Preventive Services Guidelines for Primary Care Clinicians Caring for Adults and Adolescents Infected With the Human Immunodeficiency Virus

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Primary care clinicians caring for persons infected with the human immunodeficiency virus greatly contribute to public health efforts to combat the human immunodeficiency virus/acquired immunodeficiency disease epidemic in the United States. Primary care clinicians can assess the prevention needs of persons infected with the human immunodeficiency virus and ensure that needed prevention services are received. *(Arch Fam Med. 1993;2:969-979)*

As with many other health conditions, a key to good medical management of human immunodeficiency virus (HIV) disease lies with early and accurate detection of HIV infection.[1] Early detection provides the opportunity to minimize the transmission of HIV from HIV-infected persons to others (primary HIV prevention),[2] as well as to enhance opportunities to control the progression of HIV disease. Proper management can substantially prevent opportunistic infections and other disabling complications (secondary prevention).[2]

In a national survey of primary care physicians conducted in 1990, 83% of respondents overall indicated that they needed to know more about HIV and acquired immunodeficiency syndrome (AIDS).[3] The percentage who reported they needed additional HIV/AIDS information was above 80% among physicians who had treated more than 10 HIV-infected patients, as well as among physicians who had never treated an HIV-infected patient.

This article reviews recent literature emphasizing primary and secondary HIV prevention and other public health issues/guidelines for HIV-infected adults and adolescents. It is intended to give primary care clinicians a handy reference for providing preventive services needed by HIV-infected adults and adolescents. However, to focus on HIV prevention information most relevant for primary care clinicians, some important topics, such as how to ensure confidentiality,[4,5] are not addressed. We acknowledge that success in preventing HIV transmission is dependent, in part, on a patient's trust in his or her clinician and the health care system.

Except for the section in this review specifically about the health of HIV-infected women, preventive services guidelines for HIV-infected persons are made equally applicable for both men and women. We note that studies on the natural history of HIV infection in women are ongoing and will likely yield results with important implications for preventive services specifically for HIV-infected women. When new information from these studies emerges, preventive service recommendations for HIV-infected women will need modifications.

TAKING CLINICAL HISTORIES

Clinical history taking is especially important and must be performed in a sensitive manner for persons who are, or may be, infected with HIV. This is an essential activity for primary prevention of HIV transmission and for partner notification. Unless they take appropriate precautions, persons with HIV infection can transmit

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HIV to sexual or needle-sharing partners. Although this review concentrates on HIV-infected persons, uninfected persons with high-risk behaviors also present primary care clinicians with opportunities for primary HIV prevention and referrals for additional prevention needs.

The US Preventive Services Task Force recommends that clinicians take complete sexual histories (including use of contraceptives) and drug use histories on all adolescent and adult patients.[6]

To perform a thorough sexual history, clinicians must be aware of the diversity of human sexual behavior. When taking a drug use history, clinicians must be aware of drug use parlance. To obtain accurate and reliable sexual and drug use histories, clinicians must be nonjudgmental in their demeanor and in their questions (**Table 1**).[7]

Studies indicate that some primary care clinicians may not take thorough sexual histories.[8-10] A thorough sexual history is necessary to perform effective HIV prevention counseling.[7] A thorough sexual history should gather information about the patient's sexual orientation and specific sexual behaviors, ie, the gender and number of his or her sexual partners, the type and frequency of sexual intercourse with each partner, whether intercourse is unprotected or protected, and the method of protection (including whether condoms are consistently and properly used with each partner).

A thorough drug use history is important not only because HIV can be transmitted parenterally through contaminated needles, syringes, and other unsterilized, shared injecting equipment, but also because of the many other health implications of drug use.[7] History about a client's use of alcohol and nonparenteral drugs, such as "crack" cocaine, should be assessed because such substances can cause "disinhibiting" effects on the user's sexual and drug injecting behaviors, which can then lead to unsafe behaviors responsible for HIV transmission.[11] Drugs such as crack cocaine and heroin have been associated with increased rates of HIV infection in persons exchanging sex to obtain drugs or to obtain money to buy drugs.[12] Clinicians should remain aware that patients are reluctant to reveal sensitive drug use information in an initial encounter and should be alert for symptoms of substance abuse during clinical histories and signs of substance abuse during physical examinations.

