weak

activity against HIV; its use for HBV treatment without ART in patients with dual infection may result in the selection of the M184V mutation that confers HIV resistance to 3TC and FTC. Therefore, entecavir must be used in addition to a fully suppressive ARV regimen when given to patients with HBV/HIV coinfection. Peginterferon alfa monotherapy also may be considered in certain patients.

- Other HBV treatment regimens, including adefovir alone or in combination with 3TC or FTC and telbivudine, are not recommended for patients with HBV/HIV coinfection.
- Discontinuation of agents with anti-HBV activity may cause serious hepatocellular damage resulting from reactivation of HBV; patients should be advised against stopping these medications, and they should be carefully monitored during interruptions of HBV treatment.
- When switching "or modifying" an ARV regimen in a person with HBV/HIV coinfection, ARV drugs that are active against HBV should be continued or specific anti-HBV drugs should be initiated.
- HBV reactivation has been observed in people with HBV infection during interferon-free hepatitis C virus (HCV) treatment. For that reason, all patients initiating HCV therapy should be tested for HBV. People with HCV/HIV coinfection and active HBV infection (determined by a positive HBsAg test) should receive ART that includes two agents with anti-HBV activity prior to initiating HCV therapy.

Hepatitis C Virus/HIV Coinfection

- All people with HIV should be screened for hepatitis C virus (HCV) infection. Patients at high risk of HCV infection should be screened annually and whenever incident HCV infection is suspected.
- Antiretroviral therapy (ART) may slow the progression of liver disease by preserving or restoring immune function and reducing HIV-related immune activation and inflammation. For most patients with HCV/HIV coinfection, including those with cirrhosis, the benefits of ART outweigh concerns regarding drug-induced liver injury. Therefore, ART should be initiated in all patients with HCV/HIV coinfection, regardless of CD4 T lymphocyte cell count.

- Initial antiretroviral (ARV) regimens that are recommended for most patients with HCV/HIV coinfection are the same as those recommended for people with HIV who do not have HCV infection. However, when treatment for both HIV and HCV is indicated, the ARV and HCV treatment regimens should be selected with special consideration for potential drug-drug interactions and overlapping toxicities.
- All patients with HCV/HIV coinfection should be evaluated for HCV therapy, which includes assessing their liver fibrosis stage to guide the duration of therapy and to predict subsequent risk of hepatocellular carcinoma and liver disease complications.
- Patients with chronic HCV/HIV coinfection should be screened for active and prior hepatitis B virus (HBV) infection by testing for the presence of hepatitis B surface antigen (HBsAg) and antibodies to hepatitis B surface (HBsAb) and hepatitis B core (HBcAb; total or Immunoglobulin G). Persons who are not immune to HBV infection (HBsAb negative) should receive anti-HBV vaccination.
- HBV reactivation was observed in people with HBV infection during HCV treatment with direct-acting antivirals. Accordingly, before initiating HCV therapy, patients with HCV/HIV coinfection and active HBV infection (HBsAg positive) should receive ART that includes two agents with anti-HBV activity.

Substance Use Disorders and HIV

- Substance use disorders (SUDs) are prevalent among people with HIV, including older adults, and contribute to poor health outcomes; therefore, screening for SUDs should be a routine part of clinical care.
- The most commonly used substances among people with HIV include alcohol, benzodiazepines, cannabinoids, club drugs, opioids, stimulants (cocaine and methamphetamines), and tobacco.
- Health care professionals should be nonjudgmental when addressing substance use with their patients.
- People with HIV and SUDs should be screened for additional mental health disorders.

- People with HIV and SUDs should be offered evidence-based pharmacotherapy (e.g., opioid agonist therapy, tobacco cessation treatment, alcohol use disorder treatment) as part of comprehensive HIV care in clinical settings.
- Ongoing substance use is not a contraindication to antiretroviral therapy (ART); people who use substances can achieve and maintain viral suppression with ART.
- Substance use may increase the likelihood of risk-taking behaviors (e.g., risky sexual behaviors), the potential for drug-drug interactions, and the risk or severity of substance-associated toxicities (e.g., increased hepatotoxicity or an increased risk of overdose).
- Selection of antiretroviral (ARV) regimens for individuals who practice unhealthy substance and alcohol use should take into account potential adherence barriers, comorbidities that could impact care (e.g., advanced liver disease from alcohol or hepatitis viruses), potential drug-drug interactions, and possible adverse events associated with the medications.
- ARV regimens with once-daily dosing of single-tablet regimens, high barriers to resistance, low hepatotoxicity, and low potential for drug-drug interactions are preferred.

