HIV/AIDS: Update for Behavioral Health Professionals

HOW TO RECEIVE CREDIT

- Read the enclosed course.
- Complete the questions at the end of the course.
- Return your completed Answer Sheet to NetCE by mail or fax, or complete online at www.NetCE.com. Your postmark or facsimile date will be used as your completion date.
- Receive your Certificate(s) of Completion by mail, fax, or email.

Faculty

Alice Yick Flanagan, PhD, MSW, received her Master's in Social Work from Columbia University, School of Social Work. She has clinical experience in mental health in correctional settings, psychiatric hospitals, and community health centers. In 1997, she received her PhD from UCLA, School of Public Policy and Social Research. Dr. Yick Flanagan completed a year-long post-doctoral fellowship at Hunter College, School of Social Work in 1999. (A complete biography appears at the end of this course.)

Jane C. Norman, RN, MSN, CNE, PhD, received her undergraduate education at the University of Tennessee, Knoxville campus. There she completed a double major in Sociology and English. She completed an Associate of Science in Nursing at the University of Tennessee, Nashville campus and began her nursing career at Vanderbilt University Medical Center. Jane received her Masters in Medical-Surgical Nursing from Vanderbilt University. (A complete biography appears at the end of this course.)

John M. Leonard, MD, Professor of Medicine Emeritus, Vanderbilt University School of Medicine, completed his post-graduate clinical training at the Yale and Vanderbilt University Medical Centers before joining the Vanderbilt faculty in 1974. He is a clinician-educator and for many years served as director of residency training and student educational programs for the Vanderbilt University Department of Medicine. (A complete biography appears at the end of this course.)

Faculty Disclosure

Contributing faculty, Alice Yick Flanagan, PhD, MSW, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Contributing faculty, Jane C. Norman, RN, MSN, CNE, PhD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Contributing faculty, John M. Leonard, MD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Director of Development and Academic Affairs

Sarah Campbell

Director Disclosure

The director has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Audience

This course is designed for all behavioral health professionals, including social workers, counselors, and marriage and family therapists, who may be involved with the care of persons with HIV or AIDS.

Accreditations & Approvals

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A complete Works Cited list begins on page 28.

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This course is considered self-study by the New York State Board of Mental Health Counseling.

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This course is considered self-study by the New York State Board of Marriage and Family Therapy.

Designations of Credit

Social workers completing this intermediate-to-advanced course receive 7 Clinical continuing education credits.

NetCE designates this continuing education activity for 2.5 NBCC clock hours.

Individual State Behavioral Health Approvals

In addition to states that accept ASWB, NetCE is approved as a provider of continuing education by the following state boards: Alabama State Board of Social Work Examiners, Provider #0515; Florida Board of Clinical Social Work, Marriage and Family Therapy and Mental Health, Provider #50-2405; Illinois Division of Professional Regulation for Social Workers, License #159.001094; Illinois Division of Professional Regulation for Licensed Professional and Clinical Counselors, License #197.000185; Illinois Division of Professional Regulation for Marriage and Family Therapists, License #168.000190.

Special Approvals

This course meets the qualifications for 7 hours of continuing education credit for mental health professionals in the area of HIV/AIDS as required by the California Board of Behavioral Sciences.

About the Sponsor

The purpose of NetCE is to provide challenging curricula to assist healthcare professionals to raise their levels of expertise while fulfilling their continuing education requirements, thereby improving the quality of healthcare.

Our contributing faculty members have taken care to ensure that the information and recommendations are accurate and compatible with the standards generally accepted at the time of publication. The publisher disclaims any liability, loss or damage incurred as a consequence, directly or indirectly, of the use and application of any of the contents. Participants are cautioned about the potential risk of using limited knowledge when integrating new techniques into practice.

Disclosure Statement

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Course Objective

In view of the already existing crisis in health care in the United States, the problems associated with providing the necessary care for persons with HIV infection or AIDS are significant. The purpose of this course is to address those problems in the discussion of epidemiology, pathophysiology, transmission, complications, treatment advancements, prevention, ethical and legal aspects of care, and workplace concerns.

Learning Objectives

Upon completion of this course, you should be able to:

1. Discuss the background and significance of the AIDS epidemic, including geographic patterns of transmission.
2. Describe the transmission of HIV infection, including risk behaviors and routes of contagion.
3. Outline the management of HIV disease.
4. Discuss the impact of the virus on women living with HIV infection.
5. Review the transmission of HIV to the infant and child, and discuss care of these infected children.
6. Summarize issues unique to older persons with HIV infection.
7. Review ethical and legal implications of HIV infection.

EVIDENCE-BASED PRACTICE RECOMMENDATION

Sections marked with this symbol include evidence-based practice recommendations. The level of evidence and/or strength of recommendation, as provided by the evidence-based source, are also included so you may determine the validity or relevance of the information. These sections may be used in conjunction with the course material for better application to your daily practice.

INTRODUCTION

The amount that has been learned and written about human immunodeficiency virus (HIV) infection and disease and its influence on individuals and society is staggering. Since the first reported case of HIV more than 40 years ago, researchers have made major inroads in understanding modes of transmission, infectivity, and pathogenicity. Knowledge about the characteristics and behavior of this human retrovirus and its complex mechanisms of immunopathogenesis has helped to develop targeted therapeutic interventions and vaccine strategies. Sophisticated techniques have been and are being developed to diagnose infection, monitor immune decline, monitor response to therapy and disease progression, and accurately detect and diagnose opportunistic diseases.

Therapeutic alternatives, especially the nucleoside analogue antiretroviral drugs, have been tested, approved, and are providing benefit to many who are have HIV infection. Much has been learned about the complexities of caring for persons with HIV, how to keep them disease-free longer, and how to manage their symptoms more effectively. In addition, the development of new knowledge from HIV-related research has also helped to clarify aspects of the human immune response, behavioral interventions, public health strategies, and social and ethical approaches that contribute to the understanding and management of other diseases and health conditions.

EPIDEMIOLOGY

The epidemiology of HIV infections is presented as it appears in Africa, Asia, Europe, and the United States. Analysis reveals that the HIV pandemic continues to escalate throughout developing countries compared to a notable stabilization in new cases and fatalities in some developed countries. The established healthcare community became aware of the illness that has since become known as acquired immune deficiency syndrome (AIDS) in 1981. The tasks of slowing the HIV pandemic and decreasing the mortality rate are being accomplished by efforts such as diligent treatment of sexually transmitted infections (STIs), increased condom distribution, and utilization of needle exchange programs. In order to further decrease HIV transmission, there are increased efforts to strengthen public health infrastructures, support HIV/STI prevention programs, introduce microbicide, use inexpensive antiretroviral drug therapy for treatment and prevention of transmission, and improve educational campaigns [1].

Two human immunodeficiency viruses, HIV-1 and HIV-2, have been identified and both cause AIDS. Researchers in America and England have traced the ancestry of the HIV-1 virus to two strains found in African red-capped mangabeys and greater spot-nosed monkeys. The strains most likely combined in chimpanzees that ate the monkeys, resulting in the chimpanzees developing simian immunodeficiency virus (SIV). Chimpanzees then transmitted the virus to humans, as early as 1908. Genetic studies suggest that the lower monkeys first became infected with SIV 100,000 years ago [2]. HIV-2 is believed to be endemic in West Africa. Several well-documented cases of HIV-2 infection have been reported in Europeans and among West Africans residing abroad.

Between 1988 and 2010, there were a total of 166 verified cases of HIV-2 in the United States, the majority of which were associated with immigration from, travel to, or a sexual partner from West Africa [3]. Differences in the global spread are attributed to differences in transmissibility and duration of infectiousness [4]. In the United States, HIV-2 infection is concentrated in the Northeast [3].

Many countries owe acquisition of HIV infection in their population to sexual transmission or contact with American blood products that were exported before the 1985 HIV screening procedures.

According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), an estimated 38.4 million individuals worldwide were living with HIV/AIDS in 2021, more than one-half of which were women [5]. Eastern and southern Africa account for 94% of new HIV infections [5]. It is important to note that despite increases in certain geographic areas and demographic groups, overall, the rate of new infections is declining. This is due, in part, to lower prices for anti-AIDS drugs and implementation of prevention programs [5]. In 2003, the U.S. government approved the purchase of generic drugs to fight the disease in Africa. In that same year, the President's Emergency Plan for AIDS Relief (PEPFAR) was introduced and implemented [6]. PEPFAR was reauthorized in 2008, 2013, and 2018 with more than $50 billion in funds to address HIV/AIDS and additional health issues, including malaria, tuberculosis, maternal health, and clean water [7]. At the end of 2021, $21.4 billion in U.S. dollars was available for the AIDS response in low- and middle-income countries [5].

U.S. STATISTICS

As of 2021, an estimated 1.9 million individuals were living with HIV/AIDS in North America and western and central Europe, including approximately 1.2 million in the United States [8]. The CDC estimates that approximately 15% to 20% of these individuals are unaware of their infection [8; 9]. To compound the problem, only 28% of individuals aware of their infection receive ongoing care. A majority of all individuals infected with HIV remain untested, without treatment, or both [8]. Unfortunately, this poses a risk both for those who are infected and for others.

Many changes in the progression of the HIV/AIDS epidemic should be considered. Since the first reported cases of HIV in 1981 in the United States, the epidemic continues to vary a great deal between regions, states, and even communities. Populations that are affected by HIV are also shifting. In addition to individuals traditionally considered to be high-risk (e.g., men who have sex with men [MSM] or injection drug users [IDUs]), new groups have been identified as being at greater risk. For example, in the beginning stages of the HIV/AIDS epidemic in the United States, white people were chiefly impacted. However, the epidemic now greatly affects racial and ethnic minorities, particularly black Americans, who represent approximately 42% of all new diagnoses in the United States [10]. Men continue to be heavily affected by HIV, accounting for 80% of new HIV diagnoses in 2020 [10].

