THE GENERAL POPULATION AND RISK BEHAVIORS

The general U.S. population consists of people at varying risk of HIV infection. Some take part in behaviors that put them at high risk, such as sharing IV drug equipment or engaging in certain sexual practices with people who may be infected. The vast majority of the U.S. population, however, are most likely at little or no risk, because they do not practice risky behaviors or because they live in areas that so far have had low rates of HIV infection.

Since there is little validated information about the sexual behavior of U.S. adults, estimates of people at risk have relied on Kinsey's study from the 1940s and on extrapolations from the size of groups that have so far accounted for most AIDS cases. Estimates of men who have homosexual contact range from 5-10 million, of people with any IV drug use about 1.1 million, and of people with hemophilia about 15,000 (185) for a total of about 6.5-11.5 million people in 1987. Of course, not all homosexual men or even all IV drug users are at high risk; only those who engage in certain behaviors risk HIV infection (see chapter 2 and appendix A). Adding heterosexuals at risk from infected partners, infants at risk from infected mothers, and people who received blood transfusions before HIV screening began would increase the total number at risk by an unknown amount. But people in these latter categories would have to equal the highest estimates of the other groups for the total at high risk to reach even 10 percent of the 240 million U.S. population.

Although no studies have tested a random sample of the U.S. population for HIV infection, the results of screening certain groups suggest that less than 1 percent of the general population, including high-risk and low-risk people, is infected with HIV (see table 3-1) (185). From 1985 to 1987, HIV infection among first-time blood donors averaged 0.043 percent and among applicants for military service 0.15 percent. Since the Red Cross and the military--and the applicants themselves--attempt to exclude people with high-risk behavior beforehand, these results most likely underestimate the actual prevalence of HIV infection. Similarly, the rate for residential Job Corps entrants and selected hospital patients, 0.33 percent and 0.32 percent respectively, may underestimate infection because the Job Corps does not accept active IV drug addicts and the hospital study excluded infectious disease and cancer patients.

HIV testing has shown consistent patterns across geographical area, age, sex, race, and ethnicity (185). Like AIDS cases, HIV antibody prevalence is much higher in urban than in rural areas and in the East coast, Gulf coast, and California than in other regions. The age distribution of seroprevalence also follows that of AIDS cases, with the highest rates among people in their 20s and early 30s, a pattern that follows sexual activity and IV drug use. Although males have higher rates of AIDS and HIV infection than females, the male-to-female ratio is much lower for HIV infection than the 13-to-l relationship for AIDS cases (see table 3-l). Infected men outnumber infected women by about 5 to 1 among military applicants and blood donors, but figures approach 1 to 1 in major cities. Without more systematic sampling and study, it is not clear whether differences between HIV infection rates and AIDS cases reflect changes in the underlying pattern of infection, differences between males and females in progression from infection to disease, or self-exclusion by high-risk men from military application and blood donation.

Table 3-1.--Selected Studies of HIV Seroprevalence in the U.S. Population

Group	Date of Data	Percent HIV Positive	Males:Females	Blacks:Whites	Hispanics:Whites
American Red Cross first-time blood donors	January 1985 March 1987	0.043%	4.6:1	11.6:1	3.0:1
Military applicants	October 1985 - September 1987	0.14%[a]	5.5:1	6.9:1	3.0:1
Jobs Corps residential entrants	First 25,000 from March 1987	0.33%	N.A.	N.A.	N.A.
Selected hospital patients in Midwest age 15 and older	First 8,668 from September 1986	0.32%[b]	3.2:1	8.2:1	N.A.

N.A. = not available

a Rate has been adjusted to reflect age, sex, racial, and ethnic composition of U.S. population 17-59 years. The crude rate, without adjustment, is 0.15 percent.
b Rate has been adjusted for age and sex.

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, "Human Immunodeficiency Virus Infection in the United States: A Review of Current Knowledge," Morbidity and Mortality Weekly Report 36(S-6):1-48, Dec. 18, 1987.

More rigorous studies are also needed to determine the evolution of viral transmission by race. Although blacks and Hispanics have about 3 times the rate of AIDS cases, the black rate of HIV infection is almost 7 times higher among military recruits and more than 11 times higher among blood donors.

The Department of Health and Human Services through various agencies is undertaking several surveys to obtain information on the prevalence of HIV. The National Center for Health Statistics (NCHS) is planning a national survey of seroprevalence that would draw on a random sample of U.S. households (21 7). The Centers for Disease Control (CDC) is expanding its testing of patients' blood samples to 40 hospitals across the country and is exploring similar surveillance through diagnostic laboratories and family physicians (185). In collaboration with the National Institutes of Health and State and local health departments, the CDC is also supporting the use of blood tests that are now routinely performed on newborns to gauge the seroprevalence of childbearing women throughout the United States (see chapter 2 on heterosexual adults).

PUBLIC KNOWLEDGE AND ATTITUDES TOWARDS AIDS

Virtually every adult in the United States is aware of AIDS. By August 1987, more than 99 percent had heard of AIDS (50), a significant increase from the 77-91 percent in 1983 (18). Also by 1987, only 2-5 percent did not know that a person could contract the AIDS virus by sharing needles for drug use with a person with AIDS or by sexual intercourse with an infected person (see table 3-2).

Despite these accurate perceptions about known routes of HIV transmission, however, a substantial body of inaccurate knowledge remains about exposures that do not pose a threat (see table 3-2). In 1987, only 18-26 percent knew that a person can definitely not become infected by donating blood, perhaps because people did not realize that a new, sterile needle is used for each donor. Mis - concept ions also pertained to infection through routine activities; for example, 21-38 percent thought infection is likely from working near someone with AIDS, from using public toilets, or from insects. Although there were differences by age or sex, blacks were significantly more likely than whites to hold these misconceptions. Regarding prevention, 93-94 percent knew that celibacy and a monogamous relationship between two uninfected people were effective, but only 82 percent thought using a condom and 15 percent thought using a sperm icicle were at all effective (50).

A synthesis of public opinion polls from 1983 through 1986[1] found little change in erroneous perceptions about AIDS transmission through non-invasive means (18). An apparent exception was that people were less likely in 1986 to believe that a person could catch AIDS by working in the same office.