Adherence to the Continuum of Care

- Linkage to care and adherence to both antiretroviral therapy (ART) and clinic appointments should be regularly assessed.
- An individual's barriers to adherence to ART and appointments should be assessed before or shortly after the initiation of ART and regularly thereafter.
- Rapid access to ART has become a pillar of the United States' plan to end the HIV epidemic, and delays in access to ART should be addressed and treatment initiated as soon as possible.
- People with HIV having ART adherence problems should be placed on regimens with high genetic barriers to resistance, such as dolutegravir, bictegravir, or boosted darunavir. Side effects, out-of-pocket costs, convenience, and patient preferences also need to be considered.
- Adherence to ART should be regularly assessed by self-report at every clinic visit.

- People with HIV having difficulties with adherence to appointments or ART should be provided additional adherence support using a constructive, collaborative, nonjudgmental, and problem-solving approach.
- The approach taken to improve adherence should be tailored to each person's needs and barriers to care. Approaches could include, but are not limited to:
    - Changing ART to simplify dosing or to reduce side effects
    - Allowing flexible appointment scheduling
    - Finding resources to assist with treatment costs to maintain uninterrupted access to both ART and appointments
    - Linking patients to resources to assist with unmet social and economic needs, such as: transportation, food, housing, and support services
    - Linking patients to counseling to overcome stigma, substance use, or depression
- Multidisciplinary approaches to finding solutions to problems of adherence to ART and appointments are often necessary, including collaborations with nursing, pharmacy, social work, and case management (to the extent available). The health care professional's role is to help the patient understand the importance of adherence to the continuum of care, identify the barriers to adherence and address those that are within their purview, and link the patient to resources to overcome other barriers.
- Single-tablet regimens are generally recommended when clinically appropriate, but high-quality evidence to definitively recommend them is lacking, and shared decision-making with patients is essential.
- Evidence does not support the use of financial incentives to engage patients in ongoing routine care.
- Methods to estimate adherence based on drug levels measured in plasma, dried blood spots, urine, and hair samples are available. Measuring adherence with these methods has not been shown in randomized studies to improve outcomes. However, if these methods are used, it should be in a collaborative manner to avoid promoting an adversarial relationship between the health care professional and patient.

Adverse Effects of Antiretroviral Agents

- Health care professionals should note that adverse effects were reported with all antiretroviral (ARV) drugs and were among the most common reasons for switching or discontinuing therapy, and for medication nonadherence in the earlier era of ART; newer ARV regimens are associated with fewer serious and intolerable adverse effects than regimens used in the past.
- To achieve and sustain viral suppression over a lifetime, both long-term and short-term ART toxicities must be anticipated and managed.
- When selecting an ARV regimen, health care professionals must consider potential adverse effects, as well as the individual's comorbidities, concomitant medications, and prior history of drug intolerances, which is especially important in older adult populations.
- Health care professionals should note that several factors may predispose individuals to adverse effects of ARV medications, such as:
    - Concomitant use of medications with overlapping and additive toxicities;
    - Comorbid conditions that increase the risk of adverse effects (e.g., underlying liver disease from alcohol use, coinfection with viral hepatitis, and/or liver steatosis may increase the risk of hepatotoxicity when efavirenz [EFV] or protease inhibitors are used; and borderline or mild renal dysfunction increases the risk of nephrotoxicity from tenofovir disoproxil fumarate [TDF]);
    - Certain ARVs may exacerbate pre-existing conditions (e.g., psychiatric disorders may be exacerbated by EFV, rilpivirine, and, infrequently, by integrase strand transfer inhibitors);
    - Drug-drug interactions that may increase toxicities of ARV drugs or concomitant medications (e.g., when pharmacokinetic boosters such as ritonavir or cobicistat are used, or when isoniazid is used with EFV);
    - Genetic factors that predispose patients to abacavir (ABC) hypersensitivity reaction, EFV neuropsychiatric toxicity, QTc prolongation, and atazanavir (ATV)-associated hyperbilirubinemia.