One should keep in mind when reviewing HIV/AIDS trends that the widespread use of combination antiretroviral therapy (cART) has resulted in fewer deaths and longer survival [8]. As of 2020, the Centers for Disease Control and Prevention (CDC) report several trends in the HIV/AIDS epidemic [10]:

- By region, the rate of HIV diagnosis was highest in the South (14.7 per 100,000 population) and lowest in the Midwest (7.2 per 100,000 population).
- By race/ethnicity, the percentages of HIV infection were approximately 42% among Black/African Americans, 27% among Hispanic/Latino individuals, 26% among White Americans, 3.0% among those of multiple races, 2% among Asians, and roughly 1% among American Indian/Alaska Natives or Asian/Pacific Islanders.
- By gender, 80% of adults and adolescents living with AIDS are male.

The CDC has published guidelines for medical professionals to integrate HIV prevention into the regular medical care of those living with HIV. The three major components of the recommendation are [11]:

- Screening for HIV transmission risk behaviors and STIs
- Providing brief, behavioral risk-reduction interventions in the office setting and referring selected patients for additional prevention interventions and other related services
- Facilitating notification and counseling for sex and needle-sharing partners of infected persons

The National HIV/AIDS Strategy for the United States 2022–2025 was developed by the White House Office of National AIDS Policy (ONAP) in collaboration with federal partners and with input from the HIV community across the country [12]. The Strategy is the nation's third national HIV strategy and updates the HIV National Strategic Plan of 2021. The Strategy sets targets for ending the HIV epidemic in the United States by 2030, including a 75% reduction in new HIV infections by 2025 and a 90% reduction by 2030 [12].

The CDC developed a method to better measure the rate of HIV infections in the United States. The Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS) allows the CDC to more accurately monitor the number of new HIV infections in the United States, which in turn should facilitate targeted prevention in those populations most in need [13; 14]. STARHS consists of two tests to determine both seropositivity and how recently the infection was contracted [15].

HIV TESTING

Several tests are available to screen for HIV. There are various ways by which these tests function: detection of the antibody, identification of antigens, detection/monitoring of viral nucleic acids, or rendering an estimate of T-lymphocytes (cell phenotyping). HIV self-tests also are available. Each type of HIV test has its own testing window (i.e., the time between a potential HIV exposure and an accurate test result). Nucleic acid tests can detect HIV the earliest, followed by the antigen/antibody combination test, and lastly, the antibody test [15].

Tests used to detect antibodies are the most common and effective way of identifying HIV infection and can be further broken down into two categories [16]:

- **Screening tests**: Intended to determine all individuals infected with HIV; produces few false-negative results
- **Supplemental/confirmatory tests**: Intended to determine all individuals who have positive screening tests, but are not infected (i.e., negates a false-positive), produces few false-positive results

Both types of tests are highly sensitive. Together, they can accurately assess the existence of HIV in blood supply and supplement clinical diagnosis.

Screening for the antibody is helpful only to the extent that individuals who have been exposed to HIV can be identified. However, not all of these individuals actually carry the virus, nor will all of them show signs of illness [16]. Therefore, several situations are possible [17]:

- **Exposure**: An individual may be exposed to the virus but neither carry it nor contract the disease.
- **Carrier**: The individual may carry the virus with the capability of infecting others without accompanying signs and symptoms.

- **Terminal disease**: The individual may be infectious, symptomatic, and terminal. HIV disease becomes AIDS when the immune system is so damaged that the number of CD4+ T-lymphocyte cells is less than 200 per mm3 or an opportunistic infection occurs.

It is thought that carriers of the virus who test positive for the antibody can remain as carriers for years with the virus in a dormant state. Although approximately one-third of those who now test positive for the disease eventually will begin to show clinical manifestations, it is thought by some investigators that the percentage of those who go on to develop the disease will eventually approach 100% [18].

TRANSMISSION OF HIV

Transmission of HIV results from intimate contact with blood and body secretions, excluding saliva and tears. The most common modes of transmission are sexual contact, administration of contaminated blood and blood products, contaminated needles, and mother-to-fetus. Blood transfusions of whole blood, packed cells, and fresh frozen plasma are unlikely to be the cause of transmission with the more sophisticated cross-matching and antibody screening measures; individuals needing specific blood components (such as factor VIII and frequent plasma replacement) are more at risk [18].

On the basis of newly reported cases, the transmission categories are [10]:

- Male-to-male sexual contact
- Heterosexual contact
- Injection drug use
- Male-to-male sexual contact and injection drug use
- Perinatal
- Other

SEXUAL TRANSMISSION OF HIV

HIV has been isolated from blood, seminal fluid, pre-ejaculate, vaginal secretions, urine, cerebrospinal fluid, saliva, tears, and breast milk of infected individuals. Whether HIV infects spermatozoa is controversial. Reports of the removal of infected cells from semen, allowing artificial insemination without seroconversion, support the idea that spermatozoa are not infected. No cases of HIV infection have been traced to saliva or tears [19].

The virus is found in greater concentration in semen than in vaginal fluids, leading to a hypothesis that male-to-female transmission could occur more easily than female-to-male. Sexual behavior that involves exposure to blood is likely to increase transmission risks. Transmission could occur through contact with infected bowel epithelial cells in anal intercourse in addition to access to the bloodstream through breaks in the rectal mucosa.

Although all HIV-seropositive people are potentially infectious, there is widespread variation in the seropositivity and seroconversion of their sexual partners. Factors that could explain this variability include differences in sexual practices and numbers of sexual contacts, susceptibility of the partner, differences in viral strains, changing degrees of infectiousness of the person with HIV over time, co-factors that enhance or limit transmission, genetic resistance, or a combination of these factors.

Posing the highest risk of infection is unprotected receptive anal intercourse, followed by unprotected vaginal intercourse. Risk is reduced through the use of latex condoms. For the wearer, latex condoms provide a mechanical barrier limiting penile exposure to infectious cervical, vaginal, vulvar, or rectal secretions or lesions. Likewise, the partner is protected from infectious pre-ejaculate, semen, and penile lesions. Oil-based lubricants may make latex condoms ineffective and should not be used. Water-soluble lubricants are considered safe. Natural membrane condoms (made from lamb cecum) contain small pores and do not block HIV passage.

Latex condoms are considered highly effective at preventing HIV transmission, resulting in a 70% to 80% reduction compared to never users [20]. Although abstinence from sexual contact is the sole way to absolutely prevent transmission, using a latex condom to prevent transmission of HIV is more than 10,000 times safer than engaging in unprotected sex [21]. Sexual activity in a mutually monogamous relationship in which neither partner is HIV-infected and no other risk factors are present is considered safe [4].

The phenomenon of men who identify publicly as heterosexual and generally have committed relationships with women, but who also engage in sexual activity with other men, termed being on the "down low" or DL, may be a transmission bridge to heterosexual women. In a 2005 study, researchers surveyed 328 MSM in 12 cities and found that 43% of black men, 26% of Hispanic men, and 7% of white men reported being on the down low [22]. However, it is important to note that men on the "down low" are not the only MSM who report having sexual contact with women. In a larger study of 5,000 HIV-positive MSM, 22% of gay-identified black MSM and 61% of bisexual-identified black MSM reported having had sex with a woman in the past five years [23]. Also, a 2009 study of 1,151 black MSM found that men who identified as "down low" were not more likely to engage in unprotected vaginal or anal sex with women or men [24]. Research has also shown that men who have sex with both men and women are less likely to have ever been tested for HIV or to have received information about HIV prevention than men who have sex with men only [25]. To better understand the actual extent of this behavior and its impact on HIV transmission, more research and studies must be undertaken.

Oral Sex

Numerous studies have demonstrated that oral sex can result in the transmission of HIV and other STIs. While the risk of HIV transmission through oral sex is much smaller than the risk from anal or vaginal sex, there are several co-factors that can increase this risk, including oral ulcers, bleeding gums, genital sores, and the presence of other STIs. The highest oral sex risk is to individuals performing oral sex on a man with HIV, with ejaculation. Prevention includes the use of a latex or plastic condom on the penis and a cut-open condom or a dental dam used between the mouth and the vagina or anus [26].

BLOOD DONOR PRODUCTS

It has been estimated that a milliliter of HIV-infected human blood contains up to 10,000 copies of the virus. In comparison, a milliliter of blood infected with hepatitis B virus has 100 million to 1 billion infective organisms. Even so, HIV is transmitted via blood, primarily through sharing of contaminated needles among IDUs and, rarely, through blood transfusion. Transmission of HIV-1 has occurred after transfusion of the following components: whole blood, packed red blood cells (including washed and buffy coat poor), fresh frozen plasma, cryoprecipitate, platelets, and plasma-derived products, depending on the production process. With the implementation of a donor screening program of the nation's blood supply in 1985 and advances in the treatment of donated blood products, blood transfusion is now even safer; the current risk of transmission of HIV through this route is conservatively estimated to be 1 in 1.5 million [27]. It is possible that before blood screening implementation, more than 12,000 people were infected. A large percentage of hemophiliacs acquired HIV in this manner. Donor screening, HIV testing, and heat treatment of the clotting factor have greatly reduced the risks.

NEEDLE SHARING

More than 3,100 new HIV infections occurred in 2020 among IDUs [10]. Transmission of HIV among injecting drug users occurs primarily through contamination of injection paraphernalia with infected blood. The risk of sustaining HIV infection from a needle stick with infected blood is approximately 1 in 300. Behavior such as needle sharing, "booting" the injection with blood, and performing frequent injections increases the risk. Cocaine use (by injection or smoking) is associated with a higher prevalence of HIV infection. This may in part be attributed to the exchange of cocaine for sex. Sharing of equipment is common due to legal and financial restrictions and cultural norms. Geographically, the rate of infection varies; 80% of New York City addict needle-sharers are infected, as opposed to lower rates in other metropolitan area clusters. Secondary transmission occurs to children and sexual partners. Preventive strategies include drug treatment, onsite medical care in a drug treatment program, recruitment of "street" outreach workers for intensive drug and sex "risk reduction" educational campaigns, teaching addicts to sterilize their equipment between use, the free provision or exchange of sterile injection equipment (as allowed by law), distribution of condoms and bleach to clean drug use equipment, or a combination of these interventions [4].

Syringe services programs (SSPs) are community-based prevention programs that provide a range of services, including access to and disposal of sterile syringes and injection equipment. SSPs can reduce needlestick injuries and overdose deaths. Studies show that SSPs protect first responders and the public by providing safe needle disposal. They can also serve as a bridge to other health services, including HCV and HIV diagnosis and treatment [28].