Thorough sexual and drug use histories are also necessary to help patients' sexual and needle-sharing partners.[7] Partner notification (PN) has the following objectives: (1) to provide prevention information to persons who, if not already infected, may be at very high risk of becoming HIV infected but are unaware of, or misunderstand, their personal risks, and (2) to assist partners in obtaining services such as HIV counseling, testing, referral, and additional HIV prevention counseling.[5]

There are basically two types of PN: patient referral PN and provider referral PN.[5] In patient referral PN, HIV-seropositive persons notify their own sex and needle-sharing partner(s) (including spouses). With proper support, many HIV-infected patients can successfully notify and refer their own partner(s). Provider referral PN assists HIV-infected persons if they are unable or unwilling to notify their own partner(s). In provider referral PN, assistance is offered to confidentially notify and offer services to sex and needle-sharing partner(s) (including spouses). Provider referral PN should not be

Table 1. Examples of Questions for Taking Clinical Histories About Sexual Behavior, Contraceptive Use, and Drug Use[7]*

Sexual Behaviors
Are you currently in or were you recently in a sexual relationship?
Do you have sex with men, women, or both?
How many men or women did you have sex with in the last week, last month, last year?
How often do you have sex with each man or woman?
Is each partner new, casual, or regular?
Have any of your partners been men who have sex with other men?
Have any of your partners shot drugs?
Have you had sex with someone that you know or suspect has HIV?
Have you ever traded money or drugs for sex?
Have you ever traded sex for money or drugs?
When you have sex, is it protected or unprotected? What kind of protection do you use?
During sexual intercourse, how often do you use a condom?
Do you engage in insertive oral sex? Do you engage in receptive oral sex?
Do you engage in insertive anal sex? Do you engage in receptive anal sex?
Drug Use Behaviors
What type of prescription drugs are you taking?
Do you drink alcohol? How much and how often do you drink alcohol?
Have you ever taken or used a drug that was not prescribed for you: narcotics, marijuana, cocaine or "crack"?
Have you ever injected (shot) drugs?
Which drugs did you inject?
How often did you inject each drug in the last week, last month, last year?
Do you ever share needles, syringes, or "works"?
How often do you share?
Do you ever clean the needle, syringe, or "works"?
How do you clean?
Do you clean the needle, syringe, or "works" with bleach?

**Exact wording of questions should be tailored to individual patients. HIV indicates human immunodeficiency virus.*

undertaken without the patient's consent.[13] Provider referral PN is often performed by trained personnel from local or state public health departments. The identity of HIV-infected patients should be kept confidential by clinicians and public health workers performing provider referral PN.

COUNSELING FOR BEHAVIOR CHANGES/RISK REDUCTION

Counseling

One of the most important contributions that a primary care clinician can make to HIV prevention is to counsel HIV-infected patients to avoid transmitting the virus to others. Many persons who plan to be tested for HIV within 1 year report that they intend on receiving HIV counseling and testing (CT) from a physician or health maintenance organization.[14,15]

Important behaviors about which HIV prevention counseling should be provided are high-risk sexual behaviors, drug use behaviors (including injecting drug use [IDU]), and contraceptive use (including avoiding unintended pregnancy). Counseling and testing should be performed with informed consent. Counseling is usually provided to HIV-infected persons in confidential one-on-one sessions. Follow-up counseling may be provided in small group sessions (support groups).

The Centers for Disease Control and Prevention (CDC) recommends that HIV counseling be client centered and tailored to the behaviors, circumstances, and special needs of the person being served; risk-reduction messages should be personalized and realistic.[16]

It is important for the clinician or counselor to listen to the client to determine individual prevention needs. Human immunodeficiency virus counseling should interactively assist the client, rather than lecture to him or her.[17] Pretest counseling should include a focused risk assessment whereby the counselor helps the client assess and take "ownership" of his or her individual risk for HIV infection or transmission, and it should result in a negotiated individualized risk-reduction plan. The posttest visit should reinforce the risk-reduction plan and provide HIV-infected persons with early medical evaluation and appropriate referrals. Many clients who initially discover they are HIV seropositive encounter difficulties assimilating new information, which may necessitate follow-up counseling and support.[16]

Process of Behavior Change

It is important for the clinician to understand the process of behavior change and the factors that are important for successful counseling. Behavior change is a stepwise process that moves through different stages. Several models of the process of behavior change have been proposed.[18-21] We find the transtheoretical stages of change model[20,21] to be very useful for describing human health behavior changes. This model defines five distinct stages in the process of an individual changing his or her health behavior: precontemplation, contemplation, preparation, action, and maintenance.