- Some patients experience treatment-limiting toxicities associated with ART. In these cases, ART must be modified. ART-associated adverse events can range from acute and potentially life-threatening to chronic and insidious. Serious life-threatening events (e.g., hypersensitivity reaction due to ABC, symptomatic hepatotoxicity, or severe cutaneous reactions) require the immediate discontinuation of all ARV drugs and re-initiation of an alternative regimen without overlapping toxicity.
- Toxicities that are not life-threatening (e.g., urolithiasis with ATV or renal tubulopathy with TDF) can usually be managed by substituting another ARV agent for the presumed causative agent without interrupting ART. Other chronic, non-life-threatening adverse events (e.g., dyslipidemia) can be addressed either by switching the potentially causative agent for another agent or by managing the adverse event with pharmacological or nonpharmacological interventions; management strategies must be individualized for each patient.
- Switching a patient from an effective ARV agent or regimen to a new agent or regimen must be done carefully and only when the potential benefits of the change outweigh the potential risks of altering treatment. The fundamental principle of regimen switching is to maintain viral suppression. When selecting a new agent or regimen, health care professionals should be aware that drug resistant viruses previously acquired or selected, even those not detected by past genotypic resistance testing, are archived in HIV reservoirs.
- It is essential that health care professionals review the information found below before implementing any treatment switch.
    - The patient's medical and complete ARV history, including prior virologic responses to ART
    - All previous drug resistance test results
    - Viral tropism (if maraviroc [MVC] is being considered)
    - HLA-B*5701 status (if ABC is being considered)
    - Comorbidities
    - Hepatitis B virus (HBV) status (note: patients with evidence of chronic HBV infection should not discontinue ARVs active against HBV [e.g., TDF, tenofovir alafenamide, lamivudine, emtricitabine])

- Adherence history
- Prior intolerances to any ARVs
- Concomitant medications and supplements, considering any potential drug interactions with ARVs
- Patient's willingness to accept new food requirements and/or dosing schedule

Drug-Drug Interactions

- Pharmacokinetic (PK) drug-drug interactions between antiretroviral (ARV) drugs and concomitant medications are common and may lead to increased or decreased drug exposure (note: PK interactions may occur during absorption, metabolism, or elimination of the ARV and/or the interacting drugs).
- Changes in drug exposure may increase the frequency and/or severity of toxicities or affect therapeutic responses; when prescribing or switching one or more drugs in an ARV regimen, health care professionals must consider the potential for drug-drug interactions - both those affecting ARVs and those affecting concomitant drugs; a thorough review of concomitant medications in consultation with an expert in ARV pharmacology can help in designing a regimen that minimizes undesirable interactions.
- When concomitant use of an ARV drug and another medication is likely to result in a clinically important drug-drug interaction, the first step is to assess whether other, equally effective treatment options can be used to avoid the interaction.
- When it is necessary to prescribe interacting drugs, health care professionals should be vigilant in monitoring for therapeutic efficacy and/or concentration-related toxicities.
- The extent of oral absorption of drugs can be affected by the following mechanisms: acid-reducing agents (e.g., proton pump inhibitors, H2 antagonists, or antacids) can reduce the absorption of ARV drugs that require gastric acidity for optimal absorption (i.e., atazanavir and rilpivirine); products that contain polyvalent cations (e.g., iron products, or antacids that contain aluminum, calcium, or magnesium) can bind to integrase strand transfer inhibitors (INSTIs) and reduce absorption of these ARV agents; drugs that induce or inhibit the

enzyme cytochrome P450 (CYP) 3A4 or efflux transporter P-glycoprotein in the intestines may reduce or promote the absorption of other drugs.

- PK enhancing is a strategy used to increase exposure of an ARV by concomitantly administering a drug that inhibits the enzymes that metabolize the ARV; currently, two agents are used as PK enhancers: ritonavir (RTV) and cobicistat (COBI).

Discontinuation or Interruption of Antiretroviral Therapy

- Discontinuation or interruption of antiretroviral therapy (ART) may result in viral rebound, immune decompensation, and/or clinical progression; discontinuation or planned interruption of ART is not recommended outside the context of a clinical trial.

- Reasons for short-term interruption (days to weeks) of ART vary and may include: intercurrent illnesses that preclude oral intake (e.g., gastroenteritis, pancreatitis), surgical procedures, drug toxicity, or interrupted access to antiretroviral (ARV) drugs; stopping ART for a short time (i.e., less than one day to two days) usually can be done by holding all drugs in the regimen; whether unplanned interruptions occur by accident or by necessity (e.g., because of drug toxicities), all efforts should be made by health care professionals to minimize their duration.

- For patients unable to take medications by any enteral route (e.g., in the context of severe gastrointestinal disease), all components of the oral drug regimen should be stopped simultaneously, regardless of half-lives of the drugs; after disease or illness resolution, all components of the ARV regimen should be restarted simultaneously.

