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Every Nurse Is an HIV Nurse

The epidemic has changed, with women and minorities now more at risk and new challenges attendant on aging and the effects of long-term antiretroviral therapy.

Overview: The evolution of HIV infection into a chronic disease has implications across all clinical care settings. Every nurse should be knowledgeable about the prevention, testing, treatment, and chronicity of the disease in order to provide high-quality care to people with or at risk for HIV. It's important, therefore, to have an understanding of the changing epidemiology of the disease, the most recent testing recommendations, developments in screening technology, the implications of aging with HIV infection, and the nursing implications of the ongoing epidemic.

Julie recently talked to her friend Juan about Jesse, a man she had just started dating. (The case presented in this article is a composite based on the authors' experience.) She was excited because she hadn't dated since her divorce five years before and she was very attracted to Jesse. Juan, who had already disclosed to Julie that he was gay and infected with HIV, asked Julie whether she was concerned about HIV infection. Julie's response was that she was "too old" (40 years) to worry about HIV. She had never used intravenous drugs, her sex partners had all been heterosexual men, and she hadn't had that many partners anyway (a total of six in her lifetime). Juan, however, urged her to discuss the issue with Jesse before her new relationship advanced to sexual involvement.

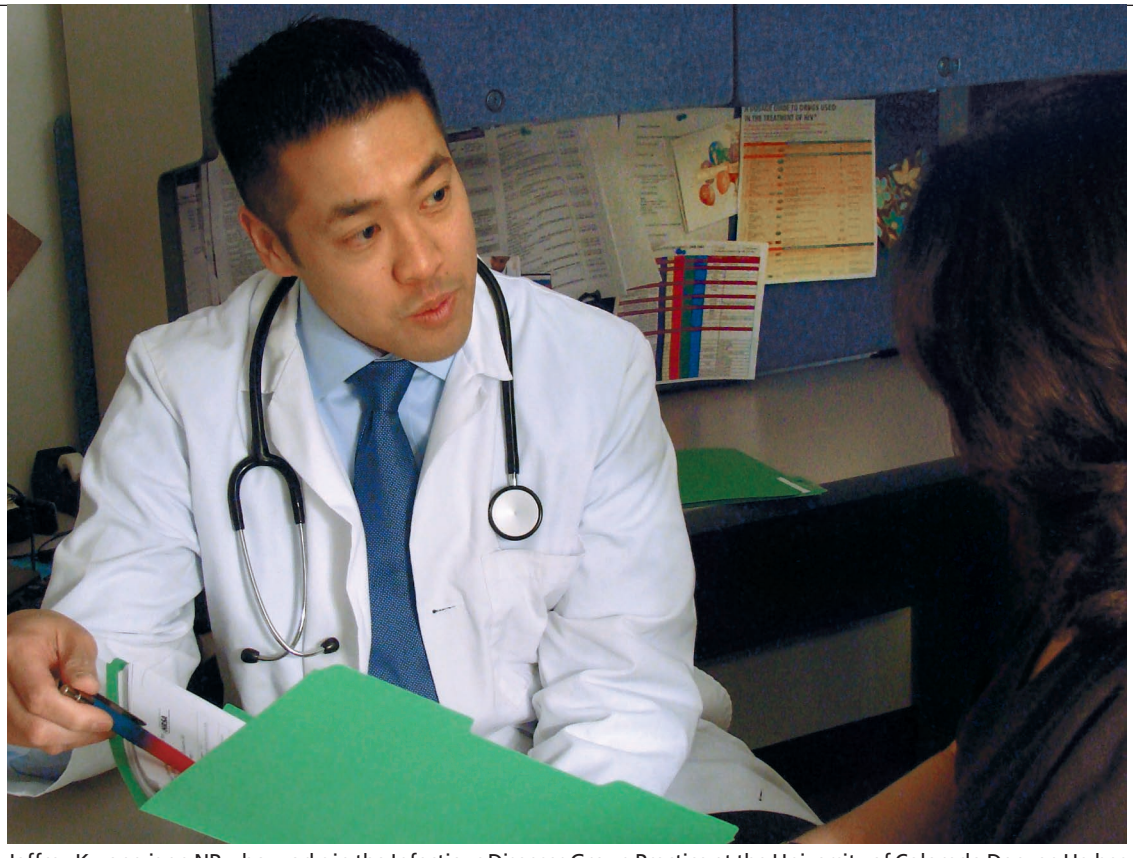
Juan assumes that he became infected in 1990 after he moved to a large metropolitan area, where he used methamphetamines, visited bathhouses, and had unprotected sex with men. He didn't get tested for HIV until 1995 because he "felt fine." He now considers himself to have been in denial. Aware of the changing face of the epidemic, he's concerned about Julie. He knows she has wanted a relationship for a while and he's afraid she'll rush into something without thinking. He's especially concerned because Julie told him that Jesse used heroin when he was younger. Even though Julie told him that Jesse had been clean since 1998, Juan is worried. If Jesse is infected with HIV but hasn't been tested, there's a chance he won't take precautions to protect Julie if the relationship becomes sexual.

