62. Counseling to Prevent HIV Infection and Other Sexually Transmitted Diseases

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RECOMMENDATION

All adolescent and adult patients should be advised about risk factors for human immunodeficiency virus (HIV) infection and other sexually transmitted diseases (STDs), and counseled appropriately about effective measures to reduce the risk of infection (see *Clinical Intervention*). Counseling should be tailored to the individual risk factors, needs, and abilities of each patient. This recommendation is based on the proven efficacy of risk reduction, although the effectiveness of clinician counseling in the primary care setting is uncertain. Individuals at risk for specific STDs should be offered testing in accordance with recommendations on screening for syphilis, gonorrhea, hepatitis B virus infection, HIV infection, and chlamydial infection (see Chapters 24, 26–29). Injection drug users should be advised about measures to reduce their risk and referred to appropriate treatment facilities (see Chapter 53).

Burden of Suffering

The precise incidence of STDs is not known, but it is estimated that each year there are 12 million new infections in the U.S.[1] This figure includes an estimated 4 million cases of *Chlamydia trachomatis* infection, 800,000 cases of gonorrhea, over 110,000 cases of syphilis, and several million cases of *Trichomonas* vaginitis and nonspecific urethritis. Each year there are 0.5–1 million cases of human papillomavirus (HPV) infection, 200,000–300,000 cases of hepatitis B virus (HBV) infection, 200,000–500,000 cases of genital herpes (HSV), and 40,000–80,000 new infections with HIV.[1–3a] An estimated 1 million Americans are currently infected with HIV, 31 million infected with HSV, 24 million infected with HPV, and over 1 million are chronic HBV carriers.[1] High-risk practices remain common in the U.S.: 13% of men and 5% of women in metropolitan areas report heterosexual activity with two or more partners in the last 12 months without consistent use of condoms.[4] Injection drug use, practiced by 1–1.6 million Americans,[1] is a major cause of new infections with HIV, HBV, and hepatitis C virus[4a] through sharing of needles (see Chapter 53).

The consequences of STDs in infected individuals range from mild urogenital symptoms due to trichomoniasis to the nearly uniformly fatal outcomes from HIV infection (see Chapters 24, 26–30). Left untreated, bacterial STDs can produce painful anogenital symptoms (urethritis, cervicitis, etc.), serious illness requiring hospitalization (e.g., pelvic inflammatory disease [PID]), or life-threatening complications (e.g., tertiary syphilis). Both ulcerative and nonulcerative genital STDs are associated with increased risk of acquiring HIV infection.[5–7] Viral STDs, for which there are no curative treatments at present, may be associated with persistent infection, chronic recurrences (genital herpes and HPV), or potentially fatal sequelae (e.g., fulminant or chronic hepatitis).

Women. Many women are at risk for STDs—14% of sexually active women ages 18–44 had more than one sex partner in the previous year and an additional 12–24% had a partner who had multiple sex partners[8]—and STDs have a disproportionate impact on women. Many STDs are more easily transmitted from men to women or have more severe consequences in women. Gonorrhea and chlamydial infection can result in PID, ectopic pregnancy, or infertility. HPV infection is associated with an increased risk of cervical cancer.[9] Pregnant women can transmit various STDs to their offspring in utero or at delivery with serious or potentially fatal consequences (see Chapters 24, 26–30). Nonetheless, in a recent survey, most women reported limited knowledge about common STDs: fewer than one fourth of those at highest risk—younger women and those with multiple partners—believed they were at risk.[10]

Adolescents and Young Adults. STDs are a particular problem in adolescents and young adults. Men and women under 25 account for two thirds of all cases of chlamydia and gonorrhea,[3] and men and women under 35 account for two thirds of newly reported HIV infections.[11,12] Among 9th to 12th graders surveyed in 1993, more than a third had had intercourse within the previous 3 months; 19% reported having had four or more sex partners.[13] Although condom use has increased among high school students, nearly half of all students did not use condoms at last intercourse.[13]