- Many ARV drugs are available as parenteral formulations; these include zidovudine, enfuvirtide, ibalizumab (IBA), and the long-acting (LA) injectable formulations of cabotegravir (CAB LA) and rilpivirine (RPV LA); the combination of CAB LA and RPV LA is approved as a complete regimen for the treatment of HIV; however, this regimen has not been studied as an alternative for patients who cannot take oral medications; health care professionals should consult with an HIV specialist before prescribing any of the aforementioned agents.

- When a patient experiences a severe or life-threatening toxicity to an antiretroviral agent, all components of the ARV drug regimen should be stopped

simultaneously, regardless of drug half-life; after resolution, a different complete regimen that does not include the offending agent should be started.

- For planned missed injection doses of CAB LA and RPV LA, oral formulations of CAB and RPV should be made available to patients as a bridging therapy for up to two months.

- When stopping long-acting injectable ART, transition to a suppressive oral ARV regimen should occur within four weeks of the last planned IM doses; patients who missed or delayed health care visits repeatedly should be reassessed to determine if resumption of injections is appropriate or if they may need to be transitioned back to an oral regimen; plasma viral load testing should be performed before the transition, and drug-resistance testing should be considered if plasma viremia is present.

- Patients with drug-resistant HIV may receive IBA as part of a salvage regimen; IBA should be initiated with a 2,000-mg loading dose given as an intravenous (IV) infusion, then followed by 800 mg given as an IV infusion every 14 days as maintenance therapy; if a dose is missed by ≥3 days, a repeat loading dose of 2,000 mg IV infusion is recommended before resumption of maintenance therapy.

- Before ART is interrupted, patients should be made aware of and understand the risks of viral rebound, acute retroviral syndrome, increased risk of HIV transmission, decline of CD4 count, HIV disease progression, development of minor HIV-associated manifestations (e.g., oral thrush) or serious non-AIDS complications (e.g., renal, cardiac, hepatic, or neurologic complications), and the development of drug resistance; patients should be counseled about the need for close clinical and laboratory monitoring during ART interruptions and provided counseling and linkage to pre-exposure prophylaxis services should they wish to refer sexual partners at risk for acquiring HIV.

- Health care administrators should note the following: several research studies are evaluating approaches to achieve sustained ART-free viral remission or a functional cure for HIV; viral eradication (i.e., elimination of HIV entirely from an individual) remains a more challenging, longer-term goal; currently, the only way to reliably test the effectiveness of these strategies is to interrupt ART and closely monitor for viral rebound in the setting of a clinical trial, an approach referred to as “analytical treatment interruption” or ATI; the duration of treatment

interruption, the dynamics of viral rebound, and the criteria for restarting ART are part of ATI clinical trial designs with the goal to conduct these clinical trials safely.

Special Considerations for Older Adult Populations

- Antiretroviral therapy (ART) is recommended for all people with HIV regardless of CD4 T lymphocyte cell count; ART is especially important for older adults because they have a greater risk of serious non-AIDS complications and potentially a blunted immunologic response to ART.
- Given that the burden of aging-related diseases is significantly higher among persons with HIV than in the general population, additional medical and social services may be required to effectively manage both HIV and comorbid conditions.
- Adverse drug events from ART and concomitant drugs may occur more frequently in older persons with HIV than in younger individuals with HIV. Therefore, the bone, kidney, metabolic, cardiovascular, cognitive, and liver health of older individuals with HIV should be monitored closely.
- Polypharmacy is common in older persons with HIV; therefore, there is a greater risk of drug-drug interactions between antiretroviral drugs and concomitant medications (note: polypharmacy may refer to the simultaneous use of multiple medications).
- Potential for drug-drug interactions should be assessed regularly, especially when starting or switching ART and concomitant medications.
- The decline in neurocognitive function with aging is faster in people with HIV than in people without HIV. HIV-associated neurocognitive disorder (HAND) is associated with reduced adherence to therapy and poorer health outcomes including increased risk of death. For persons with progressively worsening symptoms of HAND, referral to a neurologist for evaluation and management or a neuropsychologist for formal neurocognitive testing may be warranted.
- Mental health disorders are a growing concern in aging people with HIV. A heightened risk of mood disorders including anxiety and depression is observed in this population. Screening for depression and management of mental health issues are critical in caring for persons with HIV.