EPIDEMIOLOGY

HIV—the human immunodeficiency virus—is a retrovirus that's transmitted in blood, semen, vaginal secretions, and breast milk. The modes of transmission have been known since the 1980s and haven't changed: sexual intercourse, contact with blood or blood products, perinatal exposure, and breastfeeding. Infection with HIV leads to a chronic and progressive disease state that—when left untreated—culminates in immune dysfunction, disability, and death.

HIV emerged as a global epidemic in the late 1970s. In 2007 an estimated 33 million people around the world were living with HIV, 2 million people died from complications of AIDS, and 15 million children were orphaned as a result of losing one or both of their parents to AIDS.[1]

In the United States. By 2007 more than 1 million people in this country had been diagnosed with AIDS



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and more than half of those had died.[2] The Centers for Disease Control and Prevention (CDC) estimates that in 2006 there were 1.1 million adults and adolescents living with HIV infection in the United States and that 56,300 new infections occurred that year.[3,4]

A changing epidemic. The HIV epidemic in the United States has changed since statistics began to be kept in the early 1980s. Between 1981 and 1995, the population with the highest percentage (47%) of AIDS diagnoses was white men, most of whom were infected through male-to-male sexual contact.[5] Injection drug use was the second most common method of transmission, and during that period more than 550,000 people were diagnosed with HIV, with death rates highest in the first decade or so after 1981: 56% of people diagnosed with AIDS from 1981 through 1992 had died within two years of diagnosis, but two-year death rates decreased to 36% in those diagnosed from 1993 to 1995 and to 15% in those diagnosed from 1996 through 2000.

Although male-to-male sexual contact is still the most common transmission mode, by the end of 2006 it had played a role in fewer than half of all U.S. cases of HIV.[3] Heterosexual transmission had increased significantly, with 27.6% of prevalent HIV cases (12.6% of cases among men and 72.4% among women) attributed to "high-risk heterosexual contact" (heterosexual sexual contact "with a person known to have, or to be at high risk for, HIV infection").[3] Heterosexual transmission had become the most common method of infection in women, and women constituted 25.2% of all prevalent cases that year. In addition, whites were no longer the race most affected by HIV. In 2006 nonwhites accounted for 65.4% of the people living with HIV, with black men and women having the highest prevalence rates. These trends are likely to continue for the foreseeable future.

