
INTRODUCTION

Blood, semen, and vaginal fluid are the principal routes through which the human immunodeficiency virus (HIV), which causes acquired immunodeficiency syndrome (AIDS) and other disease symptoms, is transmitted from an infected to a previously uninfected person. Since testing blood donations began in 1985, a person in the United States becomes at risk of infection chiefly by engaging in practices that transfer these substances from an infected person, through sexual behavior or by sharing equipment associated with intravenous (IV) drug use. Similarly, infected women may transmit the virus to their babies during pregnancy or shortly after birth. HIV appears to be much more difficult to transmit per exposure than other sexually transmitted diseases, such as gonorrhea, or than other blood-borne diseases, such as hepatitis B.¹ HIV also appears to be much more deadly than these other diseases. In slightly over 7 years, as many as 36 percent of homosexual men with HIV infection have developed outright AIDS, and an additional 40 percent have developed other symptoms of disease (90). By May 1988, at least 92 percent of the people with AIDS diagnosed during 1981 had died (192).

Ever-increasing knowledge of HIV indicates not only the gravity of this newly-detected disease but also the means to check its spread. Unlike the control of some other infectious diseases, prevention of new HIV infections lies largely within the control of individuals and their behaviors. As is the

case for other sexually transmitted diseases (STDs), governments and communities using educational interventions can also play important roles in HIV control by communicating information, fostering social support, and providing the means for people to change and maintain certain behaviors. At present, control of HIV infection, however, depends mainly on the personal behavior of individuals.

This situation has led public health officials in the United States, the World Health Organization, and many foreign countries to stress education as the means to prevent further spread of HIV. Health education is a component of health promotion and disease prevention (17). Education regarding AIDS clearly includes the communication of information about how HIV is and is not transmitted and how to stay healthy or, if a person is already infected, how to avoid transmitting HIV to others. As used in this staff paper, the term AIDS education may also entail other activities to support behavioral changes related to disease prevention, such as testing to determine HIV antibody status and provision of devices, including condoms to reduce viral transmission through sexual behavior or bleach to reduce transmission through needle-sharing. Excluded from consideration here are aspects of prevention that do not relate to people's voluntary behavior, such as research to develop vaccines and screening of the blood supply. Education and individual behavior change are clearly important in the absence of effective medical interventions to prevent or cure HIV infection and AIDS. As shown by the history of and recent rise in syphilis rates, education and individual behavior will remain important even after effective preventive and therapeutic measures have been developed.

¹ Researchers have estimated that the chance of transmitting HIV from an infected man to an uninfected woman during each episode of sexual intercourse is 1 in 500 (88). Following a needlestick involving an infected person, a health care worker's risk of becoming infected ranges from 6-30 percent for hepatitis B virus compared with less than 1 percent for HIV (180).

AIDS education has two purposes. First, educational programs are intended to influence people to adopt or maintain behaviors that prevent HIV transmission. This purpose applies to AIDS education for all groups, including efforts directed to people with risky behaviors and to the general population, which consists mostly of people at low risk. By changing their risky behaviors, people who are already infected can avoid transmitting the virus to others, and people who are not infected can protect themselves from the virus. Communicating accurate information on how HIV is spread and how to prevent transmission, providing the skills to effect desired behavior changes, and offering support for new behavior are methods to further this goal.

The second purpose of educational programs is to maintain and promote social cohesion, a goal that relates mainly to education for the general population. Correcting misconceptions about transmission and conveying information on how HIV is and is not spread are intended to relieve anxiety among people at little or no risk and to further the second goal. Possible changes in response to more accurate information include changes in knowledge about AIDS and changes in attitudes and behavior towards people who may be infected.

This OTA staff paper reviews what is known about the effectiveness of education for the general population and for people with certain behaviors that put them at higher risk of HIV infection: certain male homosexual practices, IV drug use, certain heterosexual practices among adults, and certain practices among school-age youth. The remainder of this chapter summarizes the findings and discusses their implications for further work. The body of the paper reviews what is known about the effectiveness of education among the four groups with risky behaviors and among the general population. Appendix A contains an overview of behaviors associated with HIV transmission and principles of health behavior that may be applied to AIDS education. Appendix B describes studies related to AIDS education that

are currently being funded by the Federal Government. Appendix C acknowledges the valuable assistance of many individuals in preparing this staff paper.