High-Risk Groups. Individual behavior is the strongest determinant of STD risk, and HIV and STDs are common among persons who exchange sex for money or drugs, injection drug users (IDUs), incarcerated persons, and other persons who have numerous sex partners.[11,12,14,15] Reductions in high-risk sexual behavior since the appearance of AIDS have lowered the incidence of STDs in the gay community,[16] but many younger men who have sex with men continue to be at risk.[15] Individuals in communities where STDs are prevalent are also at higher risk: rates of gonorrhea, syphilis, and HIV infection are substantially higher in blacks and Hispanics than among whites, especially among adolescents and young adults.[3,12]

The economic consequences of STDs remain enormous. The medical costs of treating HIV and AIDS were projected to reach \$15 billion in 1995.[17] The estimated direct and indirect costs of treating PID and its sequelae were \$4.2 billion in 1990.[1]

Efficacy of Risk Reduction

Sexual Behavior. Avoiding sexual contact or needle sharing with infected partners is the most effective way to prevent infection with HIV and other STDs. Identifying infected sex partners is difficult, however, since many infected persons are unaware that they are infected, few infections are readily apparent to sex partners, and some persons may conceal the fact that they are infected.[18] Sexual contact with high-risk partners (e.g., IDUs, persons with a history of STDs or multiple sex partners, men who have sex with men) is also a strong risk factor for HIV and other STDs, but many men and women are reluctant to discuss their sexual history or drug use with their sex partners. Because accurately assessing risk in individual partners is difficult, maintaining a mutually monogamous relationship and limiting the number of sex partners may be more practical strategies for reducing the risk of STDs. Regardless of sexual orientation, risk increases steadily with increasing number of sex partners (especially casual partners).[19,20]

Certain sexual practices may increase the risk of STDs. Unprotected anal intercourse (especially receptive anal intercourse) is an important risk factor for HIV infection among both homosexual men and female partners of HIV-infected men; other practices that increase rectal trauma may also increase transmission of HIV.[20–22] Oral-genital contact can transmit herpes and gonorrhea, and it may pose a risk for transmitting HIV.[20,23]

Male Condoms. Consistent and appropriate use of latex condoms reduces the risk of many STDs.[24] Condoms have been shown in the laboratory to prevent transmission of chlamydia, HSV,[25] trichomonas, cytomegalovirus, and HIV.[26,27] In epidemiologic studies, persons who use condoms consistently are at decreased risk of gonorrhea, nongonococcal urethritis (ureaplasma or chlamydia), and genital herpes simplex.[28] In Thailand, reported cases of the five major STDs declined 69% after institution of an aggressive program to promote condom use at commercial sex establishments.[29]

Correct and consistent use of latex condoms can also reduce the risk of HIV infection.[20,22,30–32] A meta-analysis of retrospective studies of HIV transmission within heterosexual couples calculated that "regular" condom use reduced transmission from an HIV-infected partner by 69% compared to infrequent users;[33] HIV infection was rare among women who reported always using condoms. In a prospective study following 256

serodiscordant heterosexual couples (i.e., one member HIV-positive) over an average of 20 months, no seroconversions occurred among 124 couples who used condoms for every episode of intercourse, versus 12 among 121 couples who used condoms inconsistently.[7]

Condoms infrequently slip off the penis during intercourse or withdrawal (less than 1% of episodes in one study).[34] Reported rates of condom breakage have ranged from 0.6–2% for vaginal intercourse, and 1–7% for anal intercourse.[28] A substantial proportion of condom breakage or leakage may be attributable to improper handling of condoms or inadequate or improper use of lubricant. When condom skills were studied among more than 3,000 patients at STD clinics, patients correctly performed an average of 3.6 of 6 key steps in placing a condom on a penile model.[35] Use of petroleum- or oil-based lubricants causes degradation of condoms[36] and was an independent risk factor for HIV infection among prostitutes.[37] Up to 60% of homosexual men in one study reported using inappropriate lubricants.[38] Condoms are less protective against infections spread through external genital contact (e.g., HPV),[9] and failure to put on a condom before any genital contact may also account for some infections. Natural membrane condoms may be less effective than latex condoms, due to pores that may allow passage of HIV[28] and other viruses, and due to less uniform quality.[39] Nonetheless, failure to use condoms consistently remains the most important obstacle to condom effectiveness.[40,41] Dissatisfaction with condoms is higher in men than in their female partners and is attributed to reduced sensation, fear of condom breakage, inconvenience, and concern that condom use conveys mistrust of sex partners.[42,43]