Health professionals should stress the following messages when they counsel IDUs [29]:

- The best way for you to prevent HIV and hepatitis B and C virus transmission is to NOT inject drugs.
- Entering substance abuse treatment can help you reduce or stop injecting. This will lower your chances of infection.
- Get vaccinated against hepatitis A and hepatitis B. You can prevent these kinds of viral hepatitis if you get vaccinated.
- If you cannot or will not stop injecting, you should:
  - Use a new, sterile syringe obtained from a reliable source to prepare and divide drugs for each injection.
  - Never reuse or share syringes, water, cookers, or cottons.
  - Use sterile water to prepare drugs each time, or at least clean water from a reliable source.
  - Keep everything as clean as possible when injecting.
- If you cannot use a new, sterile syringe and clean equipment each time, then disinfecting with bleach may be better than doing nothing at all:
  1. Fill the syringe with clean water and shake or tap. Squirt out the water and throw it away. Repeat until you do not see any blood in the syringe.
  2. Completely fill the syringe with fresh, full-strength household bleach. Keep it in the syringe for 30 seconds or more. Squirt it out and throw the bleach away.
  3. Fill the syringe with clean water and shake or tap. Squirt out the water and throw it away.
- If you do not have any bleach, use clean water to vigorously flush out the syringe. Fill the syringe with water and shake or tap it. Squirt out the water and throw it away. Repeat several times.

It is important to note that a disinfected syringe is not a sterile syringe. The best option is always to use a new, sterile syringe with every injection.

PERINATAL TRANSMISSION

In the absence of prophylactic treatment, approximately 30% to 50% of children born to mothers with HIV will contract HIV infection. HIV is transmitted to infants by transplacental spread from mother to fetus in utero, during parturition, or through breastfeeding after birth [30]. Because infants have underdeveloped natural resistance systems, they are highly susceptible to many infections, including HIV. Both uninfected and infected infants have been born to mothers who have previously borne an infected infant. Studies have dramatically shown the beneficial effect of treating pregnant women and newborns with zidovudine (ZDV) to prevent transmission to the child, resulting in dramatic declines in the incidence of perinatally acquired AIDS [30]. Standard screening of all pregnant women is necessary to reduce transmission of HIV to infants.

Worldwide, perinatal transmission accounts for most HIV infections among children. In the United States in 2019, an estimated 84 infants were born with HIV infection, a 41% decrease from 2015 [30]. This dramatic decrease is mainly attributed to the use of cART [31]. Other strategies for reducing perinatally acquired HIV infection have included preventing HIV infection among women and, for women with HIV, avoiding pregnancy or refraining from breastfeeding.

On February 21, 1994, the National Institutes of Health's National Institute of Allergy and Infectious Diseases (NIAID) and National Institute of Child Health and Human Development (NICHD) announced preliminary results from a randomized, multicenter, double-blind clinical trial of ZDV to prevent HIV transmission from mothers to their infants. This report summarizes the interim results of that trial, which indicate effectiveness of ZDV for prevention of perinatal transmission. Based on these interim findings, NIAID accepted the recommendation of an independent data and safety monitoring board to terminate enrollment into the trial and to offer ZDV to women in the group who had received the placebo but had not yet delivered and to their infants younger than 6 weeks of age [32].

ORGAN TRANSPLANTATION

Because these procedures are less common than other transmission-related activities, there have been very few case reports of HIV acquisition by this route. HIV has been transmitted via transplanted kidneys, liver, heart, pancreas, bone, and, possibly, skin grafts and through artificial insemination. HIV testing is used in these circumstances to rule out infection. Most cases of transmission through transplants of organs, bone, or tissue occurred before HIV screening was available. However, in 2007, four organ transplant recipients contracted HIV and hepatitis C from a single deceased organ donor [33]. This was the first case of HIV infection resulting from transplantation since 1985. Since then, a living kidney donor who tested negative for HIV 12 days prior to donation was found to have transmitted HIV to the donor recipient, the first case of transmission from a living donor since 1989 [34]. As with blood transfusions, donors testing antibody seronegative may pass HIV infection on to recipients [4]. The use of nucleic acid testing and reconsideration of the use of high-risk donors have both been recommended to ensure the safety of donor recipients [33].

In 2013, Congress passed the HIV Organ Policy Equity (HOPE) Act, which called for the use of organs from HIV-positive donors for transplantation into HIV-positive candidates under approved research protocols. The provisions of the Act took effect In November 2015. The protocol initially only authorized kidney and liver transplants, but as a result of a 2020 update, organs of any type may now be transplanted under HOPE Act protocols [35; 36]. As of 2020, 324 hospitals have performed a total of 223 transplants (170 kidney, 53 liver), and a total of 30 transplant hospitals are enrolled with the Organ Procurement and Transplantation Network to participate in HOPE Act research [36].

OCCUPATIONAL EXPOSURES

Transmission due to occupational exposure of healthcare workers has occurred in needlestick accidents and blood splashes to the mucous membranes. Needlestick is the most common route. Thousands of healthcare personnel who were so exposed have been studied, and only 57 cases of well-documented infection have been reported in the United States (24 of which were nurses) [37]. The risk of infection through this route is low, and every effort should be made to decrease the exposure rate. Educational efforts, implementation of engineering controls in needled and sharp-edged medical devices, the use of hard plastic needle disposal units where these devices are most frequently used, and the development of procedural details to avoid blood and body fluid contact have greatly reduced the exposure rate. Healthcare personnel should apply Universal Precautions, as discussed in the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens standard regulations, to all activities to avoid contact with human fluids [4].

All body fluids should be considered potentially infectious. Contaminated needles or other sharps should not be bent, recapped or removed, unless specifically required by a particular medical or dental procedure. All healthcare professionals should have access to and use personal protective equipment, such as gloves, gowns, face shields, masks, eye protection, and ventilation devices, to limit exposure to potentially infectious fluids. OSHA standards require that single-use gloves be worn when contact with blood or other potentially infectious substance, including mucous membranes, can be reasonably anticipated [38].

Postexposure Prophylaxis

The U.S. Public Health Service (PHS) has developed recommendations for situations where healthcare personnel have had exposure to a source person with HIV or where information suggests that there is a likelihood that the source person is HIV-infected. These recommendations are based on the risk for HIV infection after different types of exposure and limited data regarding efficacy and toxicity of postexposure prophylaxis (PEP) [39]. Because most occupational HIV exposures do not result in the transmission of HIV, potential toxicity should be carefully considered when prescribing PEP. When possible, these recommendations should be implemented in consultation with persons having expertise in cART and HIV transmission.

It is recommended that PEP be started as soon as possible after the potential exposure and continue for four weeks [39]. The PHS no longer recommends that the severity of exposure be used to determine the number of drugs offered in an HIV PEP regimen [40]. A regimen containing three (or more) antiretroviral drugs is now recommended routinely for all occupational exposures to HIV. The regimen should be administered as soon as possible within 72 hours of exposure and should be continued for 28 days [41]. The suggested regimen is tenofovir/emtricitabine plus dolutegravir or bictegravir. PEP should be initiated even if awaiting results of HIV testing [40; 41]. In the setting of pregnancy or breastfeeding, expert consultation is advised [41].

MANAGEMENT OF HIV INFECTION

Primary physicians in consultation with specialists are playing an increasing role in the care of individuals with HIV. It is not possible for all care to be delivered by infectious disease and oncology specialists. Moreover, with early cART and prophylaxis for opportunistic infections, HIV disease shares features of other multisystem, chronic diseases characterized by acute exacerbations and end-stage manifestations.

EVIDENCE-BASED PRACTICE RECOMMENDATION

According to the Panel on Antiretroviral Guidelines for Adults and Adolescents, antiretroviral therapy should be initiated in all patients with HIV infection regardless of CD4 count.

(https://clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/adult-adolescent-arv/guidelines-adult-adolescent-arv.pdf. Last accessed February 23, 2023.)

Strength of Recommendation: AI (Strong recommendation based on one or more randomized trials with clinical outcomes and/or validated laboratory endpoints)

Primary care physicians should provide risk factor assessment of their patients and, when appropriate, screening for HIV infection with pretest and post-test counseling [42]. Pretest counseling should include review of risk factors for HIV infection, discussion of safer sex, and the meaning of a positive test. Post-test counseling should include information on steps to lower HIV risk. Post-test counseling for the patient who has a positive test result should include [42; 43]:

- Addressing emotional response and concerns associated with being HIV positive
- Treatment options
- A referral for HIV and mental health care
- Emphasis on the importance of notifying the patient's sex or drug use partner(s)
- Information about how to avoid transmitting HIV to others

Patients with HIV infection should be seen at regular intervals by a primary care provider to perform periodic physical examinations, monitor prognostic markers (e.g., CD4 count, viral load), initiate and monitor antiviral and prophylactic therapy, provide supportive counseling, and offer assistance with terminal care. Specialists should be consulted for patients intolerant of standard drugs, those in need of systemic chemotherapy, and those with complicated opportunistic infections. In some cases, a single specialist consultation with follow-up to the primary care physician will provide the needed expertise while ensuring continuity of care.