Precontemplation is the stage in which a person does not consider a particular behavior (eg, unprotected sexual intercourse) to have personal risk or does not consider a different behavior to be safer (eg, abstinence or consistent and proper condom use), and therefore lacks any intention to change his or her behavior in the foreseeable future. *Contemplation* is the stage in which a person is aware that a behavior has a risk or that a different behavior is safer but has not yet decided what to do about this knowledge. *Preparation* is the stage in which a person expresses a commitment to stop a risk behavior or to adopt a safer behavior but has not yet effectively implemented the behavior change. *Action* is the stage in which a person has stopped a risk behavior or started a healthy behavior but has not yet sufficiently incorporated the behavior change to maintain it over a long period. *Maintenance* is the stage in which a person refrains from a risk behavior or consistently practices a healthy behavior and expresses confidence that the changed behavior will be maintained under all circumstances.

Movement through stages may be rapid or slow and may be marked by reversals in the direction of change. Many persons with HIV infection require external support (eg, one-on-one sessions or small groups) to adopt and maintain behavior change, considering the lifelong nature of change required to prevent transmission of HIV infection. It is important for the clinician to understand that behavior change is a stepwise process, recognize the stage for any particular patient, and tailor counseling to the patient's particular stage of behavior to best help the patient negotiate the process into the maintenance stage.

Consider a clinician who has to provide counseling to a divorced, sexually active, HIV-infected woman who has previously undergone surgical sterilization. In counseling about routine condom use as an HIV risk-reduction strategy, the clinician should not assume that the woman is already "preparing" to use condoms. Perhaps the woman has always viewed condoms as contraceptives; because of her surgical sterilization, she has never really considered using condoms for disease prevention (precontemplation). Before providing detailed information about how to use condoms (ie, to help her move from preparation to action), the clinician should make sure that the patient understands the importance of taking steps to prevent HIV transmission to her sexual partners (ie, help her move from precontemplation to contemplation).

Effects of CT on Risk Behaviors

A thorough review has been published on the effects of HIV CT on changing risk behaviors in different

populations.[22] It is not known how often the HIV CT in the reviewed studies met recommended CDC standards.[16] Counseling and testing can be substantially effective at reducing risk behaviors among heterosexual couples in whom one partner is HIV infected.[22] There are few studies, with varied findings, of HIV CT effects on risk behaviors among heterosexuals not in steady couples or in couples in whom the partner's HIV infection status is unknown.[22]

Injecting-drug users in treatment reduce their risk behaviors after HIV CT, but so do injecting-drug users in treatment who do not receive HIV CT.[22] Counseling and testing may be effective in changing risk behaviors for acquiring HIV among men who have sex with other men.[22] In limited studies among women, HIV CT has not been shown to affect pregnancy rates or pregnancy termination rates in HIV seropositive women compared with HIV seronegative women,[22] but HIV CT does provide the information necessary for informed reproductive decisions to be made.

Longitudinal studies of men who have sex with other men show reductions in risk behaviors among men who have received HIV CT as well as among those who have not.[22] Among men who receive HIV CT, a few studies show greater decreases in HIV seropositive men than in HIV seronegative men and in men with unknown HIV serostatus, but these studies are not conclusive. In a study of behavior change among men who have sex with other men,[23] self-reported positive behavior changes (ie, the men reduced anal sex during which condoms were not used) were significantly associated with three self-reported factors: (1) having "self-efficacy/self-esteem," ie, the person was confident he could practice the safer sexual behavior even in difficult circumstances, such as under the influence of drugs or alcohol, (2) having "appropriate skills," ie, the person had the knowledge and ability to use a condom correctly, and (3) having "peer support" for behavior changes. Other factors likely to be important to positive behavior changes are for individuals to have basic information about HIV and AIDS and the norms in the community established by opinion leaders.[24]

Human immunodeficiency virus counseling should aim to convey messages that will promote factors associated with positive behavior changes (ie, self-efficacy/self-esteem, appropriate skills, peer support, basic information, and community norms). Clinicians may choose to refer HIV-infected patients to community-based organizations to provide ongoing HIV counseling and support services.

DIAGNOSTIC TESTS FOR HIV

The techniques most frequently used to confirm the diagnosis of HIV infection are those that detect the presence of antibodies to HIV (types 1 and 2).[25] The US Public Health Service (PHS) recommends that tests for HIV antibody be considered positive when a sequence of tests, starting with a repeatedly reactive enzyme immunoassay and including an additional, more specific, assay, such as a Western blot, are consistently reactive.[4] Recently licensed rapid (10-minute) microparticle filtration HIV antibody enzyme immunoassays are also screening tests, and repeatedly reactive specimens with these assays should be tested with additional, more specific tests to confirm the presence of HIV antibody (SUDS HIV-1 Test, Murex Corp, Norcross, Ga) Guidance on HIV counseling for test results from rapid HIV-antibody screening tests will need to be developed.

