

Young Men's Risk Behaviors for HIV Infection and Sexually Transmitted Diseases, 1988 through 1991

ABSTRACT

Objectives. This paper analyzes age- and period-related changes in risk behaviors for human immunodeficiency virus (HIV) infection and sexually transmitted diseases among young men in the United States between 1988 and 1991.

Methods. Data were from the 1988 and 1991 waves of the National Survey of Adolescent Males. The 1988 survey was a nationally representative survey of 1880 males aged 15 through 19 years. The 1991 survey was a longitudinal follow-up of 1676 males aged 17 through 22 years.

Results. As they aged, the young men increased their levels of sexual activity and decreased their condom use. Period-related changes between 1988 and 1991 were examined by comparing similar cohorts of 17.5- through 19-year-old men: there were signs that sexual activity and intravenous drug injection increased, but condom use did not change significantly. In 1991 51% of the young men said they were occasionally "high" during sex, a state that is related to reduced condom use.

Conclusions. Early progress in fostering safer behaviors among young men slowed and possibly stopped as the nation entered the 1990s. Prevention efforts need to be renewed and should focus on older youth and young adults. (*Am J Public Health*. 1993;83:1609-1615)

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Introduction

The 1980s witnessed a rapid growth in public awareness about the risks of human immunodeficiency virus (HIV) and other sexually transmitted diseases. Accompanying the growth in awareness, numerous signs indicated that safer behaviors, especially behaviors relating to sexual activity and condom use, were being adopted.¹⁻³ Although there were initial doubts that teenagers, traditionally viewed as being resistant to prevention messages, would adopt safer behaviors, later surveys observed major changes in behaviors in response to the acquired immunodeficiency syndrome (AIDS) crisis. The level of condom use by teenaged males more than doubled between 1979 and 1988,⁴ although condom use was often intermittent.⁵ Teenaged females also reported substantial increases in condom use between 1982 and 1988.⁶ This paper examines changes in risk behaviors for HIV infection and sexually transmitted diseases between 1988 and 1991, based on the National Survey of Adolescent Males. Behaviors examined include heterosexual and homosexual activity, condom use, and intravenous drug use.

The survey followed young men from adolescence, the period of initiation of sexual activity and other risk behaviors, into the beginnings of young adulthood, a time when sexual activity is often at its highest. The first wave of data collection occurred in 1988,⁴ when publicity about AIDS may have been at its peak. The second wave of data collection occurred during late 1990 and early 1991,⁷ when publicity about AIDS had decreased somewhat. For example, in June 1988, 86% of American adults recalled seeing a televised public service announcement about AIDS in the previous month⁸; this

figure fell to 80% in 1991.⁹ An automated search (conducted by the authors) of the *New York Times* found that the number of articles about AIDS rose between 1986 and 1988 but fell again by 1990. On the other hand, schools have offered more AIDS education in recent years, which is also salient for youth.⁸⁻¹⁰

Methods

The National Survey of Adolescent Males began in 1988 as a nationally representative survey of never-married, non-institutionalized males aged 15 through 19 years living in households. The 1988 wave was conducted between April and December 1988. The original sample of 1880 males was drawn as a two-phase multistage area probability sample that oversampled Blacks and Hispanics. The original survey had a response rate of 74%. Initial sample weights were developed to account for probability of selection, non-response, and poststratification to match the March 1987 Current Population Survey.¹¹

The second wave was conducted as a longitudinal follow-up survey about 2½ years after the initial interview, when the respondents were generally 17 through 22 years old. The follow-up survey was conducted between November 1990 and March 1991. (Hereafter, for convenience, we will simply call the second wave 1991, although about half of the data were col-