COMBINATION ANTIRETROVIRAL THERAPY

Strategies for the treatment of HIV infection are based on an understanding of the molecular biology of HIV and the life cycle of the virus within the host cell. Antiviral agents have been developed that act predominately on processes specific to the virus particle in order to preserve the integrity of the host cell. Several potential strategies specifically aimed at interruption of the viral life cycle have been defined, including:

- Preventing the virus from attaching to the CD4 receptor of the T4 lymphocyte
- Interfering with uncoating of the virus within the cell, the first essential step in proviral integration into cellular DNA
- Inhibiting reverse transcriptase (RT), a viral enzyme specific to retroviruses, which enables the virus to make a DNA copy from single-stranded viral RNA prior to integration into cellular DNA
- Blocking viral regulatory and trans-activating proteins, which are involved in the transcription and translation of viral RNA proteins from proviral DNA as the virus goes from the quiet, integrated state to active replication
- Inhibiting protease, a viral enzyme responsible for the cleaving of viral proteins both before proviral integration and as the viral particles recombine into functional proteins needed for viral maturation
- Preventing viral assembly and budding out of the cell
- Blocking the viruses' ability to enter CD4 cells

More than 30 antiretrovial drugs in several mechanistic classes are FDA-approved for treatment of HIV infection. These classes are: nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), fusion inhibitors, integrase strand transfer inhibitors (INSTIs), chemokine (C-C motif) receptor 5 (CCR5) antagonists, CD4 T lymphocyte (CD4) post-attachment inhibitors, gp120 attachment inhibitors, and capsid inhibitors. In addition, two drugs, ritonavir and cobicistat, are used as pharmacokinetic enhancers (or boosters) to improve the pharmacokinetic profiles of PIs [44]. Initiated in 1995 in the United States, cART regimens have been effective in dramatically decreasing HIV-related morbidity and mortality and should be considered for all persons with HIV who qualify for such therapy. In addition to combination therapy, the sequencing of drugs and the preservation of future treatment options are also important.

An initial regimen generally consists of two NRTIs administered in combination with a third active antiretroviral drug from one of three drug classes: an INSTI, a NNRTI, or a PI with a pharmacokinetic enhancer booster. Data also support the use of the two-drug regimen dolutegravir plus lamivudine for initial treatment [44]. The goal of these regimens is to effectively reduce HIV-associated morbidity, prolong the duration and quality of survival, restore and preserve immunologic function, and prevent HIV transmission while also avoiding drug resistance [44]. A significant proportion of patients starting cART are infected with drug-resistant strains of HIV, which may lead to suboptimal virologic responses. Therefore, pretreatment genotypic resistance testing should be used to guide selection of the most optimal initial regimen [44].

The decision to initiate antiretroviral therapy is one that requires careful discussion with the patient, usually in consultation with an infectious disease specialist or other physician well versed in the use of cART. Physicians and patients alike should be aware of the advantages, potential toxicities, and complexity of monitoring therapy. At the present time, the most active triple-drug regimen in a previously untreated patient can be expected to reduce the viral load below detectable levels, increase CD4 counts by an average of 100–150 cells/mcL, reduce the risk of HIV-associated complications, and prolong survival. However, the ability to achieve this advantage depends on the patient's willingness to accept a complex medical regimen that requires "many pills," rigorous compliance, frequent follow-up, and moderate risk for drug toxicity.

EVIDENCE-BASED PRACTICE RECOMMENDATION

Multidisciplinary approaches to find solutions to compliance with cART and appointment adherence problems are often necessary, including collaboration with social work and case management. (https://clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/adult-adolescent-arv/guidelines-adult-adolescent-arv.pdf. Last accessed February 23, 2023.)

Strength of Recommendation: Expert Opinion/Consensus Statement

Patient compliance may be improved with therapies that combine more than one drug into a single pill, making it easier for patients to comply with their medication regimen. As of 2023, there were 23 combination medications available [45]. In addition to those medications that have been FDA-approved for the treatment of HIV, there is a long list of investigational, or "pipeline," drugs being tested in clinical trials. For more information on those agents and the trials, please visit the National Institutes of Health information website at https://hivinfo.nih.gov/understanding-hiv/fact-sheets/what-investigational-hiv-drug.

In 2021, the FDA approved the first monthly injectable cART—Cabenuva (cabotegravir/rilpivirine) [46]. This monthly injectable is intended to improve compliance and quality of life in patients with controlled HIV. Prior to initiating injectable therapy, oral therapy with cabotegravir/rilpivirine is started to ensure the agents are well-tolerated [46]. In 2022, the FDA approved lenacapavir for adult patients living with HIV-1 whose infections cannot be successfully treated with other available treatments due to resistance, intolerance, or safety considerations [47]. Lenacapavir is the first of a new class of drugs called capsid inhibitors to be FDA-approved for treating HIV-1. It works by blocking the protein shell (the capsid) of the HIV virus, thereby interfering with essential steps in the viral lifecycle. The two recommended dosage regimens include oral tablets and subcutaneous injections [47].

PREVENTION OF OPPORTUNISTIC INFECTIONS

Depending on the CD4 count and other risk factors, asymptomatic patients may benefit from treatment to prevent opportunistic infections. In many cases, cART is useful in the prevention and treatment of these infections. Guidelines for antimicrobial prophylaxis of opportunistic infections are provided by the CDC, National Institutes of Health, HIV Medicine Association, and Infectious Diseases Society of America [48]. Prophylactic therapy for these conditions is strongly recommended because these infections are relatively common in patients with HIV, preventive therapy is simple and cost effective,

and efficacy has been established in clinical studies. In addition, all patients should be vaccinated with pneumococcal vaccine. Hepatitis B vaccination should be considered in patients whose serologic testing indicates susceptibility.

The CDC, the National Institutes of Health, the HIV Medicine Association, and the Infectious Diseases Society of America have developed guidelines for the prevention of opportunistic infections among individuals with HIV. The report offers guidelines specific to each type of opportunistic infection [48]. Initiation of cART within two weeks of starting treatment of a concurrent opportunistic infection is recommended, except in instances when delaying cART is warranted due to increased risk of morbidity or mortality [47]. For persons with active tuberculosis (TB), cART should be initiated within two weeks after initiation of treatment for TB, particularly if the CD4 cell count is <50 [47].

HIV INFECTION AND COVID-19

It is well-established that the COVID-19 pandemic disrupted access to and delivery of a wide range of healthcare services, including HIV care and services [49; 50]. While evidence indicates that people with HIV are not at increased risk of acquisition of SARS-CoV-2 compared with people without HIV, preventative interventions have been recommended, including [41]:

- Primary COVID-19 vaccination and vaccine boosting for all people with HIV
- Primary vaccination (three-dose regimen) and vaccine boosters for all people with untreated HIV infection or CD4 cell count <200
- Pre-exposure prophylaxis (PrEP) (in the presence of circulating variants) for adults and adolescents 12 years of age or older with HIV who have untreated HIV infection or CD4 cell count <200
- Postexposure prophylaxis is not recommended.

HIV INFECTION AND MONKEYPOX

A global surge in monkeypox virus infections, with up to 50% occurring among people with HIV, was first identified in 2022 [41]. People with HIV and low CD4 cell counts or with no viral suppression may experience more severe disease [51]. Because co-infection with other STIs is frequent, people with HIV should be screened when monkeypox is first recognized or suspected [41].

HUMAN SERVICES FOR THOSE INFECTED WITH HIV

All persons who are infected with HIV need information on the meaning of infection. Secondary health education should include the person's sexual partner and family whenever possible. Persons with HIV infection should not assume that they will or will not develop clinical disease and should take all precautions possible to extend life. However, they should be informed that they are infected for life and contagious for life. This information means that they should not engage in unsafe sexual practices, and they should be told that anything that may be contaminated by their blood, semen, or vaginal fluid may constitute a risk of infection.

A health maintenance program to involve symptom surveillance, therapy, hygiene, nutrition, stress reduction, and involvement in supportive interpersonal relationships should be maintained. Through lifestyle changes, persons with HIV infection can also minimize or eliminate immunosuppressive factors and emphasize factors that promote immune function. First, regular medical and psychiatric evaluations and follow-up are advised for persons with HIV. Secondary health maintenance involves prophylaxis and treatments to prevent disease progression.

Finally, health maintenance efforts include proper nutrition, elimination of recreational drug and alcohol use, stress management, and prevention of pregnancy, all of which may be influential in slowing the rate of disease progression. Secondary health maintenance should be directed at lifestyle changes

in these areas. Persons in the asymptomatic stage of HIV disease should focus on maintaining their weight and increasing calorie and protein intake as necessary. High-calorie, high-protein foods are from the protein, dairy, starch and grain, and fat food groups. Using food supplements and eating between meals are strategies for increasing intake. Evidence that nutrition plays a role in enhancing immunocompetence in persons with HIV comes from a prospective study of dietary intake in HIV-seropositive men who have sex with men.

Assisting persons with HIV to limit or give up the use of alcohol, recreational drugs, and tobacco is also part of secondary health maintenance. These substances reduce immunocompetence. Limiting or removing their use may slow or prevent disease progression in individuals with HIV. Self-help programs may be indicated. Women who are infected with HIV should be informed of the effects of pregnancy on the progression of disease. Pregnancy itself has an immunosuppressant effect; it is possible that pregnancy accelerates the pace of disease expression. Women should also realize that HIV is maternally transmitted. They do not need to be sick to pass HIV to the fetus, and the virus may be contracted through breast milk. In the United States, about three in ten fetuses become infected if the mother is HIV-positive and has not received cART. Women also need information on the use of ZDV during pregnancy. Counseling on birth control, pregnancy, enrolling in clinical trials, abortion, and breast-feeding should be part of any health maintenance program for women.

Stress reduction programs may also be useful in secondary health maintenance. They contribute to quality of life and may also contribute to immunocompetence. Information on stress reduction, in addition to regular exercise, rest, sleep, and personal use of relaxation techniques may be of help to some persons. It is also important to provide avenues for expression of emotion, such as friends and family, social support groups, and professional counseling. Treatment of depression is recommended both to enhance quality of life and perhaps to enhance immunocompetence.

There are several special issues that often arise in the population of persons with HIV/AIDS. Because HIV occurs with greater frequency in gay and ethnic minority (particularly black) communities, cultural competency and sensitivity are core elements of care. The guidelines recommend that providers demonstrate respect and provide excellent care to patients with various cultural backgrounds, beliefs, and sexual orientations [52]. Other socioeconomic issues, including poverty, professional and personal stigma, lack of insurance, and immigration status, occur more frequently among these groups and can impact the ability to provide care.

WOMEN LIVING WITH HIV INFECTION

Women now make up half of all AIDS cases worldwide and 23% in the United States [31; 53]. The global rate of HIV infection in women is rising rapidly, although the rate in the United States has been decreasing. The proportion of AIDS cases in women nearly quadrupled between 1985 and 2006, in part due to the CDC's expanded case definition of AIDS in 1993. More women were found to meet the AIDS case definition when the CD4+ T-lymphocyte count of <200 was added to the criteria. This may be evidence that the previous case definitions based on the clinical characteristics of men did not accurately reflect the clinical manifestations of HIV in women [54]. As of 2019, women accounted for 18% of new HIV infections, a 6% decrease from 2015 [53]. Since 2010, new diagnoses of HIV among women in the United States has decreased by 24% [31].