SUMMARY OF FINDINGS

Changes in Knowledge and Behavior

The General Population

Considerable changes in knowledge and behavior have occurred in the United States since 1981 when the first AIDS cases were diagnosed here. By mid 1987, virtually every adult was aware of AIDS, and all but a few percent knew the major means of spread (50). The growth in knowledge among the general population testifies primarily to the ability of the mass media, chiefly television, to communicate information.

Despite these changes, however, the general population continues to hold substantial misconceptions about HIV transmission (18,50). Many of these misconceptions relate to infection through routine activities, such as believing that a person can become infected by working near someone with AIDS. Other misconceptions relate to preventive measures, such as not knowing that using condoms and spermicide can prevent infection. A persistent misconception is that one can become infected by donating blood. Accurate improved knowledge has not necessarily been associated with effective changes in behavior. It may be appropriate that only a small portion of the general population has reported changing behavior in order to prevent HIV infection, since most people are at little or no risk. Most of the changes that people have reported, however, are ineffective, such as avoiding public places. People who may consider themselves at greater risk--blacks, young adults, and single people--have expressed more concern about AIDS and reported more behavior change, in both ef -

fective and ineffective ways. People reporting any change in sexual behavior were in the minority, but the percentage was sizable: 25 percent among blacks, 16 percent among young adults, and 16 percent among single people (18). Particularly noteworthy is the finding that decreases in people's misconceptions about HIV transmission paralleled declines in their support for governmental restrictions on people with AIDS, such as quarantine or mandatory testing (18).

People With Risky Behaviors

Dramatic behavioral change has occurred among homosexual males in response to the AIDS epidemic (37). In San Francisco, one study recorded that from 1985 to 1987 the proportion of homosexual men who engaged in receptive anal intercourse fell from 34 percent to 8 percent, and the proportion who engaged in insertive anal intercourse fell from 37 percent to 3 percent (68).² By 1988, less than 2 percent of uninfected homosexual men were becoming infected annually. Reports from other areas where the prevalence of HIV infection is lower (e.g., Los Angeles, Chicago, Baltimore, Pittsburgh) showed that as of 1986-1987, 55 percent of male homosexuals continued to engage in insertive anal intercourse, and 48 percent in receptive anal intercourse (78), sometimes despite knowledge regarding safer sex (202). Although more recent data on risk behaviors are not available from these areas, annual rates of new HIV infections among homosexual men enrolled in epidemiological studies are about 1 percent (150), rates comparable to the low rates recorded in San Francisco.

Many IV drug users had learned about AIDS from the mass media and from the oral communication networks within the drug-use

subculture by as early as 1983, prior to the implementation of official education programs, and by 1984, had begun to change some AIDS-related behaviors (56,58). In New York City, for example, more than half of a group of methadone patients reported that they had made some change in their injection behavior. Few (14 percent), however, reported having changed their sexual behavior (82).

Where the prevalence of HIV infection among IV drug users is high (e. g., the prevalence of infection in the New York City area may be as high as 60 percent (185), reductions in risky drug-use behaviors may have occurred too late or may be insufficient to stem sharply the spread of the infection within the IV drug use community. As most IV drug users are male heterosexuals (56), their lack of adherence to safer sexual practices may cause their female partners to become infected. IV drug users report more changes in sexual behavior with casual sexual contacts (e.g., use of condoms with prostitutes) than with partners with whom they have a long-term relationship (56). This may, in part, be explained by evidence suggesting that when IV drug users who have learned that they are HIV antibody positive have attempted to adopt safer sex practices, such as condom use, with their long-term partners, the relationship has been disrupted (29). This finding is of concern because it is within the long-term relationship that children are likely to be conceived, and potentially infected with HIV, because contraception is often not practiced (56).