During 1985 and 1986, only a small portion of the general population (5-20 percent) reported changing personal behavior to avoid AIDS exposure, and most of the changes noted were ineffective, such as avoiding water fountains and other public places, avoiding contact with homosexuals, and avoiding restaurants (18). In 1986, half of the 7 percent who reported changing sexual behavior said they were using condoms more frequently. Surveys in 1987 reported higher percentages had made some personal change (37-43 percent), and more of these mentioned taking effective approaches to avoid AIDS. No increase occurred in the percent claiming to have altered their sexual behavior or in the percent using condoms.

1 The 32 polls included were national in scope, surveyed adult men and women, and surveyed between 611 and 2,405 people. Differences in factors such as design and sampling procedure may render the results not strictly comparable across polls. The validity of the results is improved, however, if more than one poll found the same pattern of results, a situation that occurred frequently.

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) Transmission from the National Health Interview Survey by Race

Mode of Transmission[e]	8/87[a]			9/87[b] N=3,097			10/87[c] N=3,350			11/87[d] N=3,333		
		Race			Race			Race			Race	
	Total	White	Black	Total	White	Black	Total	White	Black	Total	White	Black
Having sexual intercourse:												
Very likely	92	93	91	94	94	92	93	93	92	93	93	89
Somewhat likely	5	6	3	4	4	3	5	5	6	5	5	8
Somewhat unlikely	0	0	2	0	0	-	0	0	-	0	0	-
Very unlikely	0	0	0	0	0	0	0	0	0	0	0	-
Definitely not possible			-	0	0	0	0	0	-	0	0	0
Don't know	2	1		2	1	5	1	1	2	2	1	2
Sharing intravenous needles:												
Very likely	91	92	92	93	93	87	93	93	90	93	93	90
Somewhat likely	5	6	3	5	4	6	4	4	6	4	4	6
Somewhat unlikely	0	0	1	0	0	-	0	0	0	0	0	0
Very unlikely	0	0	1	0	0	0	0	0	1	0	0	-
Definitely not possible	0	0	0	0	0	1	0	0	-	0	0	0
Don't know	2	2	4	2	2	5	2	2	3	2	2	4
Receiving a blood transfusion:												
Very likely	37	35	50	36	32	54	34	32	45	34	31	47
Somewhat likely	32	32	34	32	33	29	31	31	32	32	32	33
Somewhat unlikely	13	14	6	13	14	5	13	14	8	12	13	3
Very unlikely	13	15	1	15	17	4	16	17	6	17	18	5
Definitely not possible	1	1	0	1	1	1	1	1	2	2	2	2
Don't know	4	3	8	4	4	7	4	4	7	5	4	9
Donating or giving blood:												
Very likely	10	8	23	10	8	24	8	7	16	8	7	19
Somewhat likely	15	14	22	16	15	23	14	12	25	14	12	26
Somewhat unlikely	14	14	11	13	13	13	12	13	11	12	12	12
Very unlikely	35	37	27	34	36	21	35	37	22	35	37	23
Definitely not possible	18	20	6	21	23	10	25	26	16	24	27	10
Don't know	7	6	11	6	5	9	6	5	10	7	6	11
Being coughed or sneezed on:												
Very likely	11	10	15	11	11	18	9	9	14	8	7	14
Somewhat likely	30	30	32	29	29	27	29	28	35	25	25	29
Somewhat unlikely	18	19	14	17	17	15	17	18	13	17	18	12
Very unlikely	22	23	15	22	23	17	23	24	14	22	24	13
Definitely not possible	9	9	11	10	10	9	12	12	11	16	16	14
Don't know	10	9	12	12	11	15	11	10	14	11	10	19

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) Transmission from the National Health Interview Survey By Race (Cont'd)

Mode of Transmission	8/87 N=2,303 Total	8/87 Race White	8/87 Race Black	9/87 N=3,097 Total	9/87 Race White	9/87 Race Black	10/87 N=3,350 Total	10/87 Race White	10/87 Race Black	11/87 N=3,333 Total	11/87 Race White	11/87 Race Black
Shaking hands or touching:												
Very likely	2	2	4	2	2	4	2	2	3	1	1	4
Somewhat likely	10	10	11	11	11	14	8	7	12	7	6	10
Somewhat unlikely	19	20	18	17	17	18	16	15	20	15	15	17
Very unlikely	39	39	41	38	38	32	39	41	32	37	39	30
Definitely not possible	22	23	16	26	26	20	29	29	23	32	33	28
Don't know	7	6	11	6	6	11	7	6	10	7	6	11
Kissing on the cheek:												
Very likely	3	2	11	4	3	9	3	2	7	3	2	7
Somewhat likely	13	12	15	14	14	20	11	10	17	10	10	12
Somewhat unlikely	21	22	18	19	19	19	18	17	22	17	16	21
Very unlikely	37	38	27	33	34	24	35	37	23	35	36	25
Definitely not possible	19	19	15	23	23	16	25	26	22	28	29	22
Don't	8	6	12	7	6	12	8	7	9	7	7	12
Kissing with saliva exchange:												
Very likely	36	35	42	35	34	45	30	29	36	29	27	35
Somewhat likely	34	35	28	34	35	28	38	38	40	34	35	35
Somewhat unlikely	10	10	10	10	10	8	10	11	3	11	12	7
Very unlikely	8	9	9	9	9	6	10	11	7	11	11	6
Definitely not possible	2	2	0	2	2	2	3	3	3	4	4	5
Don't know	10	9	10	9	9	10	9	8	10	10	10	13
Sharing drinking glasses:[f]												
Very likely	15	15	20	15	14	23	13	12	19	11	10	19
Somewhat likely	32	32	30	32	32	30	31	31	33	31	30	35
Somewhat unlikely	15	15	14	14	15	11	15	16	10	14	14	8
Very unlikely	19	20	16	19	20	13	21	22	15	19	21	11
Definitely not possible	8	9	6	10	10	8	11	11	9	14	15	11
Don't know	10	9	14	10	9	14	10	9	13	10	10	14
Using public toilets:												
Very likely	9	8	17	9	8	17	6	7	13	7	6	15
Somewhat likely	22	22	25	22	22	26	20	19	25	19	19	26
Somewhat unlikely	18	19	18	16	16	12	14	15	13	15	15	13
Very unlikely	27	28	21	27	28	20	29	31	19	28	29	19
Definitely not possible	13	13	11	16	16	12	16	19	12	20	21	14
Don't know	10	10	10	10	9	14	11	10	16	11	10	14