The 2014 case definition for HIV infection includes tests and multi-test algorithms that were not available when the AIDS case definition was previously revised. The revised case definition for HIV infection also permits states to report cases to the CDC based on the result of any test licensed for diagnosing HIV infection in the United States [55].

As of 2023, AIDS was no longer among the leading causes of death in women of any race [56]. Nevertheless, women of color have been disproportionately affected by AIDS. In 2019, African American women accounted for 54% of new HIV diagnoses among women in the United States [57]. Although HIV diagnoses among African American women decreased 31% between 2010 and 2018, the incidence rates remain much higher for Black and Hispanic women than for White women [31]. In 2020, the highest number of HIV cases reported in women (857) were in those 25 to 34 years of age, followed by 661 in women 35 to 44 years of age, 550 in women 45 to 54 years of age, and 487 cases in women 55 years of age and older. The lowest number of cases (410) were reported in girls/women 13 to 24 years of age [58]. Most cases of HIV in women are transmitted through heterosexual intercourse [58].

Although AIDS cases have been identified throughout the United States, most are concentrated in large urban areas. The majority of AIDS-infected women live below the poverty line, and most have children younger than 18 years of age in their household. The most rapidly increasing incidence of AIDS is among women who have had heterosexual contact with a man with HIV. Cases of woman-to-woman sexual transmission have been reported and are accounted for in the CDC reporting category "other." Other possible modes of transmission that may occur among women include infection through artificial insemination (especially before the availability of HIV testing), sexual abuse or assault, contaminated instruments used for body piercing or tattooing, and healthcare-related occupational exposure. Certain female reproductive tract conditions (e.g., bacterial vaginosis, pelvic inflammatory disease, chlamydia) make HIV more serious.

The risk for acquisition of HIV and the factors that may affect seroconversion in heterosexual women are areas of research. In Europe and the United States, heterosexual monogamous couples with one HIV-infected partner and no other risk factors were followed over time. It was found that female partners of men with HIV were 17.5 times more likely to become infected than male partners of infected women. It was also found that the risk for infection increased in couples who did not consistently use latex condoms, were symptomatic, or had low CD4 counts. In other words, women are much more likely to become infected with HIV through heterosexual sex than men, and latex condoms, when used consistently, are an effective means of preventing transmission [59].

TOPICAL MICROBICIDES

Because HIV is spread predominantly through sexual transmission, the development of chemical and physical barriers that can be used intravaginally or intrarectally to inactivate HIV and other STI pathogens is critically important for controlling HIV infection.

Researchers are developing and testing new chemical compounds that women could apply before intercourse to protect themselves against HIV and other sexually transmitted organisms, especially in situations in which a woman is at risk of sexual violence or her sexual partner is unwilling to use latex condoms [60]. These include creams or gels, known as topical microbicides, which ideally would be nonirritating and inexpensive. Vaginal microbicides may also come in the form of an intravaginal ring, which can release the microbicide over time (up to 28 days) in order to provide more protection and to ensure adherence to the treatment [60]. Microbicides in the form of a small and quick-dissolving vaginal film are also in clinical trials. Vaginal films are considered to be more discrete and easier to carry and apply than gels [60]. Ideally, microbicides should be available in both spermicidal and non-spermicidal formulations so women do not have to put themselves at risk for acquiring HIV and other STIs in order to conceive a child. The research effort for developing topical microbicides includes basic research, preclinical product development, and clinical evaluation. Vaginal microbicides in clinical trials have shown to be between 27% and 54% effective in reducing HIV infection, with adherence to treatment being an important factor in their success [60].

CLINICAL MANIFESTATIONS

Research is being conducted to determine whether the clinical manifestations of HIV, other than those related to the reproductive tract, are different for women than for men. It appears that many symptoms and signs of acute HIV infection and non-specific manifestations, such as fevers, weight loss, and fatigue, are the same. Because past research has either excluded women altogether or included only small cohorts of women, it has been difficult to determine gender differences in the clinical course of HIV disease.

In a large, multicenter cohort study comparing mortality and disease progression between women and men, women were more likely than men to develop bacterial pneumonia, especially if they were injection drug users. In addition, women were more likely to have mycobacterial infections, whereas men had higher rates of oral hairy leukoplakia and Kaposi sarcoma [59; 61].

It is noteworthy that many healthcare providers fail to recognize recurrent vaginal candidiasis as a potential indicator of HIV [61]. This failure to diagnose results in delays in treatment. As many as 60% of women with HIV also test positive for some type of human papillomavirus (HPV). HIV infection is a risk factor for higher prevalence of HPV in the cervix and increased likelihood of infection by multiple HPV types. HIV infection is associated with a high rate of cervical cancer and cervical intra-epithelial neoplasia (CIN) or squamous intra-epithelial lesions (SIL). Menstrual irregularities are also frequently reported by women with HIV [62].

PROGNOSIS

Biologically, women and persons with vaginas are more vulnerable than men (and persons without vaginas) to HIV infection from heterosexual intercourse because of their substantial mucosal exposure to seminal fluids. Women's risk is increased by other factors, such as non-consensual sex, sex without condoms, and the unknown or high-risk behaviors of their partners. Once infected with HIV, women can face obstacles in seeking and getting treatment and accessing health care. They often lack social support and face challenges (e.g., caring for children, caring for other family members) that may impede their ability to adhere to treatment. If they do follow through with treatment, studies have shown that women differ from men in the way they metabolize drugs, which could result in unexpected responses to cART and an increase in adverse reactions to the drugs [61].

cART IN THE PREGNANT PATIENT WITH HIV

HIV counseling and the offer of HIV testing to pregnant patients have been universally recommended in the United States and are now mandatory in some states. Care of the pregnant patient with HIV should involve a collaboration between the HIV specialist caring for the patient when they are not pregnant, an obstetrician, and the patient. Treatment recommendations for pregnant patient with HIV are based on the belief that therapies of known benefit should not be withheld during pregnancy unless there are known adverse effects on the patient, fetus, or infant that outweigh the potential benefit to the patient [63; 64]. All patients with HIV who are pregnant should receive cART both for their own health and to prevent perinatal transmission [41]. Regardless of the stage of pregnancy or childbirth, if a patient is found to be HIV-positive, there are treatment options that should be explored.

EVIDENCE-BASED PRACTICE RECOMMENDATION

The U.S. Preventive Services Task Force recommends that clinicians screen for HIV infection in all pregnant persons, including those who present in labor or at delivery whose HIV status is unknown.

(https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/human-immunodeficiency-virus-hiv-infection-screening. Last accessed February 23, 2023.)

Strength of Recommendation: A (The USPSTF recommends the service based on high certainty that the net benefit is substantial.)

Patients should be registered with the Antiretroviral Pregnancy Registry, which collects observational, nonexperimental data. The registry is sponsored by GlaxoSmithKline, in affiliation with the CDC and Kendle International Inc. Patient who have been treated with cART at any time during their pregnancies are eligible for registry enrollment. The telephone number for registration is (800) 258-4263, and the website is http://www.apregistry.com.

UTILIZATION OF HEALTHCARE SERVICES

There is evidence that the utilization of healthcare services is different for women with HIV disease than for men. Women are less likely than men to receive cART and generally have poorer access to services than men. Additionally, uptake of PrEP has been slow among women in the United States [31]. Overall, women received fewer services even after they had been diagnosed and had accessed healthcare services. Women with HIV are more likely to utilize emergency services and to be hospitalized than men with HIV [31; 65].

There are several factors that affect HIV-positive women's ability to utilize available services. Studies have shown that women are almost twice as likely as men to postpone necessary care due to lack of available transportation or being too sick to visit their physician [31]. Other factors identified as barriers to equal access to care for women with HIV are stigma and isolation, lack of empowerment, competing concerns (e.g., food, housing, care for other family members), child care, insurance, and domestic or partner violence [65]. Predictors for poor access to care include racial or ethnic minority status and lack of insurance [65].

PSYCHOSOCIAL FACTORS RESULTING FROM HIV

Many women experience stigmatization and isolation after being diagnosed with HIV. Because of women's position in society, HIV-positive women confront many problems not confronted by men with HIV. For instance, the social expectation is that women are the caregivers for those who are ill in the family. As a result, women with HIV often care for their partner or children when they are ill themselves. Domestic violence has been increasingly identified among women living with HIV. Among women with HIV in the United States, 55% report having experienced intimate partner violence. It also has been suggested that women are at risk of experiencing violence following disclosure of their HIV status to partners [31]. In some instances, this violence has led to death [59].

Other common psychologic issues that arise for women with HIV include chronic low self-esteem, feelings of powerlessness, substance abuse, continuing high-risk behaviors, and psychiatric comorbidities [65]. The prevalence of anxiety and mood disorders, illicit drug use, significant alcohol use, and use of psychotropic medications among individuals with HIV is significantly higher than in the general population [65]. These issues should be addressed in order to ensure compliance with prescribed treatments and adherence to scheduled follow-up.

IMPLICATIONS FOR BEHAVIORAL HEALTH AND HEALTHCARE PROFESSIONALS

Healthcare professionals should assume a greater role in advocating for women with HIV, shaping public policy, and increasing knowledge about HIV infection through research. Behavioral health professionals are in an ideal position to participate in the early identification of women with HIV and to facilitate their entry into the healthcare system. Clinicians with a holistic perspective are ideally suited to provide a comprehensive family-oriented approach to healthcare that incorporates multiple services in one setting for women with HIV.

Lending their experience and expertise, healthcare professionals can influence the development of appropriate institutional and public policies that affect women with HIV. For example, in substance abuse programs, behavioral health professionals can advocate for policies that support gender-appropriate and culturally sensitive services and incorporate the use of the harm reduction model into the program.