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TABLE 1—Descriptive Data on Heterosexual Sexual and Contraceptive Behaviors among Young Men, 1988 and 1991

| | All Respondents | | | Similar Cohorts ^a | | |
|--|--|------------------------|----------|------------------------------|--------------------------|----------|
| | 1988 Age 15–19 y | 1991 Age 17–22 y | <i>P</i> | 1988 Age 17.5–19 y | 1991 Age 17.5–19 y | <i>P</i> |
| | Ever had sex with a female, % ^b | 60.4 | 83.6 | <.001 | 75.0 | 78.6 |
| Mean age at first intercourse (among those sexually experienced), y ^c | 14.9 | 15.6 | <.001 | 15.4 | 15.2 | <.05 |
| Contraceptive use at last intercourse ^p | | | | | | |
| Condom, % | 56.2 | 44.2 | } <.001 | 53.0 | 55.9 | } NS |
| Female contraceptive method (without condom), % ^d | 20.6 | 33.0 | | 26.9 | 22.8 | |
| No or other method, % | 23.1 | 22.9 | | 20.1 | 21.3 | |

Note. Ages are given in conventional chronological years (e.g., 15–19 includes up to 20th birthday). NS = not significant.

^aIn both periods, cohorts were never-married, noninstitutionalized 17.5- through 19-year-olds.

^bTested by chi-square.

^cTested by *t* tests.

^dFemale contraceptive methods include oral contraceptives, diaphragm, intrauterine device, contraceptive foam or jelly, and Today sponge. When combined with condom use, these methods are classified under condom use.

lected in late 1990.) Using a variety of tracking methods, we were fortunate to have an 89% follow-up rate and to retain 1676 respondents in the sample. (This number does not include 11 respondents who died between the two interview periods. Consistent with the national profile for young men's mortality, 4 died as a result of motor vehicle accidents, 4 were victims of homicide, and 3 committed suicide. One is reported to have committed suicide because he was HIV-positive.) Nonresponse analysis indicates that those who were lost to follow-up tended to be slightly older, although there were no significant differences by racial/ethnic group. More important, there was no significant attrition bias in any of the behavioral outcomes of interest). Longitudinal sample weights were developed that were based on the original weights, adjusted for loss to follow-up. In general, all analyses presented in this paper are weighted.

In both waves of the survey, the primary mode of data collection was face-to-face interviews, conducted in a confidential setting, between trained interviewers and the respondents. The most sensitive topics (e.g., substance use, risky sexual behaviors) were assessed with confidential self-administered questionnaires that the interviewer did not see. Recent methodological research compared self-administered questionnaires about drug use with face-to-face interviews and found that people were more likely to report sensitive behaviors in self-administered questionnaires.¹² In the follow-up, 32 interviews

were conducted by telephone because it was not possible to conduct a personal interview. Some of those interviewed by telephone were in the military and had been mobilized for Operation Desert Shield/Desert Storm. It is important to remember that all data presented here are self-reported data of a sensitive nature and may be subject to intentional and unintentional reporting errors.

The number of acts of intercourse and consistency of condom use in the previous 12 months were constructed variables, based on partner-by-partner data for up to six partners in the previous year for 1988 and up to eight partners in the previous year for 1991. For relationships initiated earlier than 12 months before the interview, the proportion of acts of intercourse falling within the previous year was estimated based on the proportion of the relationship that had occurred within the 12-month window. For respondents with more than six partners in 1988 and those with more than eight partners in 1991, the number of acts of intercourse with the additional partners was imputed based on the levels for the partners with data available.

Results

Changes in Heterosexual Behaviors between 1988 and 1991

Public health efforts to stem HIV and other sexually transmitted infections focus on reducing levels of sexual activity

(e.g., delaying initiation of sexual activity or reducing the number of partners) and increasing the use of condoms to protect against disease transmission. Previous analyses of the 1988 survey data found changes in sexual behavior and condom use compared with Zelnik and Kantner's 1979 National Survey of Young Men. For 17- through 19-year-old metropolitan males, the rate of condom use at last intercourse rose from 21% in 1979 to 58% in 1988. At the same time, however, there was a modest increase in the proportion of 17- through 19-year-olds who had had sexual intercourse: 66% were nonvirgins in 1979, vs 76% in 1988.⁴ However, among sexually active teens, there were modest reductions in the number of partners and in the frequency of intercourse in the previous 4 weeks between 1979 and 1988.¹³