Spermicides and Female Barrier Contraceptives. Use of barrier methods such as diaphragm, contraceptive sponge (no longer available in the U.S.), or cervical cap is associated with a 33–70% lower risk of gonorrhea, chlamydia, trichomoniasis, and PID in cross-sectional and case-control studies, compared with women using oral contraceptives or no contraception.[28] Although the physical barrier may provide some protection against cervical infections, much of the protective effect is likely to be due to the spermicides used with these methods. The most common spermicide, nonoxynol-9, exhibits in vitro activity against HSV,[44] HBV, chlamydia,[45] and HIV.[46,47] Clinical trials in sex workers and STD patients have demonstrated reductions of 25–60% in both gonococcal and chlamydial cervical infections with various preparations of nonoxynol-9 (gel, sponge, suppository, or film).[48–52] More consistent use of spermicides was associated with increasing levels of protection but was not as protective as consistent condom use.[28,51]

A female condom, consisting of a polyurethane sheath with flexible rings on each end, has been approved by the Food and Drug Administration (FDA), but clinical experience remains limited.[53] The female condom

is impermeable to HIV, cytomegalovirus, and other STD organisms in in vitro testing[54] and is an effective contraceptive when used regularly (see Chapter 63).[55] In studies to date, however, the majority of women did not use the female condom consistently; the cost (estimated $2.25 per unit), inconvenience, and unfamiliar appearance are potential obstacles to widespread acceptance.[56]

The effect of spermicide use on HIV infection has not been consistent in clinical studies.[57] A randomized, placebo-controlled trial of contraceptive sponges among Kenyan prostitutes observed significantly higher rates of vulvitis and genital ulcers among women using the sponge, with no reduction in HIV seroconversion.[48] Given the high prevalence of STDs in this population and the high dose of nonoxynol (1,000 mg/sponge), these findings may not be generalizable to average women using lower doses or different preparations of spermicides.[57] In a cohort study of prostitutes given condoms and lower dose spermicide suppositories, more consistent use of spermicides was associated with substantial reductions in the incidence of HIV, especially among women who used condoms less consistently.[32,58] Nonetheless, spermicides could increase susceptibility to HIV by increasing vaginal irritation or altering vaginal flora, especially if used at high doses.[59] Methods that deliver spermicide high up in the vagina may also be more protective against infections that require a cervical portal of entry (i.e., gonorrhea and chlamydia) than against those that do not (i.e., most viruses, syphilis).[60] Efforts are currently under way to develop a microbicide that is effective against HIV without disrupting vaginal epithelium.[61] Even if spermicides and female barrier methods are less effective than male condoms under optimal conditions, they could provide comparable protection in everyday use if they are used more consistently than male condoms.[62]

Injection Drug Use. The risk of HIV and HBV infection among IDUs is closely related to the number of persons with whom an individual shares injection equipment (needles, syringes, drug preparation materials). Treatment programs that decrease injection drug use reduce the incidence of HIV infection in heroin addicts (see Chapter 53).[63] Drug users can also reduce their risk by avoiding contaminated injection equipment. In a retrospective study of drug users in Bangkok, risk of HIV seroconversion was much lower among those who reported they had stopped sharing injection equipment.[64] A review of needle exchange programs concluded that such programs reduced needle sharing among drug users, without increasing the number of persons injecting drugs or the frequency of drug use.[65,66] Due to difficulties in study design, however, no study has yet demonstrated a reduction in new HIV infections as a direct result of needle exchange pro-