On a local government level, professionals can be active in the support of community-based efforts established to meet the needs of women with HIV. On a national level, it is imperative that the protection of women's reproductive rights, confidentiality regarding HIV status, and other critical issues that women with HIV face are advocated [59].

The epidemiology, clinical manifestations, and social factors that affect women with HIV have been reviewed. Many of these issues have been only briefly touched on because they are too lengthy to cover in this course. Readers are encouraged to seek more information about these issues from the recently growing body of literature on women and HIV. Finally, it is important for healthcare professionals to respond to the need for quality healthcare for the growing number of women infected with HIV and their families, to serve as advocates by influencing public policy, and to pursue research that increases our understanding of the problems faced by women living with HIV [59].

INFANTS AND CHILDREN WITH HIV

The initial case reports of pediatric AIDS in infants published in 1983 took much of the world by surprise. Initially, these reports were the subject of much discussion and controversy because many people refused to believe that children could suffer from AIDS. Over the ensuing years, there have been many advances in the recognition, diagnosis, and treatment of pediatric AIDS as well as the unfolding of a pandemic that is a worldwide concern. In the United States, effective screening of blood and improved manufacturing techniques for coagulation factors have eliminated these products as a cause of transmission. In 2019, 84 children younger than 13 years of age were diagnosed with HIV; less than 1% were perinatally infected [30]. Mother-to-child transmission (MTCT) can occur during pregnancy, labor and delivery, or breastfeeding in both symptomatic and asymptomatic women.

PREVENTION OF PEDIATRIC HIV

The tragedy of MTCT is that women may be unaware of their risk. The CDC has adapted recommendations that advocate universal counseling and testing with informed consent for every pregnant woman regardless of geography, identified risk behavior, or self-identified risk. In its 2019 guideline, the U.S. Preventive Services Task Force (USPSTF) recommends screening all pregnant patients for HIV, including those who present in labor who are untested and whose HIV status is unknown. The benefits supporting this statement included a potential for decreased perinatal transmission of HIV resulting from maternal and neonatal cART treatment and the increased opportunity to provide counseling regarding risks associated with breastfeeding and elective cesarean delivery [66]. As stated, all patients with HIV who are pregnant should receive cART both for their own health and to prevent perinatal transmission [41].

Many pregnant patients do not have an identified care provider, lack insurance coverage, seek care only for acute illness, or lack access to ongoing care. Nonetheless, by making counseling and testing a component of routine prenatal care, these recommendations will improve the care given to pregnant women with HIV and identify infants at risk for HIV prior to their birth. The American Academy of Pediatrics recommends HIV testing of newborn infants if testing was not offered or accepted by the patient during the prenatal period or if the patient did not receive prenatal care [67]. Testing should be offered confidentially, with counseling and informed consent provided and available healthcare services that are readily accessible.

DIAGNOSIS AND TREATMENT

The major advances in diagnosis and treatment are profoundly influencing the care of women and children with HIV infection. The documented ability of ZDV to interrupt MTCT has had a tremendous impact on the field of maternal and pediatric HIV. A second major advance is in the diagnosis of HIV infection in infants, which may be completed as early as 14 to 21 days in nonbreastfed infants with the use of virologic assays [68].

In settings throughout the United States, healthcare professionals encounter women and children in their daily practice. Knowledge about and understanding of the nationwide spread of HIV and its implications are crucial. Every pregnant woman should be offered an opportunity to know her HIV status in order to receive the best prenatal care and to assure prompt assessment of her newborn. Although surveys provide a statistical picture, each woman is an individual. HIV testing should always be offered after information and counseling has been provided to the pregnant woman.

More critical than pretest counseling is post-test support. Negative results provide opportunity to reinforce risk. Positive results should always be given in person, never over the telephone. If the site is unable to provide continuing services, arrangements should be made for uninterrupted prenatal care that is acceptable to the woman. The diagnosis of HIV is devastating to a pregnant woman, and intense support through an identified friend or family member may be helpful. Depending on the length of gestation, the woman will have many questions regarding the pregnancy as well as her own health.

The full spectrum of HIV disease in children has become evident as children survive longer. Early in the epidemic, only the most symptomatic and ill children were diagnosed, and so death appeared to occur in infancy and early childhood for most children. It is now recognized that to understand the natural history (disease progression), the progress of infected children should be followed from birth. Several prospective studies in the United States and Europe are following the progress of infants born to women with HIV; these cohorts serve as the basis for our description and understanding of the disease in children. Recent reports from these groups show that the median survival for infected children is 8 years, with children with PCP and encephalopathy having the poorest prognosis and the highest mortality in the first year of life. The period from infection to onset of AIDS-defining symptoms is often referred to as the clinical latency period. However, ongoing, complex interaction occurs between the virus and the immune system. The absence of clinical symptoms does not mean that the child is truly "well." Except for age at diagnosis and type of clinical presentation, no demographic or clinical indicators have been related to prognosis. Low CD4 counts for age are the best indicators of immunodeficiency and indicators of the risk of developing opportunistic infections. Early identification of the infected infant, specific prophylactic regimens to prevent infections, and ongoing supportive care are important in improving survival.

cART is believed to play a major role in slowing progression of the disease process. Many of the antiretroviral medications approved for use in the treatment of HIV/AIDS in adults have multiple formulations and age and weight recommendations specifically intended for infants and children [68].

Children receiving cART should be monitored for side effects, adherence, efficacy, and toxicity. The U.S. Department of Health and Human Services recommends evaluating all pediatric patients within one to two weeks and again within one to two months to monitor compliance, side effects, and response to treatment. Subsequently, a visit should be scheduled every three to four months [68]. Strategies to improve adherence should focus on selecting an appropriate regimen, educating the family/caregiver, and consistent follow-up.

CARING FOR THE CHILD WITH HIV

HIV infection is a chronic health condition meeting the classic definition as "a condition with a protracted course which can be progressive and fatal, or associated with a normal life span despite impaired physical and mental functioning" [69]. It is helpful to view HIV infection as developing along a continuum with little direct impact on the child on one end and profound impact on the child and family on the other. This continuum occurs within a framework of family illness and loss that should be acknowledged by counselors, social workers, nurses, physicians, and other healthcare and service providers. Continuum of family illness is one of the most significant differences between HIV and other chronic health conditions of childhood. Experience gained while working with other chronic childhood

conditions can be used when dealing with healthcare concerns of the child with HIV. Healthcare providers have played a central role in building and staffing networks for children with HIV and continue to be key care providers in an era of changing healthcare delivery models.

One of the most challenging aspects of caring for children and adolescents with HIV is engaging the patient in his or her own care and ensuring adherence to prescribed medications. In particular, adolescents face difficulties accessing services and have worse outcomes than other age groups [70]. Experts recommend offering individual and group education and counseling, increasing clinic accessibility, and providing specific adolescent-tailored services in order to best help these patients.

ADVANCED HIV DISEASE IN CHILDREN

The advanced stage of HIV disease in children is manifested by multiple complications. Usually, several organ systems are affected, producing many symptoms, and the progression of disease can be slow or rapid. This uncertainty makes planning and decision making difficult for patients, families, and providers. Quality of life issues come into conflict with treatment decisions. Symptoms that are caused either by the disease itself or its treatment are extremely complicated to manage. Multiple services are required in the community to allow a child to remain at home for as long as possible.

In 2008, the CDC published a revised case definition for pediatric HIV. This definition was revised again in 2014 [71; 72]. The 2014 revision combined the surveillance case definitions for HIV infection into a single case definition for persons of all ages, including adults, adolescents 13 years of age and older, and children younger than 13 years of age [72]. The revisions were made primarily to adapt to changes in diagnostic criteria that differentiate between HIV-1 and HIV-2 infection and recognize early HIV infection. Clinical symptoms are classified into five HIV infection stages: 0, 1, 2, 3, and unknown. Early infection is classified as stage 0; AIDS is classified as stage 3. The 2014 revised case definition extends the use of CD4 counts and percentages for determining the stage of HIV infection to children as well as adults and adolescents, and now determines the stage in children aged 6 to 12 years the same way as in adults and adolescents. (In the 2008 case definition, only the presence or absence of opportunistic illnesses was used as criteria for staging cases among children younger than 13 years of age [72].) The revised surveillance case definition is intended primarily for monitoring HIV infection burden and planning for prevention and care on a population level, not as a basis for clinical decisions for individual patients.

If HIV disease progresses and the child becomes increasingly ill, it is still in the child's best interest to remain at home and to engage in as many normal activities as possible. In order for this to happen, a great deal of coordination and planning is required by various healthcare providers, including nurses, social workers, physicians, psychologists, nutritionists, and community outreach workers. A system such as case management can assure good planning and implementation of services and avoid duplication. Using community-based home care services including visiting nurses, home health aides, pharmacies, infusion therapy, and respiratory therapy services can assist the family in caring for a child at home for a long period of time. Good communication with these agencies is essential. Social workers play a critical role in assisting families to find resources and entitlement programs that provide payment for these services. Developing a relationship with the child's school can result in a child continuing to attend school for a few hours a day.

For children to remain in their homes, their families should be able to care for them safely and comfortably. This care can present a big challenge to the family and healthcare providers. Children with HIV live in many kinds of family situations. Many live with biologic parents who also may have HIV. Drug and alcohol abuse may be present in the home. Many children live in homes with low incomes in high-crime areas. Others live with extended family members, often grandparents, who may be elderly with health problems of their own. Some live in foster homes in which there are more than one sick child who needs care. All of these situations can make the provision of safe home care a challenge.

Caregiver education about the child's problems, treatments, and medications is essential. Frequently, this information should be repeated numerous times. Tools such as medication schedules, calendars, and diaries are helpful. Assessing the home before implementing a complex treatment such as oxygen or parenteral therapy is mandatory because the environment may need to be altered to accommodate the equipment. Some environments may be deemed unsafe, and alternate living arrangements may be required. Infrequently, the child's family, even with home care services, cannot carry out a treatment plan. The options are limited to forgoing the treatment or placing the child in another situation, possibly a foster home or group or nursing home. This should always be the last option considered, when all other means of maintaining the child at home have been exhausted. With the appropriate community-based services, most children with advanced HIV can remain at home throughout the course of the disease. This should always be the goal. Only when the child's safety is clearly at risk should other options be considered [73].