Not receiving care. Some of the most troubling recent statistics relate to the numbers of people with HIV who are not receiving care. Of the people currently living with HIV in the United States, an estimated 42% to 59% are not receiving care and as many as a quarter don't know they're infected.[4] In addition, the CDC reports that 36% of people with HIV progress to AIDS in less than 12 months after an initial HIV diagnosis, which suggests ineffective testing and a lack of early case–finding programs.[2] Also, people who aren't aware that they're infected are more likely to transmit HIV to sexual or drug-using partners than are those who are aware.[6]

The primary goals in the treatment of HIV infection are to reduce morbidity, prolong life, improve the quality of life, preserve or restore immune function, suppress the viral load, and prevent new cases of HIV. Much progress has been made in meeting these goals in the past decade. Although the

epidemic continues to expand in the United States, there is good news on at least two fronts. The first is that treatment advances since 1995 have turned HIV infection into a chronic, treatable disease. These advances include

- the expansion of the number and types of medications used in antiretroviral therapy (this is often referred to as highly active antiretroviral therapy).
- better treatments for opportunistic diseases associated with HIV.
- improved primary care services for HIV-infected patients (such as vaccinations, routine cancer screenings, disease prophylaxis, and early treatment for opportunistic infections).

These advances led to a 17% decrease in HIV-related deaths between 2003 and 2007.[6] Second, the number of infants infected through perinatal transmission has shrunk considerably (from a high of 330 in 1994 to 79 in 2007), thanks to the testing of pregnant women for HIV and effective treatment during the perinatal period.

UPDATED TESTING RECOMMENDATIONS

Juan convinces Julie that she should have an HIV test. He also suggests that she ask Jesse to get tested, but Julie isn't ready yet to talk to Jesse about sexual issues. Juan takes Julie to a local health department clinic, where she's offered a rapid HIV test. A nurse gives Julie basic information about the test and answers all of her questions. Julie agrees to the test.

Twenty minutes after Julie provides a finger-stick blood sample, she's called back to the nurses' office. Julie is informed that her HIV test was negative. The nurse tells Julie that because she's had no recent risky sexual behavior, she can be sure she's not infected with HIV. Julie is relieved. On the way home, Julie tells Juan that she's ready to talk to Jesse about HIV and to ask that he also be tested.

HIV testing recommendations have been updated several times since 1987. These updates take into account advances in testing technologies, improved treatment options, the continuing social stigma associated with HIV infection, and the need to focus on prevention. The U.S. Department of Health and Human Services and the CDC published the latest revisions in September 2006 (see *Recommendations on HIV Testing in Adults and Adolescents in Health Care Settings*).[7] The goals of the 2006 CDC testing guidelines are to

- increase HIV screening in patients, including pregnant women, in all health care settings.
- foster earlier detection of HIV infection.
- identify and counsel people with unrecognized HIV infection and connect them to clinical and prevention services.
- further reduce perinatal transmission of HIV.

Is counseling still necessary? HIV testing is unique in that pre- and posttest counseling as well as informed consent are often required by state laws or by institutional policy. The CDC now recommends that testing be offered to all people between the ages of 13 and 64 with minimal pretest counseling and that there be no separate requirement that informed consent be obtained ("general consent for medical care should be considered sufficient to encompass consent for HIV testing").[7] Nurses who work in states with pre-and posttest counseling or informed consent requirements won't be able to follow the CDC recommendations until state laws have been changed. Institutional policies and procedures will also need to be revised in light of the latest recommendations. The National HIV/AIDS Clinicians' Consultation Center provides a compendium of state testing laws (available at www.nccc.ucsf.edu/StateLaws/Index.html).

Adolescents are included in the age range for recommended testing. Many adolescents have unprotected sex, but adolescents are often overlooked in HIV screening. Many providers are reticent about discussing issues of sexuality and drug use with teenagers and adolescents. The laws concerning underage consent and confidentiality for HIV testing differ by state, and nurses should familiarize themselves with their state laws. In many states adolescents are legally allowed to provide consent to be tested for sexually transmitted diseases, a category that includes HIV infection. HIV risk assessments should be completed in all adolescents, and HIV screening should be offered, especially to adolescents who are sexually active or who use illegal drugs. Providing information about HIV infection, testing, transmission, and prevention, as well as the consequences of infection, should be regarded as an essential component of adolescent health and primary care services.