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) Transmission from the National Health Interview Survey By Race (Cont'd)

Mode of Transmission	8/87			9/87 N=3,097			10/87 N=3,350			11/87 N=3,333		
		Race			Race			Race			Race	
	Total	White	Black	Total	White	Black	Total	White	Black	Total	White	Black
Working near someone:												
Very likely	5	4	8	3	3	7	3	3	7	3	3	6
Somewhat likely	16	16	18	15	15	18	14	13	22	14	14	12
Somewhat unlikely	17	18	14	16	15	15	15	16	13	14	13	17
Very unlikely	35	36	33	36	37	31	33	34	26	34	35	27
Definitely not possible	18	19	13	21	22	16	26	27	20	27	27	23
Don't know	9	8	14	9	8	13	8	8	12	8	7	15
Food handling/preparation:												
Very likely	11	10	19	10	9	19	9	8	17	8	7	13
Somewhat likely	24	24	29	26	27	20	24	23	26	22	22	23
Somewhat unlikely	18	18	15	16	16	9	16	16	12	16	16	14
Very unlikely	25	26	16	26	26	23	26	27	19	26	27	17
Definitely not possible	11	11	7	11	11	10	14	14	12	16	16	13
Don't know	11	11	15	11	10	20	12	12	13	13	12	20
Mosquitoes or other insects:												
Very likely	10	10	16	10	9	18	8	7	15	8	7	13
Somewhat likely	28	27	36	25	24	30	26	26	25	24	23	31
Somewhat unlikely	12	12	7	12	12	11	10	10	7	11	12	12
Very unlikely	19	19	16	21	22	11	21	22	16	19	20	10
Definitely not possible	10	11	7	12	12	8	14	15	12	17	17	13
Don't know	21	21	18	21	21	22	21	21	25	20	20	22
Attending school w/someone:												
Very likely	3	3	8	2	2	5	2	2	2	2	1	5
Somewhat likely	12	12	11	12	11	15	9	9	10	8	8	11
Somewhat unlikely	17	17	18	17	16	17	14	14	19	13	13	17
Very unlikely	38	40	27	36	38	30	37	38	33	36	38	26
Definitely not possible	20	20	21	24	25	18	28	29	23	31	31	27
Don't know	9	8	14	9	8	15	9	9	13	10	9	14
Living near a hospital or home for AIDS patients:												
Very likely	2	1	5	1	1	3	1	1	3	1	1	3
Somewhat likely	5	4	8	5	4	7	4	3	8	4	4	7
Somewhat unlikely	11	11	12	10	10	15	9	9	14	8	7	13
Very unlikely	41	42	42	40	41	40	36	37	32	38	39	30
Definitely not possible	33	35	24	36	38	25	42	44	31	41	42	31
Don't know	8	7	11	7	6	10	6	5	12	8	7	16

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) ansmi ion from the National Hea th Interv ew Survey By Race (Cont'd)

Mode of Transmission	8/87 N=2,303 Total	8/87 Race White	8/87 Race Black	9/87 N=3,097 Total	9/87 Race White	9/87 Race Black	10/87 N=3,350 Total	10/87 Race White	10/87 Race Black	11/87 N=3,333 Total	11/87 Race White	11/87 Race Black
Pets or animals:												
Very likely.....	3	2	8	3	2	8	3	2	8	2	2	7
Somewhat likely.....	10	9	17	10	10	14	10	8	16	9	8	14
Somewhat unlikely.....	12	12	12	11	11	12	8	8	8	9	9	10
Very unlikely.....	30	31	25	30	31	21	30	31	22	29	31	18
Definitely not possible..	21	2[illegible]	13	23	24	17	27	27	20	29	30	23
Don't know...	24	2[illegible]	24	22	21	27	23	23	26	[illegible]2	21	29

NOTE: - Quantity zero
0 Quantity more than zero but less than 0.5

[a] Dawson, D.A., Cynamon, M., and Fitti, J.E., "AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey United States, August 1987," Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 146 (Hyattsville, MD: November 19, 1987).

[b] Dawson, D.A., Cynamon, M., and Fitti, J.E., "AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey: United States, September 1987," Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 148 Hyattsville, MD: January 18, 1988).

[c] Dawson, D.A., Cynamon, M., and Fitti, J.E., "AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey: United States, October 1987," Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 150 (Hyattsville, MD: March 19, 1988).

[d] Dawson, D.A., and Thornberry, O.T.,"AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey: United States, November 1987" Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 151, (Hyattsville, MD: March 16, 1988).

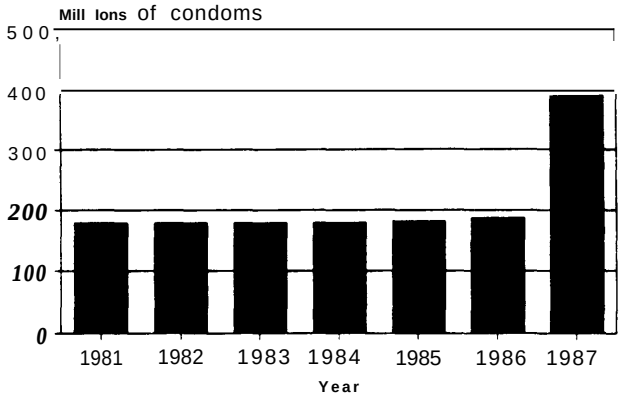
[e] Question wording: "How likely do you think it is that a person will get the AIDS virus from--?"

[f] Question wording: "How likely do you think it is that a person will get the AIDS virus from sharing plates, forks, or glasses with someone who has AIDS?"

[g] Question wording: "How likely do you think it is that a person will get the AIDS virus from eating in a restaurant where the cook has AIDS?"

SOURCE: Office of Technology Assessment 1988

Figure 3-1. --U.S. Condom Sales, 1981-1987



Source: U. S. Department of Health and Human Services, Public Health Service, Food and Drug Administration, unpublished data, silver Spring, MD, March 1988.