The Association of State and Territorial Public Health Laboratory Directors recommends that laboratories not report HIV antibody test results for patients with repeatedly reactive enzyme immunoassay screening tests before having the results of more specific supplemental tests.[26] The Association further recommends that laboratory report forms should contain a concise summary of the interpretation of all the laboratory tests performed to make the diagnostic test results clear for the clinician.[26] When these recommendations are followed, HIV antibody-positive test results may not be reported for several days (up to 2 weeks).

There are various difficulties involved in diagnostic testing for HIV infection in children younger than age 18 months; because the emphasis of this review is on HIV-infected adults and adolescents, we refer primary care clinicians to other reviews about diagnostic tests for HIV in children.[27]

CD4$^+$ T-LYMPHOCYTE TESTING, *PNEUMOCYSTIS CARINII* PNEUMONIA (PCP) PROPHYLAXIS, AND ANTIRETROVIRAL THERAPY

CD4 T-Lymphocyte Testing

An important early step in the care of an HIV-infected patient is measuring the patient's CD4$^+$ T-lymphocyte level (T-helper lymphocytes). CD4$^+$ T cells are the subpopulation of T lymphocytes to which HIV binds[28] and are selectively damaged and destroyed giving rise to immunodeficiency.[29-37] CD4$^+$ T-cell levels in an HIV-infected person should be determined using multicolor immunophenotyping performed on a flow cytometer.[38] CD4$^+$ T-cell levels are important to measure for three reasons: staging HIV infection,[39,40] guiding therapeutic and prophylactic decisions and actions,[41-44] and monitoring the course of the infection/response to therapy.[45-49]

CD4$^+$ T-cell levels are reported as absolute CD4$^+$ T-cell counts or as percentages of total lymphocytes that are CD4$^+$ T cells. An absolute CD4$^+$ T-cell count is the mathematical product of the percentage of lymphocytes that are CD4$^+$ T cells and the number of white blood cells that are lymphocytes. An accurate absolute CD4$^+$ T-cell count requires an accurate white blood cell count and differential to be determined at the same

time flow cytometric immunophenotyping is being performed.

Published studies about the efficacy of antiretroviral therapy in HIV-infected persons are based on absolute $CD4^+$ T-cell counts,[43] as are many clinical recommendations.[41,44] However, $CD4^+$ T-cell percentages are less subject to variation on repeated measurements than are absolute $CD4^+$ T-cell counts.[50,51] $CD4^+$ T-cell percentages may be used to guide clinical actions in certain situations (eg, when concurrent hematologic values and accurate absolute $CD4^+$ T-cell counts are unavailable).[39,44] Repeated $CD4^+$ T-cell testing may be necessary in guiding therapeutic decisions for individual patients. Future technological advances in flow cytometry are likely to make absolute $CD4^+$ T-cell counts as accurate and reliable as $CD4^+$ T-cell percentages.

$CD4^+$ T-cell levels are determined from adequately anticoagulated whole blood specimens. Universal precautions should be used with all specimens.[52] Recommended anticoagulants are ethylenediaminetetraacetic acid, heparin, and acid citrate dextrose (purple-top, green-top, and blue-top blood collection tubes, respectively).[38]

Specimens should be stored or shipped to the testing laboratory at room temperature, avoiding temperatures below 10°C and above 37°C.[38] (Insulating materials or special packaging may be necessary to maintain ambient temperatures.) Specimens should be transported to the testing laboratory as soon as possible, but they must be within the testing limits for the anticoagulant that is used.[38]

For interpreting $CD4^+$ T-cell levels, each testing laboratory should determine its own reference limits on $CD4^+$ T-cell counts and percentages.[38] (Laboratories should also determine reference limits specific for infants and children.)

Clinicians should make sure that $CD4^+$ T-cell tests are performed on clinical specimens in laboratories that adhere to published guidelines for flow cytometry, participate in a recognized proficiency testing/performance evaluation program, and are accredited, licensed, or certified by a recognized professional organization or governmental agency.