SCREENING

Screening for HIV infection relies on tests that detect the antibodies to HIV that develop as a result of an HIV antigen–immune system interaction. Because the development of antibodies after infection with HIV can take three to 12 weeks, antibody tests are unable to detect infections in this early acute phase or "window period." Testing of the plasma for the virus itself, which is usually detectable earlier than antibodies, can sometimes reveal HIV infection in a person with a negative or indeterminate HIV antibody test who's thought to have been recently infected.[8]

Conventional HIV testing consists of two tests performed on a blood sample obtained through venipuncture. First, an HIV enzyme immunoassay is used to detect antibodies to HIV. The enzyme immunoassay is highly sensitive and will detect anything that resembles HIV antibodies in the blood. If the immunoassay is positive, a confirmatory test, such as Western blot analysis or an immunofluorescence assay, is performed. Confirmatory tests are highly specific and are used to ensure that the antibodies detected by enzyme

Recommendations on HIV Testing in Adults and Adolescents in Health Care Settings[7]

Screening for HIV Infection

- Screening for HIV should be routinely performed in all health care settings in all patients ages 13 to 64 years, regardless of the presence or perception of HIV risk. Health care providers should initiate screening unless the prevalence of undiagnosed HIV infection in the surrounding area has been documented to be < 0.1%.
- All patients beginning treatment for tuberculosis should be screened routinely for HIV.
- All patients seeking treatment for sexually transmitted diseases should be screened for HIV during each visit for a new complaint.

Repeat Screening

- Health care providers should test all people likely to be at high risk for HIV at least annually. These include injection drug users and their sex partners, sex partners of HIV-infected people, and those who themselves or whose sex partners have had more than one sex partner.
- Health care providers should encourage patients and their prospective sex partners to be tested before initiating a new sexual relationship.
- Repeat screening of people not likely to be at risk for HIV should be performed on the basis of clinical judgment.
- Unless recent HIV test results are immediately available, any person whose blood or body fluid is the source of a health care provider's occupational exposure should be informed of the incident and tested for HIV infection as soon after the exposure as possible.

Consent and Pretest Information

- Screening should be voluntary and undertaken only with the patient's knowledge.
- Patients should be informed verbally or in writing that an HIV test will be performed unless they decline. Verbal or written information should include an explanation of HIV infection and the meanings of positive and negative test results. Patients should be offered an opportunity to ask questions and to decline testing. With such notification, consent for HIV screening should be incorporated into general informed consent for medical care, just as other screening tests are; requiring separate consent for HIV testing isn't recommended.
- Easily understood materials should be made available in the languages of populations commonly encountered in the service area. Make sure that interpreters and bilingual staff can provide language assistance to patients with limited English proficiency.
- If a patient declines an HIV test, the decision should be documented in the medical record. The patient should be assured that the decision will not make a difference in the type or quality of care provided.

Diagnostic Testing for HIV Infection

- All patients with signs or symptoms consistent with HIV infection or a related opportunistic illness should be tested for HIV.
- Clinicians should maintain a high level of suspicion of an acute retroviral syndrome in patients who have a compatible clinical syndrome and who report recent risky behavior. An HIV antibody test (an enzyme immunoassay) and a more specific confirming test, such as a plasma RNA test, Western blot analysis, or an immunofluorescence assay, are needed to diagnose acute HIV infection.
- Patients or people responsible for their care should be notified verbally that testing is planned, advised of the indication for testing and the implications of positive and negative test results, and offered an opportunity to ask questions and decline testing. With such notification, a general consent for medical care is considered sufficient for diagnostic HIV testing.

immunoassay indicate HIV infection. HIV diagnosis, then, is based on a positive enzyme immunoassay *with* a positive confirmatory test. Laboratory results are generally available from a central laboratory in one to two weeks and are reported as negative (no evidence of HIV infection), positive (HIV infection is present), or indeterminate (requiring additional testing). The patient must return to the clinic to learn the results.