grams.[67] Based on changes in reported needle sharing or in HIV contamination of returned needles, modeling studies have estimated that needle exchange programs reduce HIV incidence among IDUs by 33%.[65] Comparisons between cities and countries have demonstrated lower rates of HIV in areas with needle exchange programs and areas where drug behaviors have changed.[68] Where new needles and syringes are not available, disinfecting used equipment with bleach has been recommended,[69] but the effectiveness of this strategy has been questioned.[65,69a] Although bleach sterilizes HIV-contaminated needles in in vitro studies, most IDUs use ineffective procedures to clean needles in actual practice.[65,70]

Effectiveness of Counseling

There have been few controlled studies examining whether or not clinician counseling in the primary care setting is effective in reducing the incidence of STDs.[71] Recent publications, however, have systematically reviewed the evidence that counseling interventions, delivered in a variety of settings, can reduce specific STD risk behaviors.[72–76] The most commonly studied interventions were HIV counseling, with or without antibody testing, in high-risk populations (men who have sex with men, IDUs, or persons with STDs) and condom promotion in at-risk heterosexual populations. Additional evidence is provided by interventions delivered in nonclinical settings, such as school[77] or community programs.[73,74]

Counseling in conjunction with HIV testing is associated with significant reductions in high-risk sexual behavior among homosexual men, but testing may be more important than counseling (see Chapter 28).[72] Behavior change after counseling and testing has been more consistent in seropositive than seronegative patients. Drug users have reduced needle sharing in response to the threat of AIDS,[78] but it has been difficult to demonstrate a benefit of specific counseling interventions in IDUs. A recent review[76] identified only nine studies with appropriate control groups, only two of which found significant, lasting effects on risk behaviors among IDUs.

Counseling to promote condom use has been effective in very high-risk populations.[73] The combination of education and condom distribution increased condom use and produced substantial reductions in HIV and other STDs in studies involving foreign sex workers.[29] Interventions in STD clinics have improved compliance with treatment and follow-up for infected patients[79,80] and increased subsequent use of condoms.[81]

Counseling in the primary care setting has less consistent effects on sexual behavior. Counseling increased the number of patients obtaining or using condoms in some studies[82] and reduced the incidence of STDs in a 1950 study;[83] other recent studies reported no significant effect of counseling.[84,85] Condom promotion appears to be more effective in men than in women.[81,85,86] There are few data on the effect of clinician counseling

about other contraceptive methods, but women increased spermicide use after a brief counseling intervention (including vouchers for spermicides) in one study.[87] Whether using female-controlled methods (barriers and spermicide) influences condom use by male partners is also unknown.[88]

The efficacy of 23 school-based programs aimed at reducing sexual risk behaviors was reviewed in 1994.[77] Not all programs had significant effects, but selected programs improved specific outcomes: delaying initiation of intercourse, reducing frequency of intercourse or the number of sex partners, or increasing the use of condoms or other contraceptives. Changes in behavior have generally been modest, however, and the results of school programs are not easily generalized to counseling by clinicians.[89] Nonetheless, concern that promoting condom use in adolescents will lead to increased sexual activity is not supported by data from school-based programs,[77] community interventions,[90] or condom campaigns in other countries.[91]

Important questions remain about the long-term impact of counseling in the primary care setting. Few studies reported data on clinical outcomes (STD incidence), follow-up was often short, and most successful trials enrolled selected populations (e.g., patients with STDs) or employed interventions that may not be feasible in the average primary care practice (e.g., group counseling, role-playing, videotape programs, or multiple educational sessions). Cultural differences between clinician and patient (due to age, ethnicity, or sexual orientation) may also pose an obstacle to effective counseling; culturally tailored interventions may be more effective in certain populations.[92] Finally, an individual's susceptibility to advice about risky behavior varies over time (i.e., "stages of behavior change"[93]). As a result, effective interventions to prevent STDs are likely to require repeated individual messages, follow-up to prevent relapse, community-wide efforts to change norms and attitudes, and screening and treatment of infected individuals.[74,94]