There is virtually no reliable information on the prevalence of high-risk behaviors among heterosexuals, and for heterosexuals at risk, on their level of AIDS-related knowledge and attitudes. One San Francisco survey suggests that as many as 17 percent of adult residents there are at risk for AIDS by virtue of their multiple or high-risk sex partners. Results from this survey show that those at risk do not perceive themselves to be at risk; although many respondents reported sex partners in AIDS risk groups, less than one-third reported feeling personally threatened by

² Information on these and other changes in risky behaviors is typically based on reports from the respondents themselves. The validity of such self-reported behavior change is unknown. People may respond to surveys with the answers that they believe others want, or people may not practice the new behavior consistently or maintain it over time. Self-reports of high-risk sexual behavior and drug use, however, have been correlated with HIV infection (56,220).

AIDS, and only one-fifth had sought information on how to reduce their risk of getting AIDS (38). Many heterosexuals at risk for AIDS may be served by public STD clinics. Although these sites have been targeted for AIDS educational and testing activities, little is known regarding the AIDS-related knowledge and behaviors of STD clinic attendees (123). Similarly, although reproductive-age women attending family planning clinics have been targeted for AIDS-related educational activities, there is very little information available regarding this group's characteristics and specific risk factors that can be used to guide those designing AIDS educational programs.

Studies of HIV seroprevalence (the presence of HIV antibody in the blood) and AIDS risk factors among female prostitutes have shown that IV drug use is their major risk factor for HIV infection. In fact, HIV infection in non-drug using prostitutes tends to be low or absent. Many prostitutes have routinely used condoms with their customers since the 1970s in response to concerns regarding herpes infections and other sexually transmitted disease. Barrier contraception, however, is generally not used with steady sexual partners who may be HIV-infected (157).

Teenagers engage in both sex and drug behaviors that can transmit the HIV virus. For example, teenagers acquire more than one-quarter of the annual 20 million cases of STDS. Surveys have found adolescents very knowledgeable about how HIV is transmitted, but they are much less likely to know how HIV is not transmitted (112). Few students reporting sexual activity appear to be changing their sexual behavior because of the threat of AIDS, and of those who are, few have implemented effective changes. Of particular concern are youths at relatively high risk by virtue of a history of sexually transmitted disease and involvement in prostitution or IV drug use. Little information is available on black and Hispanic youth, but one survey found them less knowledgeable than whites about HIV transmission (62).

Effectiveness of Educational Interventions

For AIDS education and for education in related areas of health behavior, efforts to judge the effectiveness of interventions have been handicapped by program designs that do not lend themselves to evaluation. Many factors besides a particular educational program are likely to influence a person's knowledge, attitudes, and behavior. To gauge the effectiveness of a specific program requires separating the effects of the program from the effects of other factors. Research methods call for comparing changes within a group that received an intervention (the experimental group) with changes within a comparable group that did not (the control group). Alternatively, researchers may evaluate different educational strategies by comparing changes among groups that received different interventions. Rarely have such research designs been applied to evaluate AIDS education for the general population or for people with certain risky behaviors.

Perhaps it is not surprising that early AIDS education programs lacked rigorous research designs. Faced with a new and usually fatal disease, the immediate concern of organizations funding programs and public health workers implementing them was to curtail the spread of HIV infection. As a result, however, knowledge about the effectiveness of particular programs and of specific elements of programs has been slow to accumulate. The dearth of basic information on sexual behaviors in the United States has exacerbated the situation. Some Federal agencies, such as the National Institute on Drug Abuse (NIDA) and the National Institute of Mental Health, are requiring some of their AIDS education programs to include evaluations that conform to principles of research methodology (see appendix B).

General Population

Although substantial gains in AIDS-related knowledge and behavioral change

occurred within both the general population and among AIDS risk groups prior to the implementation of AIDS educational interventions, the experience of programs related to HIV transmission and to other public health concerns suggests that education has the potential to promote further changes in knowledge and behavior.