As new testing techniques have developed, screening for HIV infection has become more accessible, faster, and less invasive. Some HIV tests can be performed using urine or blood obtained by finger stick. Other tests can identify HIV antibodies in an oral fluid specimen (oral mucosal transudate collected using a device such as the OraSure HIV-1 Oral Specimen Collection Device), thereby eliminating the need for venipuncture. After specimen collection, the collection device is placed in a vial containing a preservative and sent to a central laboratory where an enzyme immunoassay is performed. If the specimen is reactive (that is, reveals the presence of antibodies), confirmatory testing is performed. Test results are typically available in three to five business days.

Rapid testing is another new testing method that helps streamline the HIV diagnosis process. These tests can be performed at the point of care (such as a clinic, an ED, or the office of a community-based organization), and results are generally available 10 to 30 minutes after sample collection. Rapid tests are also enzyme immunoassays. They're simple to perform, require minimal equipment, and are highly accurate. Results are reported as negative or reactive (also called "preliminary positive"). Reactive rapid HIV test results can be reported to the patient immediately but must then be confirmed using either a Western blot or immunofluorescence assay. Six Food and Drug Administration–approved rapid HIV tests are currently available in the United States. The tests differ with respect to the specimen (whole blood, serum, plasma, or oral mucosal transudate) and equipment required to perform them, their Clinical Laboratory Improvement Amendments (CLIA) categorizations,

Signs and Symptoms of HIV Infection[21-23]

Presenting symptoms of acute HIV infection that occur in more than 50% of newly infected people include the following:

- fever
- malaise
- rash
- myalgia
- headache or meningitis
- loss of appetite
- night sweats

Presenting symptoms of chronic HIV infection are most often related to an opportunistic disease. The most common opportunistic diseases that might indicate HIV infection include

- recurrent bacterial infections.
- candidiasis of bronchi, trachea, lungs, or esophagus.
- chronic herpes simplex.
- Kaposi sarcoma.
- *Pneumocystis jirovecii* pneumonia.
- wasting syndrome.

and the time needed for the results to appear. General and laboratory considerations from the CDC regarding currently available rapid HIV tests can be found at www.cdc.gov/hiv/topics/testing/resources/factsheets/rt-lab.htm.

Rapid testing has several advantages. It can be less stressful for the patient and, if appropriately integrated into the clinic flow, makes good use of patients' and providers' time. Since many patients don't return to a clinic to get test results, it's particularly valuable to have results available before patients leave the testing site. A rapid HIV test also gives patients an opportunity to stop and consider what the possibility of infection means and to receive prevention counseling in a timely manner, while the subject of HIV and its risk factors is front and center.

HIV TESTING IN PREGNANT WOMEN

The CDC has recommended routine, voluntary HIV screening in pregnant women since 2001. Many health care providers have adopted a policy of universal opt-out HIV screening (meaning that testing is automatic unless the woman specifically chooses not to be tested) in pregnant women during routine prenatal tests and have eliminated requirements for extensive pretest counseling and written consent for HIV testing. Research analyzed by the U.S. Preventive Services Task Force revealed that in 1995 the testing rate among pregnant women in the United States was 41%[9] (the first year universal testing of pregnant women was recommended) and had risen to 60% by 1998. In 2005, in states and Canadian provinces that had implemented "opt-out" testing, HIV testing rates among pregnant women ranged from 71% to 98%, compared with 15% to 83% in states and provinces that had an "opt-in" policy requiring a woman to specifically request HIV testing.

