Human Immunodeficiency Virus and the Primary Care Physician

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As the scope and size of the human immunodeficiency virus (HIV) epidemic grows, the primary care physician will need to assume a greater role. A knowledge of HIV risk factors and the ability to perform pretest and posttest counseling for HIV testing is essential. Counseling patients on HIV risk reduction should be part of the HIV risk interview. An understanding of the benefits and contraindications of testing, as well as a respect for the impact of testing, is important.

All HIV-seropositive individuals should undergo a complete history and review of symptoms as soon as test results are known. Judicious use of laboratory testing, including monitoring of CD4 cell counts, is recommended. Pneumocystis carinii *prophylaxis and zidovudine therapy should be offered to patients with appropriately low CD4 counts.* **J Fam Pract 1990; 31:646-650.**

In 1989 there were about one million Americans infected with human immunodeficiency virus (HIV).[1] As this epidemic spreads, an increasing burden of care is being placed on primary care physicians. It is important, therefore, that primary care physicians be able to identify patients at risk for HIV infection, advise them regarding HIV antibody testing, and identify subgroups of those infected who need treatment or referral to specialty care. This article reviews the major issues associated with the provision of care to the individual requesting HIV testing and to the patient who is found to be infected with HIV but who has no symptoms.

APPROACH TO THE PATIENT REQUESTING HIV ANTIBODY TESTING

The HIV antibody test should be thought of as an important direct medical intervention as well as a diagnostic tool. As such, the potential benefit as well as the possible harm associated with performing the test must be weighed before the test is conducted.

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Regardless of whether the HIV antibody test is ordered, the interaction between the physician and patient requesting testing presents an ideal opportunity to educate the patient about means of avoiding infection with HIV or controlling spread of the virus to others if the person is already infected. It is also an excellent setting in which to give the patient information on general health maintenance, nutrition, and other issues that would promote well-being regardless of serologic status.

To do this job well, the physician must be able to build on the information gained from the patient regarding his or her risk behaviors. If an adequate history has been taken, the physician will know specific details of the patient's sexual practices and drug use and understand the degrees of risk associated with those behaviors. Topics to be covered in the HIV risk interview are covered in Table 1. Guidelines for safer sex and drug use are covered in Tables 2 and 3. It is important that such specific information be obtained because a major goal is to inform patients about what places them or others at risk and to help them stop those specific high-risk behaviors. An approach that focuses on global injunctions regarding sexual orientation will be less helpful than advising on how to have safer sex. Likewise, the female partner of an infected man may need considerable assistance in negotiating condom use and avoiding pregnancy. The individual using intravenous drugs may be best helped by facilitating entry into a drug rehabilitation program or, if that is not possible, being

TABLE 1. TOPICS TO BE COVERED IN THE HIV RISK INTERVIEW

Risk Area	Activity
Patient's self-identified sexual orientation (heterosexual, homosexual, bisexual)	
Specific details of sexual behavior at any time in the past and in the last year	Insertive or receptive vaginal, anal, oral sex Use of condoms: always, occasionally, or never History of work as prostitute History of sexual contact with high-risk group member
Use of intravenous drugs	Sharing of needles Cleaning needles: always, occasionally, or never Geographic location when drug use occurred
Blood products	History of blood transfusion between 1978 and 1985 Hemophilia and use of blood products
Health care worker with history of needlestick	Severity of needlestick injury

instructed not to share needles or how to clean needles before use.

Benefits of Testing

A major benefit for some patients is that the knowledge of their HIV status can reduce anxiety and depression.[2] For some individuals even the knowledge that they are, in fact, infected can be less stressful than not knowing their antibody status.

TABLE 2. SAFE SEX GUIDELINES

Risk Levels	Sexual Activity
Unsafe sexual activities	Vaginal or anal intercourse without a condom Oral-genital contact without a condom Oral-anal contact Shared sex toys
Safer sexual activities	Vaginal or anal intercourse with a condom Oral-genital contact with a condom Deep kissing
Safest sexual activities	Mutual masturbation Dry kissing

NOTE: Any sexual activity that involves sharing of bodily fluids can be dangerous.