PCP Prophylaxis

The incidence of PCP can be greatly reduced with appropriate use of prophylactic antibiotics. *Pneumocystis carinii* pneumonia remains a major cause of morbidity and mortality in HIV-infected persons, often because they are not receiving such prophylaxis. The PHS recommends prophylaxis for PCP for all HIV-infected adolescents and adults whose $CD4^+$ T-cell counts are less than 200/μL.[41,42] To decide when to initiate PCP prophylaxis, $CD4^+$ T-cell levels should be determined in asymptomatic HIV-infected adolescents and adults at least every 6 months, or more frequently in symptomatic HIV-infected persons or in those close to therapeutic thresholds. (Because the emphasis of this review is on HIV-infected adults and adolescents, we refer clinicians who care for HIV-infected children to PCP prophylaxis guidelines for children recommended to PHS by the Working Group on PCP Prophylaxis in Children.[53])

Treatment regimens for PCP prophylaxis currently considered safe and effective include oral trimethoprim-sulfamethoxazole (TMP-SMX)[54] and inhaled aerosolized pentamidine isethionate.[55] Oral TMP-SMX is preferred to aerosolized pentamidine for both primary and secondary PCP prophylaxis in HIV-infected persons who have had no history of serious adverse reactions to oral TMP-SMX.[42] The recommended dosage of oral TMP-SMX for PCP prophylaxis is 160 mg of trimethoprim and 800 mg of sulfamethoxazole (eg, one double-strength tablet) once per day.[42] Insufficient data are available to recommend dosing less frequently than once a day. Leucovorin calcium does not need to be given with this treatment regimen.[42]

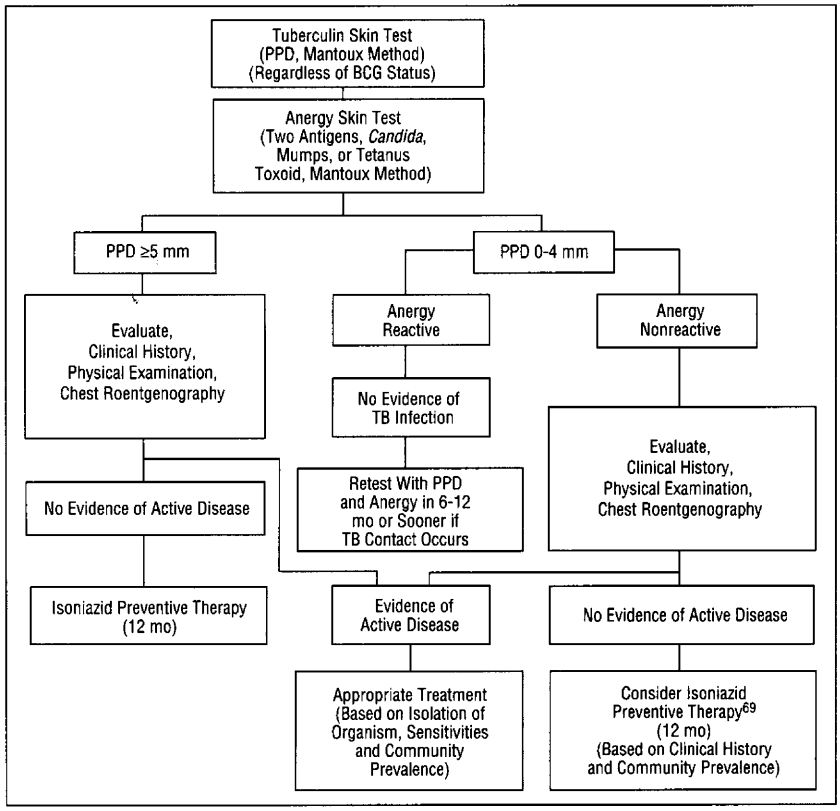
Secondary PCP prophylaxis with oral TMP-SMX for HIV-infected patients who have no history of toxic reactions is a cost-effective regimen compared with several other potential prophylaxis regimens.[56] Aerosolized pentamidine should be used for HIV-infected persons with a history of toxic effects or who develop toxic effects while receiving oral TMP-SMX.

Other regimens, including dapsone, have been used for primary and secondary PCP prophylaxis in HIV-infected persons, but results from randomized, prospective clinical trials of these regimens are not yet available.