Although several public health campaigns for the general population have not produced the behavior change desired, others have shown that education through the mass media can change health-related beliefs and behaviors. Use of the mass media achieved success in reducing smoking prevalence and in reducing people's risk of cardiovascular disease (69,75). Furthermore, the effectiveness of an educational program has been greater when the use of mass media has been supplemented with interpersonal communication and development of skills to implement new beliefs and motivations.

As illustrated by dissemination of AIDS information, the media can set a social agenda, that is, their coverage can heighten public awareness of an issue and stimulate people to ponder and discuss it. Factual information provided by the media can reduce misconceptions and fear about HIV transmission and can alert people with risky behaviors to their susceptibility and direct them to more detailed information. Media presentations can also legitimize efforts to reduce the stigma associated with HIV infection and to prevent further spread of HIV.

A particular problem regarding AIDS education is the skepticism that people have reported about messages from public health experts (147). A survey to be conducted by the National Center for Health Statistics in June 1988 will collect information on the public's perception of the credibility of AIDS information from Federal public health officials. Like other health education to promote behavior change, AIDS education also faces the problem of retaining people's interest and maintaining safer behaviors over time.

Certain Sexual Practices of Homosexual and Bisexual Men

Community-based educational approaches to controlling HIV transmission seek to provide people with information, skills, and social support conducive to adopting behaviors that will reduce the spread of infection. Some analysts have attributed the dramatic changes in sexual norms within the San Francisco homosexual community in part to community-based AIDS risk reduction programs. At least six elements characterize the model: 1) strong leadership from within the homosexual community; 2) market research techniques to identify appropriate messages and communication channels for reaching the target audience; 3) implementation of programs to inform and motivate target audiences; 4) a focus on facilitating social and cultural change; 5) reliance on multiple channels of communication, including both media, such as print and broadcast, and face-to-face interventions; and 6) broad-scale, grass-roots participation in program design and implementation (37). At the same time, continual research documented initial levels of high-risk behaviors, changes over time, and factors related to failure to change.

Unfortunately, there is limited evidence to link any aspect of the program to the behavioral change observed. Furthermore, given the unique composition of the San Francisco homosexual community, even if the model was found to be successful there, it might not be applied successfully in areas where homosexuals are not open about their sexual orientation and do not identify with the homosexual community. On the other hand, the success of San Francisco's community-based program is consistent with the results of similar programs to reduce pregnancy among teenagers and to reduce cardiovascular risk among the general population, as described below. The results of evaluations of six CDC-funded AIDS Community Demonstration Projects and several Innovative Projects for Risk Reduction should provide some information on the

effectiveness of community-based programs implemented in other geographical areas (see appendix B).

There is some evidence that homosexual men who have learned that they are HIV antibody positive through voluntary testing programs have reduced risky behaviors more than men who have learned that they are seronegative or who have remained unaware of their antibody status (35,1 33,216). Not all studies, however, report a positive effect of HIV antibody notification; some indicate that those learning of positive HIV antibody status increase risky sexual behaviors (104). Moreover, some mental health problems may be associated with learning of one's positive test results (105). In low prevalence areas, tracing the sexual contacts of those testing positive and offering them counseling and testing may help identify individuals unaware that they are at risk. Behavioral followup could be incorporated into such programs to see if they are, in fact, successful in reducing high-risk behavior.

Special interventions are needed to assist those having difficulty adopting or maintaining safe sexual practices. Multi-session, face-to-face programs show promise (108,37); however, longitudinal studies will be needed to assess their long-term impact on risk behaviors.

The Federal Government is funding several studies that examine the effects of HIV testing on behavior. For example, this issue is being considered in the CDC's AIDS Community Demonstration Projects and AIDS Prevention Projects (see appendix B).

IV Drug Use

The most effective method for IV drug users to avoid HIV infection is to stop injecting drugs, and for most, this requires formal treatment. The longer a person spends in treatment, the greater have been the reductions in IV drug use (56). A New Jersey program that provided vouchers for treatment was successful in getting many IV drug users into long-term treatment (56). Furthermore,

the program brought young black males into treatment, a group previously underrepresented in the State treatment system because of financial barriers (99).