By contrast, changes in condom sales rose slightly during 1986 and doubled during 1987 (see figure 3-l). The most likely influence during this period was the publication of the *Surgeon General's Report on Acquired Immune Deficiency Syndrome* in October 1986 and Surgeon General Koop's repeated advice during 1987 to use condoms to prevent HIV infection. Of course, the number of condoms sold or otherwise distributed may differ greatly from the number used.

Black respondents have expressed a greater sense of personal susceptibility than whites (32 vs. 15 percent in 1987), perhaps because a disproportionate number of people with AIDS are black (18). Blacks were also more likely than whites to report changing their personal behavior, in both ineffective ways, such as avoiding homosexuals, and effective ways, such as using a condom. A greater sense of vulnerability and past behavior change suggest that a substantial portion of blacks are concerned and ready to act if given correct information and the appropriate means to effect change.

Adults under age 35 were more likely than older ones to state changes in their personal behavior and, specifically, in their sexual behavior because of AIDS (18). Higher percentages of younger adults reported limiting sex to one partner and using condoms, as well as undertaking ineffective behavior, such as avoiding casual contacts with certain people. But even among those age 18 to 24, only 16 percent said that they had altered their sexual behavior because of AIDS. Another poll limited to single young adults found the younger adults most likely to have increased the number of sexual partners in recent years, but it is not clear what role sampling and study design played in the apparently conflicting results.

In general, few differences were found among respondents by gender or by marital status (18). There were too few data on Hispanics to permit separate analysis. Among regions, Southerners were the least well informed and expressed the greatest desire for more AIDS information. How threatened people felt by AIDS seemed to conform to the prevalence of AIDS in the area, with the greatest susceptibility felt in the northeast.

The analysts of the poll data concluded that as people's perceptions of AIDS transmission became more accurate, fewer were undertaking ineffective behavior to avoid infection. Moreover, decreases in misconceptions also paralleled declines in respondents' support for government restrictions on people with AIDS, such as quarantine or mandatory testing. People presumably at greater risk--blacks, young adults, and single people--expressed more concern and reported more behavior change. Consistent with theories of health behavior, however, accurate or improved knowledge was not necessarily associated with effective changes in behavior.

GOALS OF AIDS EDUCATION FOR THE GENERAL POPULATION

The goals of AIDS education for the general population fall into two main categories: promoting social cohesion and checking

transmission of the virus. Achieving both goals entails correcting misapprehensions and conveying accurate knowledge about HIV transmission. By providing information on viral transmission, educational activities can make people aware of their risk status. People at no risk can be encouraged to continue their current behavior and to support those who are infected or sick. People at high risk can be urged to seek additional information to determine whether they are infected and to change their risky behavior.

A substantial portion of the population mistakenly believe that HIV may be transmitted by blood donation and by everyday activities, without intimate contact. As indicated by survey results and anecdotal accounts, people with more accurate knowledge are less anxious about interacting with people who may be infected. By correcting inaccurate perceptions, one may therefore reduce fear among uninfected people and reduce discrimination against those infected or at high risk. With an estimated 1 to 1.5 mill ion people already infected and viral transmission continuing, individuals and institutions throughout the country will have to deal for a decade or more with HIV infection among adults and children. If stigmatizing and discriminating against people with HIV infections declined, both high-risk and low-risk people might be more willing to take part in surveys to collect data needed to plan public health activities. Moreover, improving knowledge is likely to increase compassion for infected people and lead to more responsible responses to problems. In addition to generating unnecessary fear and discrimination, misperceptions about HIV transmission appear to be impeding certain socially desirable activities, such as blood donation, and recreational activities, such as visiting crowded places and eating in restaurants (18).

To achieve the other goal of AIDS education for the general population, reducing HIV spread, requires stimulating people at high-risk to alter their behavior. Based on behavioral research, the lower perceived barriers (social disapproval, physical discomfort, financial cost, general inconvenience), the more likely people are to use preventive measures (see appendix A). People are also more likely to undertake preventive measures if they feel at risk of HIV infection, realize that preventive means are available, consider these means effective, believe in their own ability to use them, have the skills (social and mechanical) to use them, and feel that the preventive measures have social approval.

EDUCATIONAL INTERVENTIONS SPECIFIC TO AIDS

The results of public surveys indicate that substantial AIDS education has taken place and that learning is continuing to occur, with people absorbing inaccurate as well as accurate information. Much of this education has apparently stemmed from the mass media. Although these sources have successfully raised public awareness of AIDS, their efforts have lacked a specific message and an organized plan. Some information from the media may also be inaccurate. Several State governments have undertaken public educational programs (98), but the most notable formal effort in the United States is the U.S. National Information/Education Campaign, which is being implemented through the CDC.

The effectiveness of these efforts, formal and informal, is not clear, in large part because the program designs have not lent themselves to evaluation. Since people receive information from many diverse sources and are constantly expanding their AIDS knowledge, judging the effectiveness of a particular 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. Neither of these research designs has been applied to AIDS education for the U.S. general population. This section briefly describes the CDC campaign and campaigns in other developed countries, some of which have been evaluated.

The U.S. National Information/Education Campaign

Operating within the CDC since mid 1987, the National AIDS Information and Education Program is intended to add a national dimension to reduce the incidence of AIDS by changing personal behavior and the social norms that influence that behavior (184). The campaign has five objectives (204):

- to disseminate detailed factual information on AIDS transmission,
- to clarify misconceptions and to reduce fear,
- to support ongoing State and local efforts,
- to provide a supportive environment for AIDS education and for people with AIDS, and
- to help to develop a national consensus on AIDS education.

The program consists of seven com - ponents: public service campaign, national mailing, minority outreach, national AIDS hotline, national AIDS clearinghouse, corporate outreach, and research.

The first phase of the public information campaign began in the fall of 1987 with a national media campaign concentrated in October. On October 1, the CDC distributed public service announcements to the media: 38 for television, 8 for radio, and 6 for print (204). A brochure prepared by the CDC was also available upon request. During the fall campaign, staff met with national and local organizations, community leaders, and volunteers; a total of 31 meetings with representatives of community-based organizations were held in 28 cities, and 12 forums with leaders of interested constituencies (such as black Americans, Hispanic Americans, and religious media) were conducted (184a).