Early identification of HIV in a pregnant woman allows for treatment with antiretroviral therapy to support her health and to decrease the risk of transmission to her infant. HIV testing is recommended for all pregnant women at the first prenatal visit. A second HIV test, during the third trimester before 36 weeks of pregnancy, is also recommended for women who are at risk, live in areas of high HIV prevalence, or have signs or symptoms consistent with acute HIV infection.

If a woman's HIV status hasn't been documented when she arrives in labor and delivery, a rapid HIV test should be offered. If the preliminary test result is positive, immediate initiation of appropriate intravenous antiretroviral prophylaxis should be recommended without waiting for confirmation of the result. If the woman refuses testing, the newborn should receive rapid testing as soon as possible after birth so that antiretroviral prophylaxis can be offered if it's indicated.[7,10]

A dramatic decline. Diagnosing and treating HIV infection early enough in pregnant women has been shown to decrease perinatal HIV transmission rates to 1% to 2% (from rates of 14% to 25% in infants born to untreated women).[9] Recommended treatments for HIV-infected pregnant women include antiretroviral therapy that's sufficient to decrease viral loads and increase $CD4^+$ cell counts, elective cesarean section in selected cases, and avoidance of breastfeeding.[9] Since implementation of the 2001 testing recommendations, improvements in the ability to identify cases and timely intervention when a diagnosis has been made have led to a 95% decline in perinatally acquired HIV.[7] For more on current testing and screening recommendations for pregnant women, go to http://bit.ly/15Sg3W.

NEW DEVELOPMENTS IN ANTIRETROVIRAL THERAPY

When Juan was diagnosed with HIV infection in 1995, he was referred to an HIV specialty clinic. After appropriate counseling, physical examination, and laboratory tests, Juan was started on a regimen of three medications to treat his infection. Over the next 18 months, his $CD4^+$ cell count (an indicator of his immune function) rose and his HIV viral load (an indicator of the impact of the virus on the body) dropped to an undetectable level. A nurse explained to Juan that an undetectable viral load didn't mean he was cured or that the virus was gone; it just meant that the amount of virus was too low for the test to detect. Juan's clinicians were pleased with his progress.

New medications, including two new classes of drugs, and new treatment regimens have significantly improved HIV treatment. These are the currently available classes of drugs for antiretroviral therapy:[11]

- Nucleoside reverse transcriptase inhibitors

- Nonnucleoside reverse transcriptase inhibitors
- Protease inhibitors
- Entry inhibitors
- Integrase inhibitors

Monotherapy (the administration of a single drug) should never be used in the treatment of HIV because it has been found to significantly contribute to the development of drug resistance and treatment failure. A combination of three or more drugs offers the best clinical outcomes.[12]

ADVERSE EFFECTS AND ADHERENCE

Juan returned to the clinic for a regular appointment in 2007, and the nurse noted that his viral load was no longer undetectable and that his CD4$^+$ cell count was dropping. When the nurse asked Juan whether he was experiencing any new problems, he said that he was getting "fat around the belly" and that he'd noticed he had a "hump" on the back of his neck. The nurse asked some additional questions and found out that Juan had started skipping doses of his antiretroviral therapy because he'd heard that his medications were causing these physical changes.

Although a complete description of the drug classes and mechanisms of action is beyond the scope of this article, it's important for nurses to understand that each class of drugs works at different points in the HIV replication cycle and that each can also have adverse effects, which can be mild, severe, or even life threatening. Mild adverse effects, which often subside with continued therapy and supportive symptom management, include nausea, fatigue, peripheral neuropathy, headache, diarrhea, vomiting, asthenia, and rash. More serious adverse effects, including depression, diabetes, hyperlipidemia, pancreatitis, lactic acidosis, fat maldistribution, and fatal hypersensitivity reactions, need to be monitored carefully and treated if they emerge.