Although the threat of AIDS appears to be motivating IV drug users to enter treatment, further research on the long-term outcomes of drug treatments is needed. NIDA is currently funding programs targeted to IV drug users in treatment as well as out of treatment. Some programs will chart the natural history of drug use, others will evaluate interventions to curtail the practice (see appendix B).

A shortage of treatment programs has prevented some IV drug users from entering treatment, and some have rejected treatment as an option. For drug users who continue to inject, alternative approaches to reducing HIV transmission are to distribute bleach that IV drug users can use to clean their equipment and to exchange their used needles for sterile ones. Almost half the IV drug users in a San Francisco project reported using bleach that was distributed (31). It is not clear from the study design and the information available, however, whether using bleach slowed HIV spread. Needle-exchange programs have not been officially attempted in the United States. The results from other countries suggest that use of such programs has increased, but do not indicate whether providing sterile needles has slowed HIV transmission. Since new infections have occurred in areas where only bleach distribution has been tried, researchers have suggested evaluating a combined program of bleach distribution and needle exchange (31).

Some uncertainty exists regarding the impact of IV drug users' learning of their HIV antibody status. In some areas, IV drug users who knew their positive antibody status showed greater risk reduction than those testing negative (29,42). In other areas, however, after an educational program, IV drug users in treatment reduced their risky behaviors, and the behavior changes occurred irrespective of the drug user's antibody status or awareness of the results of the HIV antibody

test (125). More long-term followup is required to understand fully the impact of HIV testing in different areas. When testing is available, programs to assist those IV drug users identified as positive to seek appropriate medical care and to minimize risk to others are needed. Preliminary data from one study showed significant changes in the use of condoms with in long-term relationships when one-on-one counseling was provided to infected IV drug users and their primary sexual partners (125).

NIDA is funding several projects to study HIV testing and the IV drug user. This well - designed research incorporates experimental and control groups, which will permit analysis of the effects of the interventions. Some projects will be evaluated individually as well as by an independent organization (see appendix B).

Certain Practices of Heterosexual Adults

No formal evaluations of AIDS educational programs implemented within clinics serving high-risk heterosexuals are available. Data are available, however, from evaluations of STD-related educational programs implemented within STD clinics. Although one would expect patient motivation to change behavior in the face of a treatable STD to be less than the motivation to change in the face of a fatal illness such as AIDS, some of the findings from evaluations of STD educational interventions may be relevant to AIDS interventions.

The results of evaluations of educational interventions in STD clinics suggest that special educational interventions can improve knowledge and can affect attitudes toward preventive behavior. Person-to-person interviews appear to be more effective than other methods, such as the use of videotapes and special educational materials. Results have not been encouraging from studies that have attempted to measure actual changes in risk behavior attributable to an educational program. For example, neither distribution of free condoms nor special counseling was effective in reducing STD reinfection (46,171).

Provider performance, however, has influenced patient compliance with a recommendation to return to clinic (118). Given that the provider-client interview appears to be a preferred medium of communicating STD information and that the performance of the counselor affects client compliance, resources may be effectively used to ensure the quality of providers of AIDS and STD services (e. g., comprehensive training, continued education opportunities, interventions aimed at reducing provider stress and burnout). Developing and providing interventions that are sensitive to cultural differences among minority groups merit particular attention.

Innovative approaches are required to facilitate behavioral change for certain heterosexuals considered at high risk of HIV infection. For example, interventions to “empower” women who may be involved in dependent relationships (e. g., prostitutes and partners of IV drug users) to encourage their partners to use condoms without, at the same time, jeopardizing themselves are being evaluated (see appendix B). Within family planning clinics, the CDC is funding activities related to AIDS education for women who may be at high-risk of HIV infection (21). The clinics assess women’s risk, counsel them on ways to reduce their risk, and offer to test them for HIV antibodies.