Recommendations of Other Groups

Recommendations for physicians to counsel adolescent and adult patients on measures to prevent STDs (primarily HIV) have been issued by a number of organizations, including the American Medical Association,[95] the American College of Physicians,[96] the American Academy of Pediatrics (AAP),[97] the American Academy of Family Physicians,[98] and the American College of Obstetricians and Gynecologists (ACOG).[99] The AMA Guidelines for Adolescent Preventive Services (GAPS) recommend providing routine advice to all adolescents about responsible sexual behaviors, including abstinence and the use of condoms.[100] ACOG[101] and AAP[102] support encouraging abstinence among adolescents, but both organizations

endorse educating sexually active teens about proper condom use and increasing the availability of condoms at sites serving youth. The Canadian Task Force on the Periodic Health Examination concluded there was fair evidence to advise adolescent patients about the correct use of condoms to prevent STDs and pregnancy.[103] Healthy People 2000, a U.S. Public Health Service (PHS) report of national health objectives, endorses efforts to increase age-appropriate counseling on HIV and STD prevention by primary care providers.[104]

The key elements for reducing risk of HIV infection were outlined by the PHS in 1987:[105] abstain from sex or maintain a mutually faithful monogamous sexual relationship with an uninfected partner; abstain from sex with individuals who are not known with certainty to be seronegative and who have not been the sole partner for 6 months prior to or any time after the test; do not practice anal intercourse; do not use unsterilized syringes, needles, or drugs; and always use a condom if there are any doubts about the status of the sex partner. Revised guidelines from the Centers for Disease Control and Prevention (CDC) recommend using all opportunities to reinforce risk reduction messages; tailoring counseling to behaviors, needs, and circumstances of the individual; providing a personalized risk assessment; developing a personalized plan with the patient to reduce risk; and providing appropriate referrals.[106] Detailed instructions for patients on the proper use of condoms have been published by the CDC[24] and the FDA.[39] The CDC recommends that condoms be made more widely available by health care providers in clinics for sexually transmitted diseases, family planning, and drug treatment. A 1993 workshop co-sponsored by several PHS agencies concluded that bleach disinfection was an important way to reduce the risk of HIV transmission for IDUs who do not have the option of using sterile injection equipment; provisional recommendations on the proper use of bleach were described.[107]

Discussion

The ability of primary care clinicians to influence high-risk sexual behaviors and drug use is limited, but there is consistent evidence that American men and women have changed their behavior in response to information about HIV and other STDs, provided through public education and clinical encounters.[16,74,108] Improvements have not been consistent for all behaviors or all populations, however. Those at highest risk (drug users and their partners) may find it difficult to change behavior even when motivated to do so due to poverty, homelessness, addiction, or limited access to condoms or clean needles. Whereas use of condoms has increased in the general population, there is little evidence that heterosexual men and women have reduced the number of sex partners or delayed the onset of

sexual activity. A substantial number of young persons have multiple sex partners and few use condoms consistently.[4,13]

Clinicians nonetheless are potentially an important component of the effort to educate patients about HIV and other STDs. Whereas most persons are aware of the effects of HIV infection, few realize the serious consequences of more common STDs such as chlamydia and gonorrhea. Men and women may underestimate their risk of STDs from steady sex partners who use drugs or engage in other high-risk activities. Recent surveys indicate, however, that many physicians do not routinely take a sexual history on all patients, do not ask about specific high-risk practices, and do not offer detailed counseling about methods to reduce risk of HIV or other STDs.[109–111] Clinicians can help promote behavior change by reinforcing educational messages, identifying high-risk behaviors, helping patients plan a feasible strategy to reduce risk, and advising patients about sources of additional information. Clinicians provide an important source of information for high-risk groups (e.g., drug users and commercial sex workers) who otherwise have little access to prevention information. They are also an important source of referrals to various community resources such as drug treatment centers, STD and family planning clinics, and community programs offering free condoms, sterilized drug equipment, and cleaning solutions for needles.