A study by Hudson and colleagues found that 83% of 118 HIV-infected women struggled with depression, 84% reported muscle aches, 83% experienced weakness, and 71% reported painful joints.[13] Symptoms reported by participants to be most intense included headache, rash, insomnia, shortness of breath, and vaginal itching. The study also suggested that the severity of the women's symptoms significantly predicted their ability to perform everyday tasks. Those findings were supported by a study of 317 HIV-infected men and women who reported a median number of nine symptoms related to HIV and its treatment, with the symptoms most often reported being fatigue (65%), drowsiness (57%), difficulty sleeping (56%), and pain (55%).[14]

Nurses are often responsible for taking the patient's history and for physical assessment and should understand what symptoms and adverse effects are possible and how severe they can become, as well as appropriate treatment options. Helping patients with these problems can improve treatment adherence and the quality of the patient's life. A literature review by Berg and colleagues determined that an estimated 57% to 77% of patients with HIV are unable to adhere sufficiently to antiretroviral therapy to receive maximal benefits.[15] Besides the adverse effects of the medications, patient characteristics, patient–provider relationships, disease status, and numerous other logistical factors can all affect adherence.

Those who don't adhere to their antiretroviral therapy regimen are at increased risk for developing resistance to the medications used in their therapy. HIV can mutate into a resistant form, creating resistance to more than one drug or even to entire drug classes. As a result, the patient's CD4$^+$ cell count can drop and the viral load can rise, leading to an increased risk of opportunistic disease and failing health.

CHRONIC INFECTION AND AGING

Increasing numbers of patients live successfully with HIV (for more, see "Aging with HIV: Clinical Considerations for an Emerging Population" in this issue). A Danish study published in 2007 by Lohse and colleagues found that the median length of post-diagnosis survival in a 25-year-old diagnosed with HIV in the "late highly active antiretroviral therapy era" was 35 years.[16] Along with an increased lifespan, however, come morbidities associated with chronic HIV infection. Common symptoms of HIV infection include depression, muscle aches, weakness, painful joints, headaches, rash, insomnia, fatigue, and pain.[13, 14]

As people with HIV live longer, they must also deal with the aches, pains, and chronic illnesses that come with aging. A qualitative narrative study of HIV-infected women over 41 years of age found that many

RESOURCES

The following Web sites provide valuable information for nurses and other clinicians dealing with HIV infection in their clinical practices.

- **Association of Nurses in AIDS Care:** www.nursesinaidscare.org
- **Centers for Disease Control and Prevention:** www.cdc.gov/hiv
- **TARGET (Technical Assistance Resources, Guidance, Education and Training) Center, from the Health Resources and Services Administration:** www.careacttarget.org
- ***Journal of the Association of Nurses in AIDS Care*:** www.janacnet.org
- **National HIV/AIDS Clinicians' Consultation Center (including the updated compendium of state HIV testing laws):** www.nccc.ucsf.edu
- **AIDS Education and Training Centers National Resource Center:** www.aids-ed.org

From the U.S. Public Health Service: Postexposure Prophylaxis[24]