Certain Practices of School-Age Youth

AIDS educational programs implemented within schools have been successful in improving adolescent knowledge, but the impact on changes in risk behaviors has not yet been evaluated. The goals of sexuality education are similar to those of AIDS education: to reduce or modify teen sexual activities to curb pregnancy and STDs other than AIDS, and to improve teens’ sexual self-awareness and communication skills. It is therefore instructive to look at the evidence of success of these programs.

Results from numerous evaluations indicate that sexuality education programs increase factual knowledge about sexuality and

sexually transmitted disease but, in general, have little measurable impact on attitudes or behaviors (112). There are some important exceptions. One program using intensive cognitive-behavioral training that taught communication and problem-solving skills through role playing and rehearsal seems to have been effective in improving communication skills and attitudes compatible with lowering the risk of pregnancy (160). Particularly noteworthy are the results of a community-based program implemented in a rural South Carolina community. Using parents, churches, schools, the media, and other community organizations, this program seems to have been successful in lowering teen pregnancy rates (205). Further research to replicate these results is important because the contribution of different elements of the program is not clear, and the number of teenagers involved was small.

Although education on AIDS and sexuality appears to increase adolescent knowledge, there is little evidence that youth translate such knowledge into changes in their risk behaviors. That teens often do not apply their knowledge of risks to their personal situations is a recognized impediment to behavioral change. In the case of HIV, students may not consider infection a personal threat because most teens do not know someone with AIDS. Some have suggested that information about AIDS be presented within the context of other, more prevalent STDs, such as gonorrhea and herpes simplex, with which adolescents may have greater familiarity (61). Programs most likely to succeed in changing adolescents' behavior are those that relate the information to their personal situations and that use techniques such as role playing to teach communication skills and to reinforce new peer group norms.

AIDS educational efforts could be integrated into community-wide programs that reinforce the adoption of different behavior. That many adolescents initiate sexual activity before high school suggests that educational programs be implemented in elementary and middle schools. Because some high-risk adolescents may not be reached through

school-based AIDS educational interventions, programs could be targeted to adolescents in settings, such as juvenile detention centers and shelters for the homeless, that include teenage runaways. The National Institute of Mental Health is funding evaluations of AIDS prevention activities for adolescents who seek services at shelters for runaways or at agencies serving homosexual youth (see appendix B). The CDC is funding 15 State education agencies, 12 local education agencies, and community demonstration projects that are focusing on youth in and out of school (see appendix B).

Implications for Further Work

Studies Designed for Evaluation

Although experience indicates that public health campaigns can achieve knowledge and behavior change, it is not clear which components account for successful vs. unsuccessful results or which combinations of components are more effective than others. This gap in understanding pertains to educational interventions for people at high risk and for the general population.

The problem with AIDS education and other programs of public health education is that programs have rarely been designed to evaluate the effectiveness of interventions or to isolate the effects of different components. Without such insights, those planning educational interventions cannot determine which components are vital for success and which can be eliminated. Such information is especially important because public health programs at all levels of government face restricted budgets; formulating AIDS education programs and allocating resources among AIDS education and other health activities require knowledge of the effectiveness of different interventions.

The National AIDS Information Campaign being conducted by the CDC illustrates this situation and how it is being addressed. During fall 1987, the CDC distributed public service announcements to broad-

cast media throughout the country. NCHS conducted surveys of AIDS knowledge before and after the campaign, but it would be difficult to attribute any changes to the campaign as opposed to other information sources. More information to evaluate the program will be available from a survey planned for summer 1988, after the CDC sends an AIDS pamphlet to every household. In that survey, NCHS will examine whether people received and read the information.

Some measures of the process of the campaign are available to the CDC. Although total press stories on AIDS decreased during the last quarter of 1987 (190), during this period television and radio continuously increased their broadcast of the CDC'S public service announcements, and calls to the AIDS hotline rose greatly (204). Correlations between the use of the announcements and hotline calls within local areas could provide a measure of public response to the campaign.