OLDER PEOPLE WITH HIV

Approximately 17% of newly diagnosed cases of HIV/AIDS in 2018 occurred in individuals 50 years of age or older; 12.5% of all persons living with HIV/AIDS are 50 years of age or older [74; 75]. However, until recently, there had been little attention given to this group [75]. HIV/AIDS has traditionally been thought to be the disease of the young; therefore, in the past, prevention and education campaigns had not been targeted toward older adults. However, evidence points to the increasing number of infected older people and a need for change in prevention and education campaigns. Some older persons may have less knowledge about HIV and risk reduction strategies. Due to divorce or being widowed and the availability of medications to treat erectile dysfunction, increasing numbers of older people are becoming sexually active with multiple partners [75; 76]. For postmenopausal women, contraception is no longer a concern, and they are less likely to use a condom. Furthermore, vaginal drying and thinning associated with aging can result in small tears or cuts during sexual activity, which also raises the risk for infection with HIV/AIDS [75; 77]. Studies indicate that at-risk individuals in this age group are one-sixth as likely as younger at-risk adults to use condoms during sex [78]. The combination of these factors increases the risk for unprotected sex with new or multiple partners in this age group, thereby increasing their risk for AIDS.

This increase should be considered when evaluating older patients. Individuals in this age group are significantly less likely (less than 5%) to be tested for HIV [75]. Elderly people presenting with confusion or altered mental status or having severe bouts of pneumonia may first be evaluated for other possibilities before HIV is considered. Many physicians do not suspect HIV in their older patients and miss the opportunity to suggest testing, which can result in delayed diagnosis and treatment. Screening for HIV is recommended in all older adults to prevent late diagnosis with advanced disease. This is particularly important because older adults are more likely to have a blunted immune response following initiation of cART [41]. If HIV is diagnosed, initiation of cART is recommended as soon as possible after diagnosis (i.e., same day, first clinic visit, or within seven days). Assessment of polypharmacy and comorbidities will influence the choice of cART, improve adherence to the chosen regimen, prevent adverse drug-drug interactions, reduce risk of falls, and reduce costs [41].

Early possible signs of immunosuppression that are frequently overlooked or mistakenly attributed to aging include thrush and skin problems, especially seborrheic dermatitis, herpes zoster, and recurrent herpes simplex virus type 2 in a person who does not have a history of it. When HIV is not recognized or treated, the most typical opportunistic infections are PCP and recurrent bacterial pneumonia, CMV, and Mycobacterium tuberculosis or Mycobacterium avium complex. PCP can present as bacterial pneumonia, bronchitis, or congestive heart failure.

Early HIV symptoms in the elderly, such as fatigue and weight loss, may appear to be a normal part of aging, and AIDS-related dementia may be mistaken for Alzheimer disease.

EVIDENCE-BASED PRACTICE RECOMMENDATION

Adverse drug events from antiretroviral therapy and concomitant drugs may occur more frequently in older HIV-infected patients than in younger HIV-infected patients. Therefore, the bone, kidney, metabolic, cardiovascular, and liver health of older HIV-infected patients should be monitored closely.

(https://clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/adult-adolescent-arv/guidelines-adult-adolescent-arv.pdf. Last accessed February 23, 2023.)

Strength of Recommendation: Expert Opinion/ Consensus Statement

HIV AND TRANSGENDER AND GENDER NONCONFORMING POPULATIONS

Although research is sparse, it appears that HIV infection rates among transgender women are more than four times the national average, with even higher rates among transgender people of color [103]. One systematic review found that fewer than half of transgender women living with HIV have been diagnosed [103]. While transgender men are less likely to be HIV positive than transgender women, their rates of infection are still higher than that of the general population [104]. Since 2018, the CDC has published national-level HIV diagnosis data by gender, which includes data for transgender people and people of additional gender identities. The 2019 surveillance report found that HIV diagnoses among transgender adults and adolescents increased 9% in the U.S. and six dependent areas from 2015 to 2019 [105]. In 2019, transgender people accounted for approximately 2% of HIV diagnoses among all adults and adolescents. The vast majority (93%) of HIV diagnoses among transgender people occurred among transgender women. Surveillance data from 2019 also show [105]:

- 46% transgender women and 41% of transgender men who received an HIV diagnosis were African American.
- 77% of transgender women and 91% of transgender men received an HIV diagnosis between 13 and 34 years of age.
- 43% of transgender women and 41% of transgender men who received an HIV diagnosis lived in the Southern United States.

Transgender individuals are at risk for HIV as a result of engaging in unprotected sex and from sharing needles used for hormone injections [106; 107]. A significant percentage of transgender individuals engage in sex work; 11% of transgender respondents in a large national survey reported engaging in sex work for income, compared with 1% of cisgender women in the United States [108]. Stigma, decreased access to care, and barriers related to financial and social/familial support factors also contribute.

Hormone therapy is a priority for many transgender people, and many use hormone therapy at some point in their lives. Transgender women may have concerns about potential interactions between PrEP and hormone therapy, which usually consists of estrogens and antiandrogen medications (such as spironolactone). However, there are no known or predicted drug interactions between the medication used for PrEP; oral tenofovir, disoproxil, and fumarate/emtricitabine; and feminizing hormones [109].

Healthcare providers and community-based organizations can use a status-neutral framework to provide culturally informed, comprehensive HIV care for transgender people. This framework includes educating patients about effective prevention methods like PrEP; creating linkages to appropriate support services so transgender people with HIV can stay engaged in care and become virally suppressed; and providing tailored care that also addresses other transgender-specific health needs [105].

ETHICAL AND LEGAL CONSIDERATIONS

The ethics and law around AIDS and infection with HIV give rise to many issues that cut across several values. There is often conflict between the autonomy of the patient to behave freely, the autonomy of the patient to have care when needed, and the autonomy of the care provider to exercise judgment in their practice.

In the United States, HIV infections have historically occurred overwhelmingly in two populations: MSM and IDUs. But the number of new infections is growing in many groups, including women. Furthermore, ethnic minority groups (particularly blacks and Hispanics) are disproportionally affected by the disease. Therefore, sociocultural issues are an important aspect of care [79].

FINANCIAL ISSUES

Employment can pose a problem for individuals with HIV/AIDS. Possible issues that may be raised include difficulty maintaining employment or resuming employment after health has been restored or stabilized, stigma associated with the disease, future disability risk, confidentiality concerns, and the resulting financial burden for the employer.

Although individuals diagnosed with HIV/AIDS are living much longer as a result of available treatments, they may be forced into extended "HIV retirement," whereby employment is no longer possible due to the effects of the disease. Data collected on the employment status of these individuals are scarce, but level of employment appears to be related to advanced disease, number of complications, and level of support/use of resources [80; 81]. The U.S. Department of Labor Office of Disability studies issues of employment among persons living with HIV/AIDS and provides several toolkits and resources for employees and employers [82].

At the beginning of the AIDS epidemic, insurance companies would generally approve AIDS-related disability claims quickly, as the prognosis for infected individuals was so poor. As prognosis for individuals with HIV has improved, it has become more difficult to obtain insurance approval for treatments and/or disability services [81].

CONFIDENTIALITY

Practitioners should take extreme care in not violating the patient's confidence and should obtain the patient's consent before sharing information about their health status. Ethical judgment may be enhanced by knowing the specific state law and regulations pertaining to persons with HIV and the release of confidential information [79].

FEAR OF PATIENTS WITH HIV/AIDS

Some professionals, reluctant to care for patients with HIV/AIDS, may find that the law enforces the duty to care for all patients [79]. Many states have passed laws requiring specific consent from the patient before an HIV test may be performed [83]. Nurses, for example, may refuse to compromise their own safety and ethical standards, but they have a professional responsibility to ensure that the nursing needs of patients are met on an emergency basis. Whether the nurse has a duty to care for all patients combines the nurse's ability, the requirements of the patient, and the degree of risk. Nurses may consider the risk of nursing some patients in the light of whether there is risk to themselves, their families, and their personal ethics.

Appropriate Attitude and Behavior of the Caregiver

- Encourage the HIV-positive patient to become involved in his/her own care and determine the schedule of care when possible. Allow them to make decisions regarding their care whenever possible. This will foster for them a sense of control and independence.

- Be aware of your own attitudes toward HIV/AIDS and toward the behavior risk factors that put people at risk for contracting HIV. Remember it is not appropriate for you to judge the behavior of a person infected with HIV. How a person became infected should not be an issue.
- Treat others as you would like to be treated or you would like to have your family treated. Recognize that many family structures include same-sex partners and extended family members. Avoid placing judgment on families that do not look or behave like yours.
- Do not be afraid to talk about the disease with the patient if he or she is willing to talk with you.
- Do not be afraid to touch a person with HIV. Holding a hand, giving a hug or back rub may be comforting. However, also be sensitive to people who do not want physical closeness.
- Be aware that Universal/Standard Precautions are to be used with all patients, not just those who are HIV-positive.
- Be sensitive to the sense of isolation that may be felt by the patient with HIV.
- All information about a person who has HIV must be kept in the strictest confidence. Public health disclosures must be documented to meet HIPAA compliance.
- Remember that all patients deserve respectful, competent care.

According to the Americans with Disabilities Act (ADA), an individual is considered to have a disability if he or she has a physical or mental impairment that substantially limits one or more major life activities, has a record of such impairment, or is regarded as having such impairment [84]. Persons with HIV disease, both symptomatic and asymptomatic, have physical impairments that substantially limit one or more major life activities and are, therefore, protected by the law. Persons who are discriminated against because they are regarded as being HIV-positive are also protected. For example, a person who was fired on the basis of a rumor that he had AIDS, even if he did not, would be protected by the law. Moreover, the ADA protects persons who are discriminated against because they have a known association or relationship with an individual who is HIV-positive. For example, the ADA would protect an HIV-negative woman who was denied a job because her roommate had AIDS [84].

Under the ADA, an employer must make a reasonable accommodation to the known physical or mental limitations of a qualified applicant or employee with a disability. A reasonable accommodation is "any modification or adjustment to a job, the job application process, or the work environment that enables a qualified applicant or employee with a disability to participate in the application process, perform the essential functions of the job, or enjoy the benefits and privileges of employment" [84]. However, an employer is not required to provide an accommodation if it would post an undue hardship on the operation of its business. Undue hardship is defined as "an action requiring significant difficulty or expense" [84].