TABLE 3. SAFER DRUG USE

Risk Level	Activity
Ideal	Avoid all use of drugs; obtain drug treatment if necessary
Next best	If unable to avoid all use of drugs, do not use intravenous drugs
Next best	If unable to avoid use of intravenous drugs, do not share needles
Next best	If you do share needles, make sure that they are cleaned with bleach and water before each use

A second and extremely important benefit of testing accrues uniquely to the patient who is HIV-antibody positive. Recent research has indicated that certain prophylactic treatments can limit morbidity and prolong life in some people. Such treatments cannot be undertaken, however, unless the infection status is determined. Finally, for the woman of childbearing age, knowing that she is HIV-positive can be a determining factor in a decision to not become pregnant.

Harms of Testing

Weighed against the potential benefits of early medical intervention and stress reduction are several potential harms of testing, which can be minimized by the physician if care is taken but cannot always be completely eliminated.

Stress associated with an actual or anticipated positive test result can exacerbate or even unmask heretofore undiagnosed psychiatric disorders. The physician should be aware that there is increased risk of suicide in persons with HIV infection and acquired immune deficiency syndrome (AIDS).[3,4] The possibility of a positive test result should, therefore, be explored with the goal of further understanding the patient's ability to cope with such an outcome. The end result of such a discussion could be a decision to postpone testing until stronger social supports are gathered or greater psychological health is achieved. Increasing social supports and psychological health may entail referral to a mental health professional or may be achieved as the result of the physician-patient interactions in the primary care setting. When the test is performed, results should be imparted to the patient promptly, privately, and in person. Sufficient time should be allowed in the physician's schedule to provide support, counseling, and education, and close follow-up is often warranted.

A second potential harm of testing relates to the problem of confidentiality. Because some behaviors associated with contraction of HIV infection may be viewed as immoral, even the knowledge that someone has been tested can become a basis for discrimination in employment, housing, or insurance. This situation can be even worse if a positive

test or diagnosis of AIDS becomes public knowledge.[5] A careful assessment of the physician's own confidentiality is, therefore, essential. The American Medical Record Association[6] has established guidelines for handling data on individuals being tested in both outpatient and inpatient settings. If strict confidentiality cannot be assured, it is best to refer the patient to an institution that can assure confidentiality. Many community organizations and city or county health departments offer such services.

A final potential harm of testing can stem from obtaining a false-positive result. The most widely used serologic test for the presence of HIV antibody is the enzyme-linked immunosorbent assay (ELISA), which has a sensitivity and specificity approaching 99%.[7] Because there is a risk of false positivity, however, all ELISAs positive for HIV must be confirmed by another method. In most laboratories, confirmation is done by the Western blot technique or indirect immunofluorescence. It is essential not to inform a patient of a positive result from an ELISA that has not been confirmed by another method. In addition, in low-risk populations there is a predictable chance of obtaining a false-positive result even if the ELISA is confirmed.[8] This possibility underscores the importance of obtaining a complete history of risk behaviors before testing (Table 2). If an individual has been determined to have no risk factor for acquiring HIV infection, it may be best to avoid the potential harm that would result from a false-positive result. Exploration of the person's anxiety regarding AIDS and appropriate reassurance and counseling may be the only intervention indicated.

Informed Consent

Once the risks and benefits of serologic testing have been weighed and a decision has been made to proceed with testing, it is essential (and some states require) that informed consent be obtained. Issues that must be covered include a review of the potential harms and benefits to the patient of being tested, an explanation of the meaning of a positive and a negative result, and the possibility of a false-negative or false-positive result. The patient should understand where the results of the test will be recorded and to whom and under what circumstances, if any, they will be released. States vary, for example, in regard to reporting requirements for HIV-seropositive patients by name.