In developing public service announcements for the fall 1987 campaign, the CDC and Ogilvy & Mather, the public relations firm that prepared the campaign, convened several focus groups, but because of limited time and funding, did not attempt to pilot test the messages (204). Since the same messages were distributed throughout the country, comparisons could be made only about people's knowledge and behavior before and after the fall campaign. Given the many other sources from which people may gain information on AIDS, this approach does not permit one to isolate the effects of the CDC'S efforts. Under contract to the CDC, Macro Systems is in the process of studying how to evaluate the CDC'S information/education efforts (204).

In August 1987, NCHS, as part of its National Health Interview Survey, implemented a survey of AIDS knowledge that was fielded monthly from August through December among a representative national sample of the U.S. population (50,51,52,53,217). These results identify areas of accurate and inaccurate perceptions and could guide future phases of the campaign (see table 3-2). Although the survey has excluded questions on behavior related to HIV transmission, NCHS is exploring the incorporation of behavioral questions into a separate study (217).

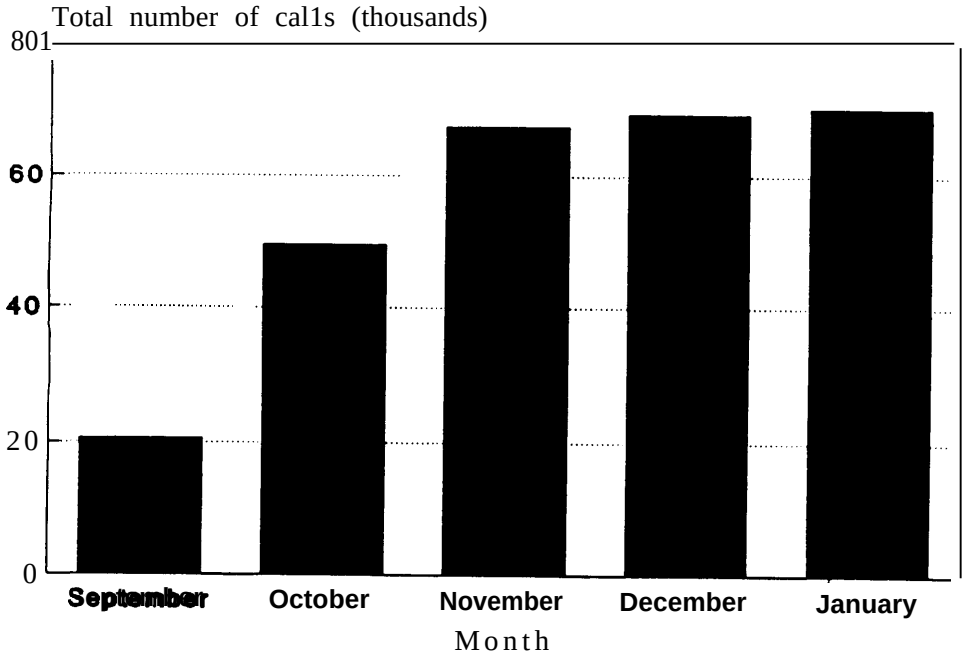
Some measures of the campaign's process are available. Between September and October 1987, operator-assisted calls to the National AIDS Hotline more than doubled, from about 20,000 to over 49,000 (146). This change cannot be attributed solely to the CDC campaign; since the number of lines increased from 11 to 44 on Oct. 1, 1987 (204), the increased number of calls may have reflected the improved capability of the system to handle callers rather than increased interest among the U.S. population.

Operator-assisted calls to the hotline continued to increase throughout the following three months; however, they exceeded **70,000** in January 1988, an amount considered peak capacity during key calling hours (see figure 3-2)(204). Although television broadcasters began to use the CDC's public service announcements in October, their use in number and dollar value more than doubled in November and continued to grow in December. During the first four months of the campaign, radio and television broadcasters on major networks and in the top 75 local markets aired public service announcements valued at about $6 million (figure 3-3) (204). Radio and television networks donated about 65 percent of this time, and about 55 percent of the announcements appeared during prime-time viewing hours. Use of the announcements varied greatly by markets: from October through January, Philadelphia aired 209 spots valued at $175,000; Washington, D.C. aired 12 spots valued at $2,000; and Los Angeles used only 1 valued at $75. Using data already collected, the CDC could gain some insight into people's response to the public service announcements by examining the relationship between the number and dollar value of spots run in a local market and hotline calls from area codes in that locality (204).

During the quarter including the October campaign, AIDS information conveyed by the media apparently fell (see figure 3-4).[2]

2 The Centera for Disease Control conducted a computer search of NEXIS Library for stories pertaining to AIDS. NEXIS contains approximately 150 journals, newspapers, magazines, newsletters, wires, financial information, and medical information within its library.

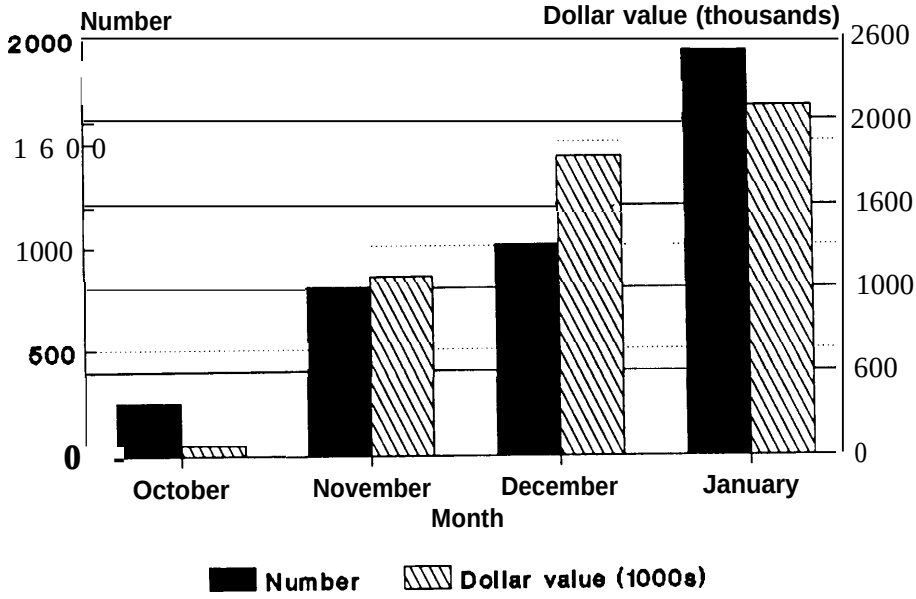
Figure **3-2.-Calls to the National AIDS[a] Hotline, September 1987-January 1988**