- Health care administrators should note that one of the most common mental health disorders among older adults is major depressive disorder; major depressive disorder may refer to a form of depression that occurs most days of the week for a period of two weeks or longer leading to clinically significant distress or impairment in social, occupational, or other important areas of functioning (CDC, 2022).
- Older adult individuals with HIV may suffer from dementia. Dementia may refer to a cluster of symptoms centered around an inability to remember, think clearly, and/or make decisions (note: dementia is not a normal part of aging) (CDC, 2019).
- Older adult individuals with HIV may suffer from cognitive impairment. Cognitive impairment occurs when an individual has trouble remembering, learning new things, concentrating, focusing, or making decisions that affect everyday life (CDC, 2019).
- Older adult individuals with HIV may suffer from suicidal ideation; suicidal ideation may refer to thoughts of suicide and/or thoughts of planning suicide; suicidal ideation may lead to a suicide attempt and/or suicide; a suicide attempt may refer to a non-fatal self-directed and potentially injurious behavior with any intent to die as a result of the behavior (note: a suicide attempt may or may not result in injury); suicide may refer to a death caused by injuring oneself with the intent to die (CDC, 2022).
- HIV experts, primary care providers, specialists, and other health care professionals should work together to optimize the medical care of older adults with HIV and complex comorbidities.
- Early diagnosis of HIV and counseling to prevent secondary transmission of HIV remains an important aspect of the care of older adults with HIV.

Section 2 Summary

Rapid access to ART is a pillar of HIV/AIDS treatment. Health care administrators should ensure their health care organizations' treatment protocols and policies and procedures outline ART for residents. Health care administrators should work to continually revise treatment protocols and policies and procedures to reflect up to date HIV/AIDS treatment recommendations that include ART.

Section 2 Key Concepts

- ART is recommended for all persons with HIV to reduce morbidity and mortality and to prevent the transmission of HIV to others.
- ART should be initiated as soon as possible after HIV diagnosis.
- All persons with HIV should be informed that maintaining a plasma HIV RNA (viral load) of <200 copies/mL, including any measurable value below this threshold value, with ART prevents sexual transmission of HIV to their partners.
- ART is especially important for older adults because they have a greater risk of serious non-AIDS complications and potentially a blunted immunologic response to ART.

Section 2 Key Terms

Polypharmacy - the simultaneous use of multiple medications

Major depressive disorder - a form of depression that occurs most days of the week for a period of two weeks or longer leading to clinically significant distress or impairment in social, occupational, or other important areas of functioning

Dementia - a cluster of symptoms centered around an inability to remember, think clearly, and/or make decisions

Suicidal ideation - thoughts of suicide and/or thoughts of planning suicide

Suicide attempt - a non-fatal self-directed and potentially injurious behavior with any intent to die as a result of the behavior

Suicide - a death caused by injuring oneself with the intent to die

Section 2 Personal Reflection Question

Why is it important for health care administrators to update and/or develop treatment protocols and/or policies and procedures that reflect HIV/AIDS treatment recommendations?

Section 3: Opportunistic Infections (OIs)

As previously mentioned, opportunistic infections (OIs) may refer to infections that occur more frequently and are more severe in people with HIV/AIDS. Older adults with HIV/AIDS are especially vulnerable to OIs. In addition to OIs, older adults with HIV/AIDS may also be more vulnerable to coronavirus disease 2019 (COVID-19) (note: coronavirus disease 2019 [COVID-19] may refer to a respiratory illness that can spread from person to person, which is caused by a virus known as the severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]). Therefore, health care administrators should possess insight into OIs and COVID-19 to best serve residents. With that in mind, this section of the course will focus on OIs and COVID-19.

Opportunistic infections (OIs)

OIs can negatively impact the health, overall well-being, and quality of life of older adult residents with HIV/AIDS. OIs can also lead to the death of an older adult resident with HIV/AIDS. Therefore, health care professionals and health care administrators should work to adequately prevent and treat OIs. Specific information regarding OIs may be found below. The information found below was derived from materials provided by the CDC unless, otherwise, specified (CDC, 2021).

- **Candidiasis** - candidiasis is caused by a fungus called Candida; candidiasis can affect the skin, nails, and mucous membranes throughout the body; people with HIV often have trouble with Candida, especially in the mouth and vagina; candidiasis is only considered an OI when it causes severe or persistent infections in the mouth or vagina, or when it develops in the esophagus (swallowing tube) or lower respiratory tract, such as the trachea and bronchi (breathing tube), or deeper lung tissue.