CLINICAL INTERVENTION

All adolescent and adult patients should be advised about risk factors for STDs and counseled appropriately about effective measures to reduce risk of infection ("B" recommendation). This recommendation is based on the proven efficacy of risk reduction, although the effectiveness of clinician counseling in the primary care setting has not been evaluated adequately ("C" recommendation). Counseling should be tailored to the individual risk factors, needs, and abilities of each patient. Assessment of risk should be based on a careful sexual and drug use history and consideration of the local epidemiology of STDs. Sexual history should include questions about number and nature of current and past sex partners (including same-sex partners or partners who have injected drugs), any history of past STD infections, the use of condoms or other barrier protection, and particular high-risk sexual practices such as anal intercourse. Patients at risk of STDs should receive information on their risk and be advised about measures to reduce their risk. Effective measures include abstaining from sex, maintaining a mutually faithful monogamous sexual relationship with a partner known to be uninfected, regular use of latex condoms, and avoiding sexual contact with casual partners and high-risk individuals (e.g., IDUs, commercial sex workers, and persons with numerous sex partners).

Patients who have sex with multiple partners, casual partners, or other persons who may be infected should be advised to use a latex condom at each encounter and to avoid anal intercourse. Condoms need not be recommended to prevent infection in longstanding, mutually monogamous relationships in which neither partner is an injection drug user or is infected with HIV. Patients using condoms should be informed about the importance of using them in accordance with recommended guidelines.[24]

- Handle condoms carefully to avoid damaging with fingernails or sharp objects.
- Use a new condom in good condition for each act of intercourse.
- Place the condom on an erect penis before any intimate contact and unroll completely to the base.
- Leave a space at the tip of the condom and remove air pockets in the space.
- Ensure adequate lubrication during intercourse. Water-based lubricants (e.g., K-Y jelly, spermicidal foam or gel) should be used. Petroleum jelly, mineral oil, hand lotion, baby oil, cold cream, massage oil, and other oil-based lubricants should not be used because they may damage latex condoms.
- Hold condom firmly against base of penis during withdrawal, and withdraw while the penis is still erect so that the condom remains in place.

Women at risk of STDs should be advised of options to reduce their risk in situations when their male partner does not use a condom, including the female condom. Women should be informed that spermicides and female barrier methods (diaphragm or cervical cap) can reduce the risk of gonorrhea and chlamydia but are not likely to be as effective as properly used male condoms, and their effectiveness against HIV and other STDs remains unproven. Pregnant women at risk of STDs should be informed of the potential risks to the fetus of HIV and other sexually transmitted infections (chlamydia, gonorrhea, syphilis, hepatitis B, and herpes) and the importance of being screened for HIV and other STDs during pregnancy.

Advice should be provided as appropriate that using alcohol or drugs can lead to high-risk sexual behavior. Persons who inject drugs should be referred to available drug treatment facilities, warned against sharing drug equipment, and, where possible, referred to sources for uncontaminated injection equipment and condoms. Drug users should be advised of the importance of being tested for HIV, of using condoms regularly with both casual and steady partners, and of following specific steps to reduce the risk of transmitting infection during preparation and injection of drugs (see Chapter 53). All patients at risk for STDs should be offered testing in accordance with recommendations on screening for syphilis, gonorrhea, HIV infection, and chlamydial infection (see Chapters 26–29) and should receive hepatitis B vaccine (see Chapter 66).

The draft update of this chapter was prepared for the U.S. Preventive Services Task Force by David Atkins, MD, MPH, with contributions from materials prepared by William Feldman, MD, FRCPC, Anne Martell, MA, CMC, and Jennifer L. Dingle, MBA, for the Canadian Task Force on the Periodic Health Examination.

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