Table 1 compares a variety of standard measures of heterosexual activity and condom use between 1988 and 1991. In this table and in Tables 2 through 4, the columns headed "All Respondents" contrast the complete samples in 1988 and 1991. In a conventional longitudinal fashion, they indicate the status of the young men as they aged over the 2½ years of follow-up. The columns headed "Similar Cohorts" present data for subsamples who were similarly defined for each period: never-married, noninstitutionalized young men who were 17.5 through 19 years old. This strategy essentially examines the older half of the sample in 1988 and the younger half in 1991. The similar cohorts are almost completely independent. Only 12 of the sexually active men (1%) appear in both samples, owing to slight slippage in the 2½-year interval between interviews.

The proportion of all respondents who had had intercourse rose from about three fifths in 1988 (when they were 15 through 19 years old) to about five sixths in 1991 (when they were 17 through 22 years old). The proportion using condoms at last intercourse fell by about 12 percentage points, from 56% in 1988 to 44% in 1991. However, this decrease was offset by a switch to female contraceptive methods. Although there was an age-related decrease in use of condoms to protect against HIV or other sexually transmitted diseases, there was no net decline in protection against pregnancy.

Were these changes due to the fact that the respondents were 2½ years older at the time of the second interview, or to the fact that one survey was done in 1988 and the next in 1991? There were no significant changes in the proportion of re-

spondents in the similar cohorts (17.5- through 19-year-olds) who had ever had sex, nor were there any significant changes in condom use. The shifts in sexual experience and contraceptive use seen in the overall sample appear to be primarily attributable to the fact that the respondents were 2½ years older in 1991.

Although the overall proportion of 17.5- through 19-year-olds who were sexually experienced did not change between 1988 and 1991, there was a small but significant decline in mean age at first intercourse, from 15.4 to 15.2 years ($P < .05$). There were other indications of changes in sexual activity, shown in Table 2. For both all respondents and the similar cohorts, there were significant increases in the mean number of partners in the previous 12 months and in the mean number of acts of intercourse in the previous 12 months and in the previous 4 weeks. The proportion of young men with five or more partners in the previous year also increased. Generally, sexually active young men reported beginning their sexual careers a little earlier, having more partners, and having somewhat more frequent intercourse in 1991 than in 1988. In both Tables 1 and 2, there is a small, nonsignificant trend toward increased condom use among the 17.5- through 19-year-olds. Regardless of statistical significance, the magnitudes of the differences are quite small.

Table 3 presents selected statistics by racial/ethnic group. Because sample sizes are smaller within racial groups, statistical power is reduced. For the overall sample, there were increases in the mean number of partners in the previous 12 months for all races, although the difference was not significant for White youths. That is, most young men tended to have more partners in a year as they aged into their late teens and early 20s. For the 17.5- through 19-year-olds, there were significant increases in the number of partners for Black youths, although the trends increased for White and Hispanic youths also. In the overall sample, the consistency of condom use fell by a mean of 8 to 10 percentage points for all racial/ethnic groups as they aged 2½ years. Condom use was more common among Black men in both 1988 and 1991.