- **Coccidioidomycosis** - coccidioidomycosis is caused by the fungus Coccidioides; it is sometimes called valley fever, desert fever, or San Joaquin Valley fever; people can get it by breathing in fungal spores; the disease is especially common in hot, dry regions (e.g., southwestern United States).

- **Cryptococcosis** - cryptococcosis is caused by the fungus Cryptococcus neoformans; the fungus typically enters the body through the lungs and can cause pneumonia; cryptococcosis usually affects the lungs or the central nervous system (the brain and spinal cord), but it can also affect other parts of the body.

- **Cytomegalovirus (CMV)** - CMV can infect multiple parts of the body and cause pneumonia, gastroenteritis (abdominal pain caused by infection of the colon), encephalitis (infection of the brain), and sight-threatening retinitis (infection of the retina at the back of eye); people with CMV retinitis have difficulty with vision that worsens over time; CMV retinitis is a medical emergency because it can cause blindness if not treated promptly.

- **HIV-related encephalopathy** - HIV-related encephalopathy is a brain disorder that can occur as part of an acute HIV infection or can result from chronic HIV infection; its exact cause is unknown, but it is thought to be related to infection of the brain with HIV and the resulting inflammation.

- **Herpes simplex virus (HSV)** - HSV is a common virus that does not causes major complications for most people; HSV is usually acquired sexually or passed from mother-to-child during birth; in most people with healthy immune systems, HSV is usually latent (inactive); stress, trauma, other infections, or suppression of the immune system (e.g., with HIV) can reactivate the latent virus and symptoms can return; HSV can cause painful cold sores (sometime called fever blisters) in or around the mouth, or painful ulcers on or around the genitals or anus; in people with severely damaged immune systems, HSV can also cause infection of the bronchus (breathing tube), pneumonia (infection of the lungs), and esophagitis (infection of the esophagus, or swallowing tube).

- **Histoplasmosis** - histoplasmosis is caused by the fungus Histoplasma; Histoplasma most often develops in the lungs and produces symptoms similar to the flu or pneumonia; people with severely damaged immune systems can get a very serious form of the disease called progressive disseminated histoplasmosis; progressive disseminated histoplasmosis can last a long time and spread to other parts of the body.

- **Kaposi's sarcoma (KS)** - KS is caused by a virus called Kaposi's sarcoma herpesvirus (KSHV) or human herpesvirus 8 (HHV-8); KS causes small blood vessels to grow abnormally and can occur anywhere in the body; KS appears as firm pink or purple spots on the skin that can be raised or flat; KS can be life-threatening when it affects organs inside the body, such as the lung, lymph nodes, or intestines.

- **Tuberculosis (TB)** - TB is caused by a bacterium called Mycobacterium tuberculosis; TB can spread through the air when a person with TB coughs,

sneezes, or speaks; breathing in the bacteria can lead to infection in the lungs; symptoms of TB in the lungs include: cough, tiredness, weight loss, fever, and night sweats.

- **Mycobacterium avium complex (MAC)** - MAC is caused by infection with different types of mycobacterium: Mycobacterium avium, Mycobacterium intracellulare, or Mycobacterium kansasii; these bacteria live in the environment, including in soil and dust particles; infections with these bacteria spread throughout the body and can be life threatening in people with weakened immune systems.

- **Pneumocystis pneumonia (PCP)** - PCP is a lung infection caused by the fungus Pneumocystis jirovecii; PCP occurs in people with weakened immune systems; the first signs of infection are difficulty breathing, high fever, and dry cough.

- **Pneumonia** - pneumonia is an infection in one or both lungs; many germs, including bacteria, viruses, and fungi, can cause pneumonia; symptoms of pneumonia include: a cough (with mucous), fever, chills, and trouble breathing; in people with immune systems severely damaged by HIV, one of the most common and life-threatening causes of pneumonia is an infection with the bacteria Streptococcus pneumoniae, also called Pneumococcus; individuals with HIV should get a vaccine to prevent infection with Streptococcus pneumoniae.

- Salmonella **septicemia** - Salmonella are bacteria that typically enter the body through eating or drinking contaminated food or water; infection with salmonella (called salmonellosis) can affect anyone and usually causes nausea, vomiting, and diarrhea; Salmonella septicemia is a severe form of infection in which the bacteria circulate through the whole body and exceeds the immune system's ability to control it.