Also, the Federal Rehabilitation Act of 1973 prohibits discrimination on the basis of a handicap. All stages of HIV disease, including asymptomatic HIV infection, have been found by the courts to be handicapping conditions under Section 504 of this Act [85].

CONSENT TO TEST

Informed consent should be obtained from each person being tested. Each individual should be fully aware of the limitations of the HIV-antibody test regarding HIV infection and the development of AIDS. The test and its meaning, the reason for ordering the test, and its potential adverse consequences should be understood. The consent also includes information about how the test information will be used.

Cultural Considerations in Informed Consent

An individual's ability and prerogative to make decisions about treatment is now seen as a vital expression of autonomy and is a prerequisite to participation in treatment or interventions. Autonomy, individualism, and self-determination are belief systems that are highly valued in Western societies, especially in the United States. Autonomy may be categorized into two groups: first-order autonomy and second-order autonomy [86]. First-order autonomy is what Westerners espouse and value: self-determination and autonomy in decision making. Second-order autonomy, however, is prevalent in collectivistic societies where decision making is group-oriented and takes into account another decision-maker who is accorded authority and respect [86]. For example, in many Asian cultures, particularly if the family system is based on a patriarchal authority system, a male elder or leader who is regarded as the primary decision-maker is key in this process of informed consent.

The process of informed consent entails the explicit communication of information in order for the individual to make a decision. Again, Western cultures value explicit information, which is centered on American consumerism; believing in having choices and being able to exercise choices in purchases extends to healthcare. However, some cultures believe that language and information also shape reality [87]. In other words, explicit information, particularly if it is bad information, will affect the course of reality.

A signature is required on most Western informed consent forms to represent understanding and agreement on the part of the individual involved. Yet, this might be viewed as violation of social etiquette in some cultures. In some cultures (for example, Egypt), signatures are usually associated with major life events and legal matters. Therefore, requiring a signature outside these circumstances would imply a lack of trust, particularly when verbal consent has been given [88].

Furthermore, consent forms often contain technical and legal jargon that may be overwhelming to the native English speaking individual, but can be much more daunting for immigrants who may not be English proficient or familiar with various legal concepts. For some immigrants who have experienced political persecution in their homelands, asking for a signature on a consent form that contains foreign legal and technical terms can potentially place them at risk for secondary traumatization, as some were persecuted, tortured, and forced to sign documents in their homelands [89].

This cultural dissonance can be a challenge to many general healthcare and mental health practitioners. Cultural experts are highly recommended for consultations to assist in the interpretation and navigation of the complex web of cultural interactions.

AIDS PREVENTION

PRE-EXPOSURE PROPHYLAXIS (PREP)

In 2012, the FDA approved the first medication for the prevention of sexually transmitted HIV infection, the combination drug Truvada (emtricitabine/tenofovir DF) [90]. In 2019, another combination drug—Descovy (emtricitabine/tenofovir)—was approved to prevent HIV infection [91]. In 2021, the FDA approved the first injectable agent for the prevention of HIV infection; cabotegravir is given first as two initiation injections administered one month apart, and then every two months thereafter [92]. In conjunction with safer sex practices, these agents have been found to be partially effective as pre-exposure prophylaxis in high-risk patients [93]. Also in 2021, the CDC and the U.S. Department of Health and Human Services updated their clinical practice guidelines for pre-exposure prophylaxis for the prevention of HIV infection [94]. In 2022, the International Antiviral Society, published recommendations for the treatment and prevention of HIV infection in adults [41]. These guidelines outline indications for prophylaxis as one prevention option for HIV transmission, in particular for high-risk, IDUs, MSM, and heterosexually active men, women, and adolescents. The most impor-

tant first step in determining if an individual is a candidate for PrEP is a thorough history, including sexual and injection drug activities. PrEP should be offered to all sexually active adults and adolescents at substantial risk of acquiring HIV [41; 94]. The optimal PrEP regimen is the one most acceptable to an individual and congruent with their sexual behavior, ability to reliably take prescribed medications, anticipated sexual activity, and adverse effect profile. Delaying PrEP is not recommended for individuals at risk [41]. Recommendations on the frequency and type of laboratory testing for people receiving PrEP vary according to the chosen regimen and patient risk profile [41]. All patients prescribed pre-exposure prophylaxis must have a negative HIV test prior to initiating treatment and every three months thereafter. In addition, patients should be advised regarding possible side effects and the continued necessity for safe sex practices. Eligible patients should also be screened for hepatitis B and possible kidney problems [94].

AIDS VACCINE

Achieving an end to the AIDS epidemic will require the development of an effective vaccine. Both preventive and therapeutic vaccines are being studied for use in the fight against HIV. Preventive vaccines are developed to protect individuals from contracting HIV, while the goal of therapeutic vaccines is to boost immune response to and better control existing HIV infection [95]. Of course, the ultimate goal in vaccine research is a vaccine that will prevent infection; however, despite several trials, no vaccine effective in preventing HIV has been discovered. In 2014, a study of a new approach involving injection of known neutralizing antibodies (rather than an antigen to stimulate the body to produce antibodies) was initiated [96]. While much progress has been made in understanding the HIV pathogen, it has provided many challenges in vaccine development, and as of 2023, there is no vaccine to prevent HIV [95; 97; 98].

The International AIDS Vaccine Initiative (IAVI) is working to speed the development and distribution of preventive AIDS vaccines, focusing on four areas: mobilizing support through advocacy and education; accelerating scientific progress; encouraging industrial participation in AIDS vaccine development; and assuring global access.

EDUCATION AND INTERVENTION TO PREVENT HIV/AIDS INFECTION

Many adolescents engage in behaviors that put them at risk for HIV infection. According to the CDC, 37.4% of high school students reported being sexually active [99]. Approximately 54.3% of sexually active high school students had not used a condom at last sexual intercourse; 1.2% had ever injected an illegal drug [99]. The CDC asserts that renewed educational efforts that reach all students before risk behaviors are initiated and that seek to delay the onset of sexual activity, increase condom use among students who are sexually active, and decrease injection drug use are warranted [100]. Education and interventions are considered vital to the reduction of high-risk behaviors in this population.

Although more than 85.3% of adolescents report having received education on HIV prevention in school, the content of these discussions may not provide adequate information on the subject. Furthermore, the American Academy of Pediatrics determined that school-based education and intervention programs do not provide the necessary opportunities of confidential discussions or targeted counseling [101]. Healthcare professionals have a unique opportunity to intervene in this population to provide accurate and complete information on HIV transmission and risk reduction.

The CDC HIV/AIDS Prevention Research Synthesis Project collects and analyzes systematic reviews and identifies evidence-based interventions that have been proven effective in eliminating or reducing sex- or drug-related risk behaviors, reducing the rate of new HIV infections, or increasing HIV-protective behaviors [102]. As of 2023, 78 best-evidence interventions and 58 best practices had been identified, many of which target specific populations. Intervention packages and more information on these interventions are available at https://www.cdc.gov/hiv/research/interventionresearch/prs.

SUMMARY

Although prevention and new medical interventions may reduce the pace of the epidemic, HIV will be a significant disease for many years both in the United States and the world. Education provides the opportunity to ensure that healthcare professionals have the information necessary to provide the best possible care for persons with HIV. Healthcare administrators have the responsibility to recognize the special stresses, and the generic ones, associated with caring for patients with HIV and to address those with meaningful changes in case load and staff support. Those who specialize in HIV care should identify ways to renew themselves through education, individual support, staff support, and variation of workload so that they can continue to contribute their valuable expertise to patients with HIV. With no easy cure in sight, healthcare professionals have the opportunity to work with patients to help them achieve and maintain their optimal level of health during the continuum of HIV disease.

FACULTY BIOGRAPHIES

Alice Yick Flanagan, PhD, MSW, received her Master's in Social Work from Columbia University, School of Social Work. She has clinical experience in mental health in correctional settings, psychiatric hospitals, and community health centers. In 1997, she received her PhD from UCLA, School of Public Policy and Social Research. Dr. Yick Flanagan completed a year-long post-doctoral fellowship at Hunter College, School of Social Work in 1999. In that year she taught the course Research Methods and Violence Against Women to Masters degree students, as well as conducting qualitative research studies on death and dying in Chinese American families.

Previously acting as a faculty member at Capella University and Northcentral University, Dr. Yick Flanagan is currently a contributing faculty member at Walden University, School of Social Work, and a dissertation chair at Grand Canyon University, College of Doctoral Studies, working with Industrial Organizational Psychology doctoral students. She also serves as a consultant/subject matter expert for the New York City Board of Education and publishing companies for online curriculum development, developing practice MCAT questions in the area of psychology and sociology. Her research focus is on the area of culture and mental health in ethnic minority communities.

Jane C. Norman, RN, MSN, CNE, PhD, received her undergraduate education at the University of Tennessee, Knoxville campus. There she completed a double major in Sociology and English. She completed an Associate of Science in Nursing at the University of Tennessee, Nashville campus and began her nursing career at Vanderbilt University Medical Center. Jane received her Masters in Medical-Surgical Nursing from Vanderbilt University. In 1978, she took her first faculty position and served as program director for an associate degree program. In 1982, she received her PhD in Higher Education Administration from Peabody College of Vanderbilt University. In 1988, Dr. Norman took a position at Tennessee State University. There she has achieved tenure and full professor status. She is a member of Sigma Theta Tau National Nursing Honors Society. In 2005, she began her current position as Director of the Masters of Science in Nursing Program.

John M. Leonard, MD, Professor of Medicine Emeritus, Vanderbilt University School of Medicine, completed his post-graduate clinical training at the Yale and Vanderbilt University Medical Centers before joining the Vanderbilt faculty in 1974. He is a clinician-educator and for many years served as director of residency training and student educational programs for the Vanderbilt University Department of Medicine. Over a career span of 40 years, Dr. Leonard conducted an active practice of general internal medicine and an inpatient consulting practice of infectious diseases.

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