Changes in Higher-Risk Behaviors: Drug Injection and Homosexual Intercourse

The epidemiology of HIV and sexually transmitted disease infection indicates that certain behaviors are associated with a heightened risk of becoming infected or

TABLE 2—Heterosexual Sexual Activity and Condom Use among Young Men, 1988 and 1991

| | All Respondents | | | Similar Cohorts ^a | | |
|---|------------------|------------------|-------|------------------------------|--------------------|-------|
| | 1988 Age 15-19 y | 1991 Age 17-22 y | P | 1988 Age 17.5-19 y | 1991 Age 17.5-19 y | P |
| Mean no. partners in last 12 mo (among those sexually experienced) ^b | 2.1 | 2.5 | <.01 | 2.0 | 2.6 | <.05 |
| Mean no. partners in last 4 wk (among those with 1 or more partners in last 12 mo) ^b | 0.8 | 0.8 | NS | 0.8 | 0.8 | NS |
| Mean no. acts of intercourse in last 12 mo (among those who had sex in last 12 mo) ^b | 23.3 | 62.5 | <.001 | 30.0 | 49.1 | <.001 |
| Mean no. acts of intercourse in last 4 wk (among those who had sex in last 4 wk) ^b | 5.1 | 8.2 | <.001 | 5.4 | 6.7 | <.01 |
| % with 5 or more female partners in last 12 mo ^c | 4.4 | 10.4 | <.001 | 6.3 | 10.7 | <.01 |
| Consistency of condom use (mean % of times used among those who had sex in last 12 mo) ^b | 55.6 | 45.6 | <.001 | 51.0 | 54.7 | NS |

Note. Ages are given in conventional chronological years (e.g., 15-19 includes up to 20th birthday). NS = not significant.
^aIn both periods, cohorts were never-married, noninstitutionalized 17.5- through 19-year-olds.
^bTested by *t* tests.
^cTested by chi-square.

TABLE 3—Selected Comparisons of Heterosexual Behavior and Condom Use among Young Men, 1988 and 1991, by Racial/Ethnic Group

| | All Respondents | | | Similar Cohorts ^a | | |
|---|------------------|------------------|-------|------------------------------|--------------------|------|
| | 1988 Age 15-19 y | 1991 Age 17-22 y | P | 1988 Age 17.5-19 y | 1991 Age 17.5-19 y | P |
| Ever had sex with a female, % | | | | | | |
| Black | 80.5 | 91.6 | <.001 | 88.3 | 93.1 | NS |
| White | 56.7 | 82.6 | <.001 | 72.8 | 76.2 | NS |
| Hispanic | 59.6 | 81.6 | <.001 | 67.2 | 77.0 | NS |
| Mean no. partners in last 12 mo (among those sexually experienced) ^c | | | | | | |
| Black | 2.6 | 3.6 | <.01 | 2.4 | 4.3 | <.01 |
| White | 2.0 | 2.3 | NS | 2.0 | 2.3 | NS |
| Hispanic | 1.7 | 2.1 | <.01 | 1.8 | 2.1 | NS |
| Consistency of condom use (mean % of times used among those who had sex in last 12 mo) ^c | | | | | | |
| Black | 61.4 | 50.3 | <.001 | 57.2 | 58.1 | NS |
| White | 54.4 | 44.7 | <.01 | 49.9 | 54.8 | NS |
| Hispanic | 51.1 | 42.6 | <.01 | 42.6 | 48.3 | NS |

Note. Ages are given in conventional chronological years (e.g., 15-19 includes up to 20th birthday). NS = not significant.
^aIn both periods, cohorts were never-married, noninstitutionalized 17.5- through 19-year-olds.
^bTested by chi-square.
^cTested by *t* tests.

infecting one's partner.² These behaviors include using intravenous drugs, being the partner of an intravenous drug user, being the partner of a prostitute, and having ho-

mosexual intercourse, especially receptive anogenital intercourse. To maximize responses, all questions about these behaviors were asked by self-administered