- **Toxoplasmosis** - toxoplasmosis is caused by the parasite Toxoplasma gondii; the parasite is carried by warm-blooded animals including cats, rodents, and birds and is released in their feces (stool); people can develop it by inhaling dust or eating food contaminated with the parasite; Toxoplasma can also occur in commercial meats, especially red meats and pork, but rarely poultry; infection can occur in the lungs, retina of the eye, heart, pancreas, liver, colon, testes, and brain; although cats can transmit toxoplasmosis, litter boxes can be changed safely by wearing gloves and washing hands thoroughly with soap and water afterwards; to help avoid toxoplasmosis, all raw red meats that were not frozen

for at least 24 hours should be cooked through to an internal temperature of at least 150°F.

- **Cryptosporidiosis (Crypto)** - Crypto is a diarrheal disease caused by a tiny parasite called Cryptosporidium; symptoms include abdominal cramps and severe, chronic, watery diarrhea.
- **HIV wasting syndrome** - wasting is defined as the involuntary loss of more than 10% of one's body weight, while having experienced diarrhea or weakness and fever for more than 30 days.

HIV and COVID-19

In the current health care climate, health care administrators should consider how COVID-19 can impact residents with HIV/AIDS. Specific information regarding COVID-19 and HIV may be found below. The information found below was derived from materials provided by the CDC unless, otherwise, specified (CDC, 2022).

- Individuals with HIV have higher rates of certain underlying health conditions; older age and underlying health conditions can make people more likely to become seriously ill if they get COVID-19; this is especially true for older adults with advanced HIV/AIDS or older adults with HIV who are not on treatment.
- Older adult residents at increased risk for severe illness, and those who live with or visit them, should take precautions (e.g., getting vaccinated and wearing a well-fitting mask) to protect themselves and others from COVID-19.
- Some COVID-19 treatments can interact with antiretroviral therapy (ART) used to treat HIV.
- Health care administrators should note the following: health care professionals should conduct a medication reconciliation before COVID-19 treatments are initiated; medication reconciliation may refer to a process of comparing the medications a patient is taking (and should be taking) with newly ordered medications; the comparison addresses duplications, omissions, and interactions, and the need to continue current medications; medication reconciliation is intended to identify and resolve discrepancies; health care organizations should identify the information that needs to be collected to reconcile current and newly ordered medications and to safely prescribe medications in the future (Joint Commission, 2022).

- Health care administrators should note the following: research indicates that currently available medications used to treat or prevent COVID-19 will not interact with pre-exposure prophylaxis (PrEP) to prevent HIV (note: pre-exposure prophylaxis [PrEP] may refer to a medication regimen that can reduce the chances of HIV infection; Truvada and Descovy are approved for PrEP).
- Health care administrators should note that there is no association between COVID-19 vaccines and risk for HIV infection. COVID-19 vaccines improve the immune system's ability to prevent COVID-19 and protect vaccinated people from the more severe complications of COVID-19.
- COVID-19 vaccines are safe for older adults with HIV; COVID-19 vaccines meet the Food and Drug Administration's (FDA) rigorous scientific standards for safety, effectiveness, and manufacturing quality; people with HIV were included in COVID-19 vaccine clinical trials.
- COVID-19 vaccines are recommended for everyone who is eligible.
- After completing the COVID-19 vaccine primary series, some people who have advanced HIV (including an AIDS diagnosis) or who have HIV and are not taking HIV treatment should get an additional primary shot; the additional primary shot is intended to improve a person's immune response to their two-dose COVID-19 vaccine primary series; people who are eligible for an additional primary shot should receive this dose before they get a booster shot.
- The CDC does not recommend an additional primary shot of the COVID-19 vaccine for people with HIV who are virally suppressed or who do not have advanced HIV.
- The CDC recommends that everyone, including people with HIV, get a booster shot when they are eligible.
- Research suggests that COVID-19 vaccines do not interfere with PrEP to prevent HIV, or with ART to treat HIV.
- Currently, treatment for COVID-19 is limited; HIV medications are not approved to treat COVID-19; people with HIV should not switch their HIV medicine in an attempt to prevent or treat COVID-19.