To evaluate the effectiveness of different components of the campaign, the CDC could systematically vary the content or dissemination of messages within an area. With the concurrence of the States, different approaches might be tried within a State or across States. The insights gained could be used to increase the effectiveness of subsequent phases of the campaign.

Even when AIDS education programs have been evaluated, most have not used rigorous research methods. Rarely have those undertaking educational programs compared changes within a group that received an intervention (the experimental group) with changes within a group that did not (the control group). Nor have they systematically varied the intervention among different groups and compared the results. For the most part, educators aware of the risks of AIDS have understandably concentrated on implementing programs intended to change behavior. In the absence of appropriate research designs, it is difficult to interpret the results of evaluations that have been performed. It is also difficult to interpret the potential impact of a program if the charac-

teristics of program participants and how they differ from the risk group at large are not provided. An educational program may appear to be successful in changing risk behaviors if the experience of a group of self-selected program volunteers is studied. Program success, however, may be more a function of the characteristics of the participants than of the program itself.

Some recently-funded research projects will employ research designs to avoid such potentially misleading results. For example, one investigator funded by NIDA will randomly assign IV drug users admitted to a residential detoxification program to one of three different interventions to evaluate their relative effectiveness (see appendix B). Although such an approach may not always be feasible, careful design of the evaluation component of an educational intervention, before a program is implemented, is key to gaining an understanding of what elements are effective and ineffective.

To facilitate comparisons of the results of evaluations conducted in different areas, it would be helpful to standardize the measurement of outcomes of interest (e.g., changes in specific types of sexual behavior). For example, simply standardizing the interval and length of followup of subjects involved in research studies would be helpful (37). The type of data that is advisable to collect might change over time. For example, since HIV antibody testing is more widely available, it would be helpful if those evaluating interventions to change the behavior of homosexual men, in addition to recording the number of encounters of unprotected anal intercourse, recorded whether their partners were infected with the virus. Although unprotected anal intercourse between two seropositive individuals is inadvisable, it does not contribute to new cases of infection.

Targeting Information to Specific Groups

Developing effective educational interventions requires that planners know for each target group what knowledge and behavior they wish to change. Such insights are espe-

cially important with AIDS education, since the populace already has a high level of knowledge (accurate and inaccurate) about AIDS and HIV infection (18,52). Moreover, such information is needed to develop culturally sensitive messages for different ethnic groups.

For the general population, NCHS surveys can provide continuing information to identify which beliefs and attitudes to address in future programs, and NCHS is exploring appropriate methods to collect information about behaviors that put people at risk of HIV infection (21 7). These data, however, are not likely to be adequate for program planners at the local level. For example, those planning to implement educational interventions within family planning or STD clinics will need to conduct baseline surveys of client knowledge, attitudes, and behaviors so that the programs can be tailored to meet specific community needs. Furthermore, some community-based surveys may be needed to see if AIDS programs located within the community are appropriate and accessible to members of high-risk groups located within the community.

An important aspect of having education reach the intended audience is tailoring the content and dissemination of messages to reach people at high risk. AIDS has disproportionately affected blacks and Hispanics. It is important that educational messages associate HIV infection with certain risky behaviors rather than with membership in a

certain group. At the same time, communicating information effectively requires that messages take into account the language, literacy level, and cultural sensitivities of the people to whom they are targeted.

Reaching people in various social and cultural subgroups requires different approaches. Further research is required to understand the characteristics and risk behaviors of people in different groups. Among IV drug users, further research is required to understand the impediments to changes in sexual behavior, especially within long-term relationships. Few educational programs have been targeted to homosexual and bisexual males who are black and Hispanic, who have low educational levels and low incomes, or who are adolescents, and little is known about how to reach these groups.³ Such research may suggest new counseling approaches. Within the Department of Health and Human Services, the Office of Minority Health and the CDC National Information and Education Program are planning special efforts targeted to people in minority groups (see appendix B). Given the importance of reaching people who are disadvantaged and who are members of minorities, it is essential to adequately evaluate these projects and to incorporate their findings into future educational programs.

³ Most homosexual men studied to date have had high educational attainment and have been upper-middle class.