TABLE 4—Frequencies of Behaviors Associated with Higher Risk of HIV and Sexually Transmitted Disease Transmission among Young Men, 1988 and 1991

| | All Respondents, % | | | Similar Cohorts, % ^a | | |
|--|--------------------------------|------------------------|-----------------------|---------------------------------|--------------------------|-----------------------|
| | 1988 Age 15–19 y | 1991 Age 17–22 y | <i>P</i> ^b | 1988 Age 17.5–19 y | 1991 Age 17.5–19 y | <i>P</i> ^b |
| | Ever had sex with a prostitute | 0.7 | 2.5 | <.001 | 1.0 | 1.6 |
| Ever had sex with an intravenous drug user | 0.7 | 1.2 | NS | 1.4 | 0.9 | NS |
| Ever used intravenous drugs | 0.5 | 1.6 | <.01 | 0.5 | 2.1 | <.01 |
| Ever had sexual contact (masturbation, oral or anal intercourse) with another male | 2.1 | 1.4 | NS | 2.3 | 0.8 | <.05 |
| Ever had oral or anal intercourse with another male | 1.5 | 1.0 | NS | 1.9 | 0.7 | <.05 |
| Ever had receptive anogenital intercourse with another male | 0.9 | 0.5 | NS | 1.9 | 0.2 | <.05 |

Note. In this table, the percentages use all respondents as the denominators. Ages are given in conventional chronological years (e.g., 15–19 includes up to 20th birthday). NS = not significant.
^aIn both periods, cohorts were never-married, noninstitutionalized 17.5–through 19-year-olds.
^bTested by chi-square.

questionnaires, but even so, most researchers would agree that these very sensitive items are probably underreported. As seen in Table 4, each of these behaviors was reported by fewer than 3% of the respondents in our sample. The very small sample sizes severely limit statistical power and indicate the problems in trying to survey relatively rare or stigmatized behaviors. With regard to these behaviors, researchers are concerned that bias may arise because disproportionate numbers of people at high risk may fail to participate in the survey or to answer specific questions.

For all respondents, there was a significant increase in the proportion of respondents who reported having sex with a prostitute or paying someone for sex, but this increase appears to be age-related because the 17.5- through 19-year-old groups were not significantly different. There were also significant increases in the percentage of respondents who reported using intravenous drugs, both for all respondents and for the 17.5- through 19-year-old similar cohorts. For the 17.5- through 19-year-olds, the percentage reporting intravenous drug use rose from 0.5% in 1988 to 2.1% in 1991. For both sex with prostitutes and intravenous drug use, the apparent increases might have been at least partly caused by small changes in question wording between 1988 and 1991. (The self-administered questionnaire asked in 1988, "Have you ever had sex with a prostitute?" In 1991, "Have you ever had sex with a prostitute or with someone you paid for sex?" In 1988, "Have you ever taken street drugs using a needle?" In 1991,

"Have you ever taken street drugs, like heroin or cocaine, using a needle? This includes 'shooting up' and 'skin popping.'")

One of the most sensitive risk behaviors is homosexual activity. The percentage of young men who said they had ever engaged in sex with another man fell between 1988 and 1991, but we warn that the responses given were not reliable. For example, 30 respondents (unweighted) reported ever having oral or anal intercourse with another male in 1988, but in 1991 only 11 of these respondents acknowledged ever having oral or anal intercourse. Thirteen respondents who reported no oral or anal intercourse in 1988 said that they had engaged in these behaviors by 1991, although this change may reflect real changes in status. We checked and ruled out the possibility that this change was due to attrition of men with homosexual activity in 1991. It is plausible that some respondents were more open about their experiences in 1988 than they were 2½ years later. Although most survey researchers are aware of the difficulty of eliciting responses about extremely sensitive, stigmatized topics, this finding also raises questions about time-related reporting bias in retrospective data. These inconsistent findings prohibit us from drawing any firm conclusions about actual changes in the level of homosexual activity for young men between 1988 and 1991.