- Health care administrators should note that, currently, researchers are looking at whether HIV medications can treat COVID-19, and at the effectiveness of different drugs to treat COVID-19 in people with HIV.
- Health care administrators should work to reduce the stigma associated with COVID-19 and older adults with HIV/AIDS.
- Stigma may refer to bias against an identifiable group of people, a place, or a nation.
- Stigma is often associated with a lack of knowledge about how COVID-19 spreads, a need to blame someone, fears about disease and death, and gossip that spreads rumors and myths.
- Stigma and discrimination can occur when people link a disease, such as COVID-19, with a population, community, or nationality; stigma can also happen after a person has recovered from COVID-19 or released from home isolation or quarantine (note: discrimination may refer to the unfair treatment of people or groups based on characteristics, such as: race, gender, age, or sexual orientation).
- Stigma can negatively impact individuals by creating more fear or anger toward individuals instead of focusing on the disease that is causing the problem; stigma can also make people more likely to hide COVID-19 symptoms or illness, keep them from seeking health care immediately, and prevent individuals from adopting healthy behaviors; stigma can make it more difficult to control the spread of COVID-19.
- Older adults who experience stigma may also experience discrimination; discrimination can take the form of: other people avoiding or rejecting them; getting denied health care, education, housing, or employment; verbal abuse; or physical violence.
- Stigma can negatively affect the emotional, mental, and physical health of stigmatized groups and the communities they live in; stigmatized individuals may experience isolation, depression, anxiety, or public embarrassment; stopping stigma is important to making all health care facilities safer and healthier.
- Older adults impacted by stigma may experience suicidal ideation. Health care administrators should note the following: the suicide of a patient while in a staffed, round-the-clock care setting is a frequently reported type of sentinel event; the term sentinel event may refer to an unanticipated event in a health

care setting that results in death or serious physical or psychological injury to a patient(s), not related to the natural course of the patient's illness; identification of individuals at risk for suicide while under the care of or following discharge from a health care organization is an important step in protecting these at-risk individuals (Joint Commission, 2022).

- Health care administrators can help prevent stigma by utilizing the strategies found below.
    - Provide COVID-19 education to residents and their families.
    - Educate individuals about the risk of obtaining COVD-19, or lack of risk, from contact with products, people, and places.
    - Maintain the privacy and confidentiality of those seeking health care and those who may be part of any contact investigation.
    - Correcting negative language that can cause stigma by sharing accurate information about how the COVID-19 virus spreads.
    - Speaking out against negative behaviors and statements about COVID-19 and individuals with COVID-19, including those on social media.
    - Use media channels, including news media and social media, to speak out against stereotyping groups of people who experience stigma because of COVID-19.
    - Make sure that images used in communications show diverse communities and do not reinforce stereotypes.
    - Thank health care professionals, responders, and others working on the front lines of COVID-19 care.
    - Suggest resources for mental health or other social support services for individuals experiencing stigma or discrimination.

Section 3 Summary

OIs and COVID-19 can impact the health, overall well-being, and quality of life of older adult residents with HIV/AIDS. OIs and COVID-19 can also lead to the death of an older adult resident with HIV/AIDS. Therefore, health care administrators should work to

ensure OIs and COVID-19 are adequately prevented and treated. Finally, health care administrators should work towards reducing the stigma associated with both OIs and COVID-19 through education and supportive measures that promote privacy and speaking out against negative behaviors and statements.

Section 3 Key Concepts

- Older adults with HIV/AIDS are especially vulnerable to OIs.
- Older age and underlying health conditions can make people more likely to become seriously ill if they get COVID-19; this is especially true for older adults with advanced HIV/AIDS or older adults with HIV who are not on treatment.
- Health care administrators should work to reduce the stigma associated with COVID-19 and older adults with HIV/AIDS.

Section 3 Key Terms

Coronavirus disease 2019 (COVID-19) - a respiratory illness that can spread from person to person, which is caused by a virus known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

Wasting - the involuntary loss of more than 10% of one's body weight while having experienced diarrhea or weakness and fever for more than 30 days

Medication reconciliation - a process of comparing the medications a patient is taking (and should be taking) with newly ordered medications (Joint Commission, 2022)

Pre-exposure prophylaxis (PrEP) - a medication regimen that can reduce the chances of HIV infection

Stigma - bias against an identifiable group of people, a place, or a nation

Discrimination - the unfair treatment of people or groups based on characteristics, such as: race, gender, age, or sexual orientation

Sentinel event - an unanticipated event in a health care setting that results in death or serious physical or psychological injury to a patient(s), not related to the natural course of the patient's illness (Joint Commission, 2022)

Section 3 Personal Reflection Question

How can insight into OIs and COVID-19 help improve the care of older adults with HIV/AIDS?

Conclusion

Health care administrators should consider how HIV/AIDS can affect older adults. Health care administrators should work to identify residents with HIV/AIDS to ensure they receive the care they require. Finally, health care administrators should work to continually revise treatment protocols and policies and procedures to reflect up to date HIV/AIDS recommendations.

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