[a]**Operated assited cal1s**

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, unpublished data, Atlanta, GA, **May 11, 1988.**

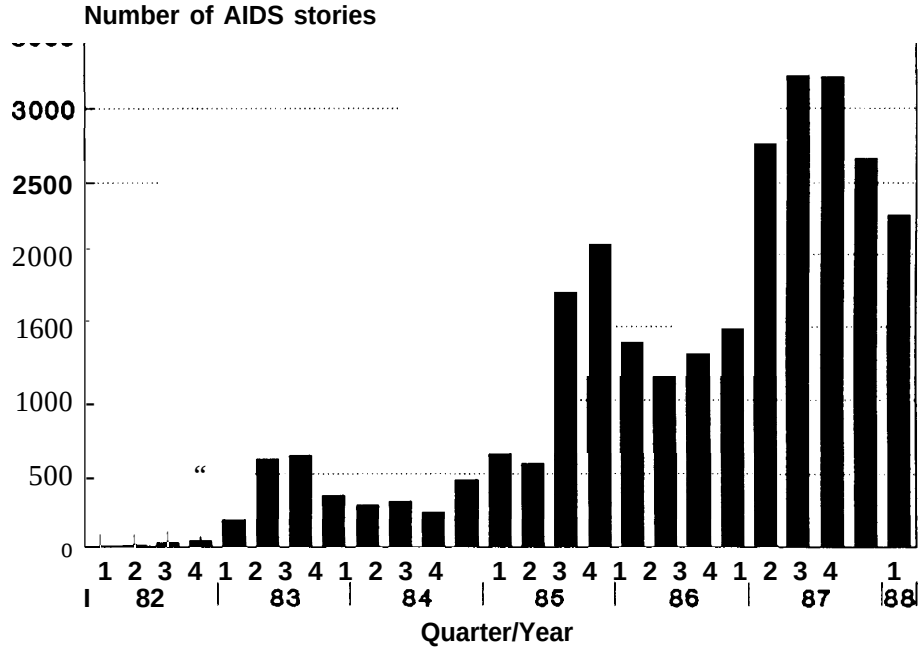
Figure 3-3. --CDC **PSAs Aired on Television, October 1887-January 1888**[a]



[a]Top 76 markets

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, unpublished data, Atlanta, GA, May 11, 1988.

Figure 3-4.--News **Media Coverage of AIDS** [a]



[a]Based on computer search of NEXIS

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, unpublished data, Atlanta, GA, April 1988.

The decline was especially striking because it ended continuous increases from spring 1985 and did not appear to reflect seasonal trends. Since the content of these stories has not been analyzed, it is not known whether this change bore any relationship to the AIDS campaign and whether any change occurred during this period in the portion of stories with accurate vs. inaccurate information. During the period from October 1987 to March 1988, the highest number of stories on AIDS appeared during the middle two weeks of October (16).

Unlike the situation in countries that have government stations, U.S. agencies depend on decisions of private managers about whether and when to schedule public service announcements. This problem exemplifies the admonition that the effectiveness of an educational program depends not only on its content, but also on its implementation (74,207). At a minimum, the message must reach the intended audience to have an effect. If the media are not airing public service announcements at appropriate times or with adequate frequency, the Government could pay for the messages to be given at specific times. Although paying commercial rates is clearly more costly per message used, if payment increases the audience receiving the message, the cost per person reached may be much lower and the entire program more effective.

The CDC and the Surgeon General have prepared a brochure that will be mailed starting the end of May 1988 to every U.S. household. The brochure provides information about how HIV is and is not transmitted and urges support for people with AIDS (193a). During 1988, the campaign's messages will emphasize women at risk, sexually active adults, teenagers, and parents (194).

During June 1988, NCHS will include in its National Health Interview Survey questions relating to the brochure and public service announcements. The survey will query respondents about whether they are aware of the public service announcements or the brochure; whether they have read the brochure; and how they used the information. Questions also pertain to their knowledge of AIDS and HIV, use of blood tests for HIV antibody, risky behaviors, willingness to participate in a national seroprevalence study, and trust in information from Federal public health officials. This information will permit policy makers to determine the extent to which messages from the campaign are reaching the populace. In addition, people's reactions to blood testing and their trust in Federal public health officials can guide approaches to conducting seroprevalence surveys and to future information dissemination.

Campaigns in the United Kingdom and Australia

In 1986, the government of the United Kingdom began an AIDS advertising campaign that is still continuing (25). The aim of the campaign is to educate people about the facts and myths of AIDS, to offer advice and reassurance, and to influence the climate of opinion so that ultimately people at risk modify their behavior. The first year's campaign consisted of three phases: advertising in the national press; extensive television and press editorial coverage plus low-level press advertising; and a press, poster, and television campaign combined with editorial television and press coverage, a youth campaign, and delivery of booklets to all households.

The government arranged for an evaluation of the first year's campaign. Since the campaign used the same approach throughout the country, it was possible only to track changes that occurred over time, but not to isolate the effects of the campaign. On the basis of baseline and subsequent surveys, over the year adults who were aware of any recent AIDS information or who had discussed AIDS more than doubled (25). About 80 percent of the general population and of youth recalled the campaign's advertisements, the highest of any such campaign in Britain. Substantial improvement occurred in people's knowledge about specific routes of HIV transmission and

the desirability of condom use, but only slight declines in the misconception that blood donation can transmit HIV. Surveys found little attitudinal change toward people with AIDS and little behavioral change in the number of sexual partners or in condom use. Consistent with previous trends, however, homosexual behavior had continued to change, with less unprotected anal intercourse and fewer sex partners.

In 1987, the government of Australia launched an educational program to provide information to motivate the public to avoid risky practices (170). The program consisted of a television announcement, which portrayed great danger; pamphlets distributed to physicians, pharmacists, and health and social service agencies; advertisements on radio and in print that were targeted to specific groups; and a hotline for counseling.

The results of interviewing urban Australians before and during the campaign are consistent with the campaign's correcting misconceptions about how HIV is transmitted, such as through public toilets, but there was no change in the belief that blood donation posed a risk. Knowledge that condom use decreases the risk of HIV infection started at a high level (92 percent) and increased (to 95 percent). Men reported more routine condom use after the campaign began, and 44 percent of the population reported that the campaign had changed their attitudes or behavior, with higher figures among young adults and single people.