Antiretroviral Therapy

Antiretroviral therapy with zidovudine (previously termed *azidothymidine*) for HIV-infected persons with fewer than 0.50×10^9/L $CD4^+$ T cells (500/μL) has been shown to delay the onset of AIDS and other severe conditions associated with HIV-related immunosuppression[43] and may prolong life.[57] Zidovudine therapy may also decrease the amount of HIV-1 in semen.[58] Preliminary results from a study of heterosexual men found that zidovudine use was associated with reduced HIV transmission to female partners,[59] but this finding needs additional study. The recommended dosage of oral zidovudine is 500 mg/d.[43] Various dosing schedules have been recommended (eg, 100 mg every 4 hours while awake or three doses per day [200 mg, 200 mg, and 100 mg]).[43] The major adverse reactions to zidovudine relate to suppression of bone marrow (anemia, thrombocytopenia, neutropenia),[60] and drug-resistant viral isolates have been reported.[61] Nausea, vomiting, headache, fatigue, confusion, myositis, and blue pigmentation of fingernails have also been reported as adverse reactions.

In October 1991, the US Food and Drug Administration approved didanosine (previously termed *dideoxyinosine*) for use in persons with advanced HIV infection who do not tolerate zidovudine or who demonstrate significant clinical deterioration dur-



Recommendations for tuberculosis (TB) evaluation and therapy in adults and adolescents infected with the human immunodeficiency virus. PPD indicates purified protein derivative.

ing zidovudine therapy.[62] The recommended starting dosage of oral didanosine is 200 mg every 12 hours for persons weighing between 50 and 74 kg. The major adverse reactions to didanosine are pancreatitis and peripheral neuropathy.[62] Pancreatitis with didanosine may be life threatening. Sporadic hepatitis, headaches, and insomnia have also been reported.

In June 1992, the Food and Drug Administration approved zalcitabine (previously termed *dideoxycytidine*) for use in combination with oral zidovudine in adults with advanced HIV infection and signs of clinical deterioration.[63] The major adverse reactions to zalcitabine include a reversible painful peripheral neuropathy and pancreatitis. Other adverse reactions reported include rash and stomatitis.

Recommendations for antiretroviral therapy will change, and will likely include recommendations for combination therapies, as the results of clinical trials emerge.

TUBERCULOSIS

Coinfection with HIV and tuberculosis (TB) is a serious and increasing problem. Persons latently infected with *Mycobacterium tuberculosis* who become infected with HIV are at increased risk of developing active TB disease (7% per year in one study[64]) compared with a lifetime risk of 5% to 10% in persons who are not infected with HIV. In addition, HIV-infected persons who become newly infected with TB are at very high risk for developing rapidly progressive clinically active TB disease,[65-69] with case fatality rates above 70% in HIV-infected persons who are infected with multiple drug–resistant TB.[66]

The PHS Advisory Council for Elimination of Tuberculosis recommends HIV CT for all persons with TB disease, tuberculous infections, and positive tuberculin skin test results.[70]

The Advisory Council also recommends tuberculin skin testing with 5 tuberculin units of tuberculin purified protein derivative using the Mantoux method in all HIV-infected persons,[70,71] with other TB diagnostic tests, as appropriate. Persons with HIV infection should be evaluated for delayed-type hypersensitivity anergy with two antigens (*Candida*, mumps, or tetanus toxoid) administered by the Mantoux method[72] at the same time their purified protein derivative skin test is performed. An algorithm of the recommendations for TB evaluation and therapy in HIV-infected persons is presented (**Figure**).[73]

The CDC has developed recommendations for the evaluation and therapy of persons exposed to multiple drug–resistant TB, including recommendations for preventive therapy for HIV-infected persons.[74]

IMMUNIZATIONS

The Immunization Practices Advisory Committee recommends routine immunization of symptomatic and asymptomatic HIV-infected adults and adolescents with certain vaccines or toxoids (eg, influenza [yearly]; pneumococcal polysaccharide vaccine; tetanus and diphtheria toxoids, adsorbed [for adult use]; enhanced potency inactivated poliovirus vaccine; measles, mumps, and rubella vaccine [if indicated]).[75] Measles disease in HIV-infected persons may be severe or fatal.

Haemophilus influenzae type b conjugate vaccine may be considered for HIV-infected adults[75] because it may afford protection against disease, the risk of disease is substantial, and adverse reactions are minimal. The Immunization Practices Advisory Committee also recommends hepatitis B vaccine for health care workers, men who have sex with other men, injecting-drug users, and heterosexuals who have multiple sex partners.[75] Hepatitis B vaccine should be given to HIV-infected persons based on these recommendations.

The Advisory Committee recommends that live vaccines, ie, oral poliovirus vaccine (live virus) and BCG vaccine for TB (live bacteria), should

not be administered to persons with HIV infection.[75] (Recommendations for BCG vaccine in HIV-infected infants may be different for infants receiving vaccines under the World Health Organization's Expanded Programme on Immunizations.)