APPROACH TO THE PATIENT WHO IS HIV SEROPOSITIVE

Medical Evaluation

All HIV-seropositive individuals should undergo a complete review of symptoms and a physical examination as soon as possible after the return of the confirming test results. A thorough systems approach should be taken. The clinical signs and symptoms of HIV-associated illnesses have been well covered in recent reviews.[9,10] Reassurance can be offered if no abnormalities are uncovered; if problems are detected, appropriate care can be undertaken in a timely manner. It is important to follow the patient closely to watch for development of advancing HIV infection and to provide support and information.

Laboratory Testing

Important decisions regarding ordering laboratory tests should be based primarily on findings in the physical examination and history. A screening complete blood cell count (CBC) with a platelet count should be done on all patients. Anemia, neutropenia, and thrombocytopenia are fairly common and may occur when the patient is asymptomatic. Baseline serologic testing for syphilis should be done on all HIV-infected patients from groups at high risk for acquiring syphilis (homosexual or bisexual men and prostitutes). Other baseline laboratory tests to consider include lactate dehydrogenase (LDH), erythrocyte sedimentation rate (ESR), and toxoplasma serology. A baseline LDH may be helpful because an abrupt increase in LDH can occur with *Pneumocystis carinii* pneumonia (PCP) or B-cell lymphoma. The erythrocyte sedimentation rate may gradually increase with progressive HIV infection. Sudden rises, though, may indicate a new infection or malignancy. Knowing whether a patient has had past infection with *Toxoplasma gondii* may be of diagnostic help if the patient develops seizures or encephalopathy.

A T-helper cell (CD4) count should be obtained as part of the initial evaluation of the HIV-infected patient. The CD4 cell count is the best predictive laboratory test for the progression to AIDS.[11] Decisions on starting PCP prophylaxis and zidovudine may be based solely on these counts. The counts can fluctuate, and repeat testing should be done to confirm a low value before instituting therapy based on a single low count. CD4 cell counts should be repeated every 6 months for the individual whose counts are above 0.6×10^9/L (600/μL).[12] Counts should be checked more frequently (every 3 months) as CD4 counts approach 0.5×10^9/L (500/μL) and again as they approach 0.2×10^9/L (200/μL) because specific therapeutic intervention (instituting zidovudine therapy at count of 0.5×10^9/L (500/μL) and PCP prophylaxis at 0.2×10^9/L (200/μL) is dependent on the count.[12] Monitoring CD4 counts can be discontinued once the count falls below 0.2×10^9/L (200 μL), as interventions based on CD4 count should already have been instituted. Recommendations for screening laboratories and frequency of follow-up testing are covered in Table 4.

TABLE 4. RECOMMENDED LABORATORY TESTS

Initial Visit	Follow-up
Complete blood count with platelets	Every 6 months. If patient is taking zidovudine: monthly for 3 months if stable, then every 3 months
VDRL	None
CD4 count	Every 6 months if count $>0.6 \times 10^9$/L (600 μL). Every 3 months if count is approaching 0.5×10^9/L (500 μL) or has dropped to nearly 0.2×10^9/L (200 μL. Stop CD4 counts when $<0.2 \times 10^9$/L (200 μL) and therapy has begun
Tuberculin skin test and controls	None
Consider lactate dehydrogenase, erythrocyte sedimentation rate, and *Toxoplasma* titer	As indicated, based on specific symptoms

HEALTH MAINTENANCE OF THE HIV-INFECTED PATIENT

Because of the increased risk of many infections and diseases in HIV-infected patients, knowledge of these increased risks by the patient and physician are important.

Vaccinations

Most community-acquired pneumonias in HIV-infected patients are caused by *Streptococcus pneumoniae* or *Hemophilus influenzae*. There is, moreover, an increased incidence of bacterial pneumonia in this patient population, with estimated rates of pneumococcal pneumonia ranging as high as 9.5/100 patients per year.[13] Because of this increased risk, vaccination has the potential to be helpful in decreasing morbidity and mortality. The Advisory Committee on Immunization Practices recommends that children with asymptomatic HIV infection be immunized with both pneumococcal vaccine and *H influenzae* type B vaccine.[14,15] Routine childhood immunizations (inactivated polio vaccine; measles, mumps, rubella; and diphtheria, pertussis, tetanus) are safe and recommended for the asymptomatic HIV-infected child. Current recommendations for HIV-infected adults include pneumococcal vaccine and an annual influenza vaccination.[16,17] Case reports of pneumococcal vaccine failure in HIV-infected patients have surfaced, however, and it is not certain that a reliably protective antibody titer will be achieved.[18] It may be that earlier in the course of HIV infection there is less derangement of B-cell function; therefore, a reasonable recommendation is to administer the vaccine to HIV-positive patients as early as possible after diagnosis.[19,20]