OTHER PUBLIC EDUCATION PROGRAMS

Several programs that have used mass media to try to promote health-related behavioral change may provide lessons for AIDS education. This section reviews experience with programs that have been associated with behavioral changes in three areas: cardiovascular risk reduction, smoking cessation, and control of syphilis. Researchers attempting to reduce cardiovascular risk have designed and implemented well-designed studies that permit analyzing the effectiveness of the programs undertaken. Programs to curtail smoking have gained some prominence, for their successes as well as their failures. U.S. efforts to control syphilis may provide insights into effective strategies for AIDS education, since both are sexually transmitted diseases.

Some other programs have had less success in fostering behavioral change in three other health-related areas: use of seat belts, use of family planning techniques, and use of alcohol and other drugs. In general, programs in these areas have resulted in changes in knowledge and attitudes, but not in behavior. Several programs to increase voluntary seat-belt use in the United States and other countries have failed to achieve even modest success (1 03). An information program in Sweden during the 1970s, however, did lead to increased seat-belt use.

Mass media programs to promote the use of family planning techniques have had limited success in changing people's behavior (173). It was notable that television messages increased awareness most and that people generally reacted favorably to the advertisements. Advertisements in the print media, however, had little effect.

During the early 1970s, several educational efforts were undertaken to discourage drug abuse, particularly among adolescents and young adults (103). In one program, the Advertising Council, working with the National Institute of Mental Health, developed public service announcements to combat drug use. The announcements were consistently aired outside prime-time hours, did not expose target groups to specific messages, failed to take account of social networks and sources of information credible to drug users, and may have erred in containing strong fear messages (103). There is a consensus that efforts during the 1970s failed to influence drug use, whether among youth or adult women. Programs specifically focused on al-

cohol use produced little or no change in behavior, although awareness of alcoholism increased (103).

Instead of indicating that mass media approaches cannot change behavior in this area, campaigns that did not achieve an effect may exemplify only approaches that were poorly designed or implemented (74,207). At least one program to curtail alcohol use and driving produced attitudinal changes (103). As Wallack emphasizes, programs that address the community as well as the individual are more likely to succeed, and efforts to curtail drunk driving are occurring in an environment where media advertising and television programs promote unsafe practices (209,137).

Certain characteristics of HIV infection described above that make behavior change and its evaluation difficult apply to some of these other public health programs. In all cases, ongoing media attention and public interest impede isolating the effect of a particular educational program.

Cardiovascular Risk Reduction

Perhaps the best designed studies of interventions that use mass media come from programs to reduce the risk of cardiovascular disease among entire communities. Comparing changes in three similar communities, Stanford researchers found that over a 3-year period during the early 1970s, risk of cardiovascular disease[3] fell and remained significantly lower in the two communities that had received educational interventions (69). Mass media alone successfully promoted behavior, particularly nutritional behavior, to lower cardiovascular risk about 25 percent. Combining mass media with face-to-face instruction achieved even greater changes (about a 30-percent reduction), largely because of a greater reduction in smoking. In addition to providing information and attempting to affect attitudes and motivation, mass media materials were developed to teach specific skills and to reflect the characteristics of the target audiences (121). With greater use of health professionals and less use of media, a project in Finland during the same period achieved comparable risk reduction (69).

The Stanford researchers concluded that sustained community-based education can achieve behavior change for risk reduction, but the optimal mix of approaches to conduct an education program has yet to be defined. Research is continuing in five larger communities, with the addition of youth education, and interim results support the effectiveness of the educational interventions (121). Projects are also underway in other States (Rhode Island, Minnesota, Pennsylvania) and other European countries (Switzerland, Germany, Portugal, Italy, and Yugoslavia) (103).

Although this body of research supports the effectiveness of community-based programs using mass media, cardiovascular risk reduction differs from reducing HIV transmission in certain ways that may well influence the success of educational programs (103). Because cardiovascular disease is so much more prevalent than AIDS, people are more likely to know someone like themselves who has had cardiovascular disease and hence may be more likely to feel susceptible to the disease. In addition, behaviors linked to cardiovascular risk, such as diet, smoking, and exercise, are easier to discuss and acknowledge publicly than behaviors associated with HIV infection, which relate to sexual behavior, IV drug use, and reproduction. Finally, for several years the social environment has been supporting changes in behavior to reduce cardiovascular risk. Similar social support may be building for changes in drug use. There is no such consensus in the United States about sexual behavior, however, and messages in the media and in society generally regarding sexual behavior often conflict with behavior to reduce the risk of HIV infection.

3 The researchers measured cardiovascular risk by means of a composite score that incorporated factors such as plasma cholesterol, systolic blood pressure, relative weight, age, and sex.

Reduction of Smoking

Over the past generation, U.S. social norms regarding smoking have changed dramatically. Although the role of mass media and anti-smoking campaigns in this development is not clear, a review of 40 programs involving the mass media concluded that large-scale campaigns not only improved people's awareness, knowledge, and motivation, but also reduced smoking prevalence (75). Since few studies incorporated comparison groups that received no intervention, the review compared the effects of different programs, with the results from face-to-face clinics as the ultimate (highest) standard for success and the results from a self-help program of the American Lung Association as a lower, more reasonable standard by which to judge mass media programs.

In the late 1960s, an advertising campaign using the Fairness Doctrine was undertaken to counter advertisements that promoted smoking. The results suggest that public service announcements can be effective. That successful campaign included the following features: widespread dissemination (reach); high frequency, including some during prime-time broadcast hours (frequency); endurance, in this case three years (duration); and variations in the message. The high frequency probably reduced the opportunity for the audience to avoid the message, and presentation of opposing views (the tobacco industry's vs. health agencies') probably increased discussion of the issue.

Intensive media campaigns in the United States and other developed countries have lowered the prevalence of smoking as much as good self-help manuals, such as those of the American Lung Association; both approaches have led people to quit smoking at twice the rate of the smoking population without such programs (75). Adding cornmunity activities, in turn, appears to double the effectiveness of media programs alone. Self-help clinics that are broadcast on television or radio are about as effective as self-help manuals. Combining media self-help clinics with printed material raised their effectiveness, and adding group discussion raised it even more. None of the interventions that used mass media reduced and maintained smoking prevalence as well as face-to-face clinics. Mass media interventions, however, would be more cost effective than face-to-face clinics if, as Flay suggested, mass media approaches can reach and change the behavior of more people for the same or lower cost (75).