SEXUALLY TRANSMITTED DISEASES (STDs)

Other STDs are transmitted by the same sexual behaviors that transmit HIV and at the same time HIV is transmitted. Some preexisting STDs, especially those causing genital ulcerations, serve as cofactors facilitating HIV transmission and acquisition.[76-78] Treatment guidelines published by the CDC in 1989[79] contain specific recommendations for diagnosis, therapy, and follow-up for persons with STDs, including those STDs associated with HIV transmission (ie, syphilis,[80,81] chancroid,[82] and herpes simplex virus type 2,[83] which cause genital ulcers, and gonorrhea, chlamydia, and trichomoniasis, which cause purulent cervicovaginal infections and mucosal disruption[84]). Human immunodeficiency virus–related immunosuppression may exacerbate illness associated with STDs, such as syphilis, and may complicate diagnosis and medical management. The STD treatment guidelines address the special diagnostic, treatment, and follow-up issues for syphilis in HIV-infected patients.[79] Primary prevention through safer behaviors is the best method for patients to avoid the risks of HIV and other STDs.

WOMEN'S HEALTH

Several studies have shown that HIV-infected women may be at increased risk for diseases of the uterine cervix, including dysplasia and invasive cervical carcinoma (with and without human papillomavirus infections).[85] The CDC,[85] in accordance with the US Preventive Services Task Force,[6] recommends that all HIV-infected women undergo a Papanicolaou test annually, rather than every 1 to 3 years at the clinician's discretion as recommended for women who do not have risk factors for cervical cancer. Women with HIV-associated immunosuppression are reported to have more severe manifestations of other gynecological conditions, such as vaginal candidiasis[86] and pelvic inflammatory disease.[87]

It is important for primary care clinicians to be knowledgeable about counseling on reproductive decisions for HIV-infected women and their male partners. The risk of transmitting HIV from an infected woman to her newborn infant ranges from 13% to 40%.[88-91]

All women who are at risk for HIV infection and who are pregnant or reproductively capable should be routinely counseled and tested for HIV antibody.[4,92] Counseling about reproductive decisions may be offered to HIV-infected women (and their partners) in a nondirective manner.[92-94] This is the model most often used in genetic counseling.[95] Nondirective counseling offers basic risk information to adequately inform persons, but supports whatever is the woman's (or couple's) final informed reproductive choice.

Transmission of HIV from women to their infants through breast-feeding after delivery has been well documented.[96] A prospective cohort study from 19 European cities found a twofold increase in the risk of HIV infection in breast-fed children compared with never-breast-fed infants born to HIV-infected mothers.[97] A review of published studies indicates that the estimated risk of transmission via breast-feeding was 29% if the mother acquired HIV infection postnatally and 14% when the mother was infected

Table 2. Human Immunodeficiency Virus (HIV) Infection Reporting to Health Departments Required as of May 1993, United States and Territories[103]

By Name	Anonymous	Symptoms (Not Yet Acquired Immunodeficiency Disease) by Name	HIV Infection Reporting Not Required*
Alabama	Georgia	Maryland	Alaska
Arizona	Illinois	Washington	California
Arkansas	Iowa		Connecticut†
Colorado	Kansas		Delaware
Idaho	Kentucky		District of Columbia
Indiana	Maine		Florida
Louisiana	Montana		Hawaii
Michigan	New Hampshire		Massachusetts
Minnesota	Oregon		Nebraska
Mississippi	Rhode Island		New Mexico
Missouri	Texas		New York
Nevada			Pennsylvania
New Jersey			Puerto Rico
North Carolina			Vermont
North Dakota			
Ohio			
Oklahoma			
South Carolina			
South Dakota			
Tennessee			
Utah			
Virginia			
West Virginia			
Wisconsin			
Wyoming			

**Some health departments receive HIV infection reports on a voluntary basis.*
†Requires reports of pediatric HIV infection by name.

Table 3. Recommended Initial Schedule of Visits to Primary Care Clinicians for Adults and Adolescents Who Are Diagnosed as Having Human Immunodeficiency Virus (HIV) Infection*

First Visit	First Follow-up Visit (2 Weeks)	Visit 2 Days Later	Visit 2 Weeks Later
Taking the clinical history (sex, contraceptives, drugs) HIV risk assessment HIV risk-reduction plan Physical examination HIV antibody testing STD screening and treatment	Reinforce HIV risk assessment and risk-reduction plan HIV antibody test results and posttest counseling Discuss partner notification $CD4^+$ T-cell test† TB skin test and anergy skin tests‡ Immunizations§ Papanicolaou test‖ Appropriate referrals HIV infection reporting	TB skin test and anergy skin test results Counseling for behavior changes Partner notification Appropriate referrals	$CD4^+$ T-cell test results Antiretroviral therapy PCP prophylaxis Counseling for behavior changes Partner notification Appropriate referrals Schedule follow-up visit in 6 months (earlier visit may be needed based on clinical or psychological conditions)