Exposure	Defined as percutaneous injury (for example, a needle stick or cut with a sharp object) or contact of mucous membrane or nonintact skin (for example, exposed skin that's chapped, abraded, or afflicted with dermatitis) with blood, tissue, or other body fluids that are possibly infectious.
Significant exposure	Defined as exposure to a larger quantity of blood, as can occur through exposure to a device visibly contaminated with an infected patient's blood, a procedure involving a hollow-bore needle placed directly in a vein or artery, or a deep injury; also exposure to the blood of a patient with terminal HIV illness (now defined as high viral load).
First aid	Wash cut or puncture wound with soap and water. Flush mucous membranes with water. There's no evidence that the use of antiseptics or expressing fluid reduces transmission. Application of caustic agents (such as bleach) isn't recommended.
Next steps	Follow institutional policy regarding the reporting of injury to the ED or employee health service immediately for evaluation of exposure. Ideally, treatment should begin 1 to 2 hours after exposure but not more than 72 hours later (New York State postexposure prophylaxis guidelines suggest treating within 36 hours).
Source patient	**Known HIV infection.** Knowing the source patient's current and past antiretroviral regimens, results of past testing for drug resistance, and viral load are helpful. Don't delay treatment while gathering this information.
	Unknown HIV status. Test patient with rapid HIV test. Check state guidelines as to the need for informed consent.
	Unknown source. Consider type of injury and fluid involved in exposure. If unsure how to proceed, call hotline or experienced HIV provider.
Health care workers	Health care workers should undergo baseline testing for HIV, hepatitis B, and hepatitis C. If postexposure prophylaxis is used, the health care worker will be monitored for drug toxicity at baseline and again at 2 weeks. Monitoring includes complete blood count and renal- and hepatic-function tests.
Postexposure prophylaxis	The selection of a drug regimen must balance the risk of infection against the possible toxicity of the agents used. The Centers for Disease Control and Prevention recommends a 2- or 3-drug regimen, based on the severity of exposure and other considerations (New York State guidelines suggest a 3-drug regimen in all cases). Consultation with an experienced HIV-care provider is recommended, given the complexity of choosing and administering postexposure HIV prophylaxis.
Follow-up care	Follow-up care should include counseling, postexposure testing, monitoring of treatment medications, and medical evaluation.
Nursing considerations	**Documentation** • Date and time of exposure. • Details of the procedure being performed and the use of protective equipment at the time of exposure. • The type and amount of fluid to which the health care worker was exposed. • Details about the source patient. • Details about postexposure medical management. **Health care worker education** • Stress the importance of adherence to the prophylaxis regimen. Discuss adverse effects that may occur, and available treatments. • Stress the importance of reporting any signs and symptoms of acute HIV infection. • Stress the importance of preventing secondary transmission by using condoms and not sharing injection equipment. • Make counseling available.
For immediate help	PEPline (the National Clinicians' Post-Exposure Prophylaxis Hotline), available 24 hours a day, 7 days a week: (888) 448-4911.

of the women expressed concern about their inability to differentiate between the symptoms and normal body changes associated with aging and those caused by chronic HIV infection.[17] A study of HIV-infected men and women 55 years of age or older found that, among the 165 subjects who received HIV care after 1996, the most common comorbid conditions were hypertension, chronic airway disease, diabetes mellitus, and arthritis.[18] Both aging and HIV infection undermine immunity and host defenses, and there is now some research—as well as a great deal of anecdotal evidence—indicating that HIV infection may accelerate the aging process.[19] Yet another concern for those receiving antiretroviral therapy is that the decrease in renal function associated with aging can impede drug absorption and efficacy.[20]

NURSING IMPLICATIONS

Even nurses who don't work in HIV care can make a difference in the epidemic. Nurses are seen as trustworthy resources for information on HIV prevention and testing, and they should be comfortable discussing these topics with a wide range of people. In addition, nurses may be the first clinicians to recognize HIV-related symptoms (see *Signs and Symptoms of HIV Infection*[21-23]) or risk factors in a patient. Symptoms can be nonspecific; it's important to remember that HIV often belongs in a differential diagnosis and to encourage other clinicians to keep that in mind. When working with HIV-infected patients, nurses can play a pivotal role in medication adherence, symptom management, positive behavior change, and patient education. For available Web sites related to HIV nursing, see *Resources*.

A note on occupational exposure. Although the risk of HIV infection after an occupational exposure is small, nurses should be aware of ways to care for a health care worker who's been exposed to HIV at work (see *From the U.S. Public Health Service: Postexposure Prophylaxis*[24]). The risk of infection after an occupational percutaneous exposure is roughly 1 in 300 (0.3%)[25]; after a mucous membrane exposure, the risk of seroconversion is approximately 9 in 10,000 (0.09%).[24] ▼

For more than 20 additional continuing nursing education articles on the topic of immunodeficiency, go to www.nursingcenter.com/ce.

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