Control of Syphilis

During World War I, 13 percent of the men drafted in the United States were infected with either syphilis or gonorrhea (24). Although a diagnostic test could detect syphilitic infection, the main treatment, a drug containing arsenic, was toxic and necessitated prolonged administration.

The campaign undertaken by the military against venereal disease centered on promotion of sexual abstinence and repression of prostitution (24). Posters, films, and other material warned soldiers about the health risks of prostitutes, and more than 20,000 women were quarantined. Although the efficacy of condoms in preventing syphilis was recognized, the military did not provide them to the troops because it was feared that such a step would encourage sexual relations. Instead, soldiers were required to undergo disinfectant treatment after sexual exposure. Moreover, soldiers who contracted a sexually transmitted disease lost their pay and were subject to court-martial (23). Despite these measures, rates of syphilis remained high during the war.

During the late 1930s, State and Federal governments developed programs to detect and treat syphilis in its early stages (24). Diagnostic facilities and clinics increased, and States began to require applicants for marriage licenses to be tested for syphilis, despite the recognition that intercourse before marriage was common. Although premarital testing became compulsory in most States, 25

percent of the people who tested positive were actually uninfected, but still underwent treatment. By 1978, only about 1 percent of all tests positive for syphilis were conducted as part of premarital testing.

During World War II, the military not only undertook an educational program, but also provided condoms and sought to treat soldiers rapidly without punishing them (24). Rates of syphilis infection fell during the early 1940s, a decline that accelerated with the introduction of penicillin from late 1943 (23). Even with the availability of effective treatment, however, the disease has persisted and has begun to increase in prevalence during the past decade.

Like syphilis during the early part of this century, AIDS has raised issues of sexual behavior about which there are diverse and conflicting views in U.S. society. Also similar are the populace' widespread fear of contagion and its stigmatization of infected and sick people (24), mainly people from groups historically subjected to discrimination. The experience with syphilis indicates that intensive education and provision of condoms during World War II protected soldiers from infection, but that attempts during World War I to prevent infection through abstinence, fear, and appeals to morality were not successful (24).

CONCLUSIONS

What is known specifically about AIDS education and generally about public health campaigns indicates the considerable capability of the mass media. In only a few years, the general population has gained a great deal of knowledge about AIDS, most of it through television (103). Furthermore, studies of other public health campaigns have shown that education through the mass media can change people's health-related beliefs and behavior to a limited extent. It is also clear that an educational program increases its effectiveness by combining use of mass media with interpersonal communication and by helping people develop skills to implement their new beliefs and motivations, through mass media or supplementary approaches (74). The media set an agenda for society; their coverage can heighten public awareness of an issue such as AIDS and stimulate people to ponder and discuss it (208). The media can provide factual information that reduces misconceptions and fear about HIV transmission and that alerts people with risky behaviors to their susceptibility and directs them to more detailed information. The media can also legitimize efforts and attitudes to reduce the stigma associated with HIV infection and to prevent further spread of HIV.

Although past experience indicates that public health campaigns directed to the general population can achieve change, it is not clear why some programs have been more effective than others (74). Which elements and combinations of elements are responsible for successful campaigns is the subject of continuing research, for example, in the area of cardiovascular risk reduction. To identify successful program elements requires that programs be designed to isolate the effect of different elements and that evaluations be conducted. Such an approach could be applied to AIDS education programs. For example, in cooperation with States and localities, the CDC could systematically vary the content or dissemination of messages within a State or across States. Surveys before and after the interventions, perhaps as part of NCHS' current AIDS surveys, could evaluate their relative effectiveness. These insights could then be used to increase the effectiveness of subsequent phases of the campaign.

A necessary condition for effective education is that the message reach the intended audience, a precondition that depends on the number of messages, when and how they are presented, and the duration of the campaign. Relying on public service announcements increases uncertainty about this aspect of a campaign, because media managers rather

than campaign organizers control the frequency, timing, and duration of the message. Although the anti-smoking campaign illustrates that public service announcements can effectively disseminate information, legal requirements related to the Fairness Doctrine underlay media use of that advertising. Existing data on the CDC's fall campaign and data that NCHS plans to collect about the national mailing can be analyzed to gain insight into the audience reached by these messages. For some aspects of AIDS education, notably condom use, commercial interests coincide with public health concerns and can help communicate certain messages to prevent HIV infection (103).

One aspect of reaching the intended audience for AIDS education entails tailoring the content and dissemination of messages so that they reach people at high risk. That AIDS has disproportionately affected blacks and Hispanics argues for special measures to reach them. Television may offer particular opportunities. Blacks, Hispanics, and people from lower socioeconomic groups have generally recalled better those messages delivered through television (1 19,178). Audiovisual media are especially important means of reaching minorities, since minorities have been more likely to obtain health information through these sources than through print media (22). Reaching people from different ethnic backgrounds may also require the development of messages that are sensitive to the language and culture of specific communities. In many of its activities, the CDC's national information and education program has undertaken special efforts for minorities. Few studies, however, have evaluated programs of AIDS education for minorities in the general population or with risky behaviors (see chapter 2).

Finally, but very importantly, one must consider the environmental context of AIDS education (208). Like any public health problem, HIV transmission and its prevention depend not only on individual behavior but also on community norms and social policies. As noted earlier, the tone of mass media coverage can improve individual and social attitudes towards HIV infection and support preventive behavior and compassion. Relevant messages, however, pertain to more than specific matters regarding AIDS. U.S. society, advertising, and television programming exploit sexual insecurity (208). To support behavior consistent with reducing HIV transmission, the media and advertisers could alter their depiction of sexual behavior, as they did for smoking and are doing for alcohol use. Messages from mass media also have the potential to generate greater demand for certain services, such as drug treatment and HIV testing.

Since there have been few public service announcements about AIDS over the course of the epidemic, people must have been acquiring information from other aspects of the media. Greater insights into the role that news and entertainment media have played in shaping public perceptions and behavior about AIDS might help to guide future policies regarding AIDS education.