STD indicates sexually transmitted disease; TB, tuberculosis; and PCP, Pneumocystis carinii *pneumonia.*
†*Repeat every 6 months (more frequently with symptoms or when close to therapeutic thresholds).*
‡*If purified protein derivative is less than 5 mm and anergy reactive, retest in 6 to 12 months (sooner if TB contact occurs).*
§*Influenza vaccine yearly.*
‖*Perform yearly.*

prenatally.[98] The PHS recommends that HIV-infected women be advised against breast-feeding.[92] The World Health Organization recommends that in settings in which infectious diseases are not the primary causes of death during infancy (eg, developed countries), pregnant women infected with HIV be advised not to breast-feed and should use a safe feeding alternative.[99]

OTHER PREVENTIVE SERVICES ISSUES

Referrals

Persons infected with HIV face many psychological, social, and economic problems during the course of their disease. Primary care clinicians should make appropriate referrals for HIV-infected persons to other services not provided on-site. Referrals may include specialized medical care, drug treatment, family planning services, and other medical or psychosocial services. Physicians may choose to refer patients to community-based case management providers or organizations that can identify and coordinate the services required to meet the needs of HIV-infected persons.[100-102] Persons infected with HIV may need access or referral to psychosocial services, such as crisis intervention services (including suicide prevention), peer support groups, nutritional and food services (including meals-on-wheels), child care services, legal assistance (antidiscrimination protection, estate and custody matters), transportation services, housing assistance, employment counseling, job rehabilitation services, insurance benefit assistance, and public-support eligibility assistance. In addition, HIV-infected women may have special needs for the care of their children.

Surveillance for and Reporting of HIV Infections and AIDS

All 50 states and the District of Columbia require the reporting of all AIDS cases that meet the AIDS surveillance case definition[39] to the state or local health department.[103] All health departments have legal safeguards to protect the confidentiality of AIDS case reports. Currently, 25 states require the confidential reporting of all HIV infections by the name of the person to state or local health departments (**Table 2**).[103] An additional 11 states maintain HIV infection reporting requirements (without the name of the person), and two states require the reporting of symptomatic HIV infections that do not meet the AIDS surveillance case definition.[103] Clinicians should be aware of the AIDS surveillance case definition,[39] report all AIDS cases they diagnose, and comply with the AIDS/HIV infection reporting requirements of their state. The purposes of public health reporting are to help institute appropriate prevention and disease control measures, monitor trends, plan for and manage resources within communities, and identify needs of specific populations.[104] In addition, some states use HIV infection reporting to ensure proper referrals for prevention and health services.[103]

Recommended Schedule of Visits

Table 3 presents a recommended schedule of initial visits for asymptomatic HIV-infected adults and adolescents to primary care clinicians and summarizes the guidelines reviewed. Table 3 provides a logical and organized sequence to the problems that must be addressed for successful primary and secondary HIV prevention. Persons infected with HIV who have symptoms require prompt evaluation to establish the diagnosis of, and develop a treatment plan for, opportunistic diseases.

CONCLUSION

The HIV/AIDS epidemic in the United States presents primary care clinicians, the public health community, and the general public with unprecedented challenges. We hope this re-

view provides information useful to primary care clinicians for meeting the challenges of primary and secondary prevention in the care of HIV-infected persons.

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Use of trade names and commercial sources is for identification purposes only and does not constitute endorsement by the Public Health Service or the US Dept of Health and Human Services.

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Yearly reports on HIV/AIDS, including all articles, recommendations, and guidelines related to HIV infection and AIDS that appeared in the Morbidity and Mortality Weekly Report (MMWR) *can be purchased from the National Technical Information Service, 5285 Port Royal Rd, Springfield, Va 22161; telephone (703) 487-4650. Periodically,* MMWR *publishes articles containing information relevant to, but not specifically about, HIV infection and AIDS (eg, immunization guidelines). Single issues of such* MMWR *publications may be obtained from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402-9371; telephone (202) 783-3238.*

Reprint requests to Office of the Deputy Director (HIV), National Center for Prevention Services, Centers for Disease Control and Prevention, Mailstop E-07, Atlanta, GA 30333 (Dr Gerber).

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