Tuberculosis

When compared with the general population, HIV-infected patients are at markedly increased risk of developing clinically apparent tuberculosis. Overall, 4.6% of AIDS patients have developed tuberculosis.[21] The incidence is especially high in HIV-infected Haitians and intravenous drug abusers.

Reactivity to the standard Mantoux tuberculin skin test in HIV-infected patients with tuberculosis decreases as HIV staging progresses toward class IV disease. In one study by the Centers for Disease Control (CDC),[22] 63% of patients with tuberculosis diagnosed 1 to 24 months before their AIDS diagnosis had positive skin tests, whereas only 33% of the patients who had tuberculosis diagnosed simultaneously or after AIDS diagnosis had positive tests. Individuals with a positive skin test should receive isoniazid prophylaxis regardless of age (300 mg/d by mouth for 12 months).[23–25] All patients with positive skin tests should have a chest x-ray examination to evaluate for active pulmonary disease.

Zidovudine

There has been increasing use of zidovudine (formerly AZT) in asymptomatic HIV-seropositive individuals, and the primary care physician should be aware that this area is changing rapidly. Results of a recent study[26] of zidovudine use in asymptomatic seropositive individuals have shown benefit in slowing disease progression to advanced AIDS-related complex or AIDS. In this study a dose of 100 mg of zidovudine five times per day was as effective as higher dose therapy (200 mg six times per day) and had a much lower incidence of side effects. Zidovudine therapy (500 mg/d) is recommended for both symptomatic and asymptomatic patients with CD4 cell counts less than 0.5×10^9/L (500/μL).[12]

PCP Prophylaxis

The majority of patients with AIDS will have at least one episode of PCP during their lifetime. The mortality rate of the first episode is between 5% and 20% and appears to be directly related to the severity of the disease at the time of presentation.

HIV-infected individuals at highest risk for development of PCP are those with history of previous PCP or those with low CD4 cell counts. Patients with CD4 cell counts of fewer than 0.2×10^9/L (200/μL) or less than 20% of total lymphocyte count have a higher incidence of developing PCP over the next 6 to 12 months when com-

pared with patients with higher counts.[27] Current recommendations are, therefore, to give prophylaxis to all HIV-infected individuals with CD4 cell counts of fewer than 0.2×10^9/L (200/μL). Regimens that have been studied include inhaled aerosolized pentamidine (300 mg once every 4 weeks) and oral trimethoprim-sulfamethoxazole (800 mg of sulfamethoxazole and 160 mg of trimethoprim twice a day with 5 mg of leucovorin).[28,29] Currently only aerosolized pentamidine has Food and Drug Administration approval for use as a prophylactic agent for PCP. Recent guidelines from the CDC[27] do not recommend one regimen over another. Several other regimens are currently under investigation, including dapsone and pyrimethamine-sulfadoxine (Fansidar). No specific guidelines have been set up for children, although significant experience with the use of trimethoprim-sulfamethoxazole for PCP prophylaxis in children with acute lymphocytic leukemia has been reported.[30]

SUMMARY

This paper has outlined an approach to the patient who presents requesting HIV testing and to the patient who is found to be HIV-antibody seropositive. Central to provision of care to such patients is an appreciation of the medical, social, and psychological issues that surround HIV infection. It should be emphasized that, for those in the early stages of infection and for the worried well, the medical needs are relatively simple when compared with the psychosocial needs. It has been the intent of this paper to address both these areas in the hope that primary care physicians become more comfortable in meeting the needs related to HIV in their practices.

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