Risky Heterosexual Behaviors in 1991

In 1991 the survey included questions about drug and alcohol use related to sex-

ual activity and about heterosexual anal intercourse. In addition to general public health concerns about substance use, there are specific concerns that if one or both members of a couple are high on drugs or alcohol during sex, they may be less responsible and less likely to use condoms or other contraception.¹⁴ In earlier analyses of 1988 data, higher levels of cocaine or alcohol use were generally correlated with other risk behaviors, including having more partners, having intercourse more often, and using condoms less often.⁵ The concern about anal intercourse is twofold. First, people may be less likely to use condoms during anal intercourse because the woman cannot get pregnant. Second, there may be a higher risk of transmission of HIV or other sexually transmitted diseases during unprotected anal intercourse because there may be greater physical trauma than during vaginal intercourse.

More than one quarter (26.3%) of sexually active young men said that they had been drinking before last having intercourse; 3.5% said that they had used drugs and 2.3% had used both drugs and alcohol. (The interviewer asked, "Before you had sexual intercourse the last time, had you been drinking wine, beer, or other alcoholic drinks?" "Before you had sexual intercourse the last time, had you been using marijuana, cocaine, or other drugs?") Asked about the extent to which they had been high on alcohol or drugs when having intercourse during the previous year, about half (49.3%) said that they never had been high and about 13% said that they had been high about half the time or more often. (The self-administered questionnaire asked, "During the last 12 months, how often were you 'high' on alcohol or drugs when you had sexual intercourse with a female?")

Black men reported using alcohol or drugs before sex less often than did White or other-race men. The comparisons between Black and Hispanic men are a little inconsistent: Black men reported using substances at last intercourse less often than did Hispanic men, but the distributions for being high over the previous year were quite similar for Black and Hispanic men. Substance use during sex generally increased with older ages.

As seen in Tables 5 and 6, substance use preceding sex was associated with reductions in condom use, both at last intercourse and over the previous 12 months. Measured over a 12-month period, substance use preceding sex was also associated with a larger number of part-

ners and a greater frequency of intercourse. The relationships are not linear—that is, more substance use is not consistently related to more sexual activity—but the general trend is positive. This indicates that substance use poses double health threats. First, those who drink or use drugs prior to sex tend to have a greater volume of sexual activity, elevating the number of exposures to potential disease transmission. Second, the substance users are less likely to use condoms or female contraceptives, increasing the risk of any given act of intercourse.

About 9% of sexually active young males reported engaging in heterosexual anal intercourse in the previous 12 months (1 or 2 times, 4.0%; 3 to 10 times, 4.1%; more than 10 times, 0.8%). Unfortunately, 60% of those who engaged in anal intercourse never used condoms during anal intercourse and only 20% always used them. These rates of condom use are much lower than rates for vaginal intercourse. Although young people are aware of the need for protection during vaginal intercourse, they are probably less aware of its relevance during a riskier type of intercourse.

Discussion

Heterosexual Behaviors and Condom Use

As teenaged males move toward young adulthood their level of sexual activity increases (proportion nonvirgin, mean number of partners per year, mean frequency of intercourse) and condom use decreases. This pattern has been observed cross-sectionally^{4,5,15} and is demonstrated longitudinally here. As males age, they tend to switch from reliance on condoms toward use of female contraceptive methods, especially oral contraceptives. Because they are more sexually active, the risk of HIV or sexually transmitted disease transmission becomes that much greater.

When we controlled for age differences through selection of similar cohorts, there were no significant changes in condom use or in the proportion of those sexually experienced between 1988 and 1991, but there were signs that 17.5- through 19-year-olds, particularly Black and other-race males, had more partners and more frequent intercourse in 1991 than in 1988. Why did the reported levels of sexual activity rise? Both methodological and substantive explanations are possible. On the methodological side, although we have defined the 17.5- through 19-year-olds to

TABLE 5—Substance Use before Sex and Use of Contraceptives at Last Intercourse^a among Sexually Experienced Males Aged 17 through 22 Years, 1991

| | No Alcohol or Drug Use before Sex | Used Alcohol or Drugs before Sex | P |
|--|-----------------------------------|----------------------------------|--------|
| Condom, % | 47.6 | 38.1 | } <.01 |
| Female contraceptive method (no condom), % | 32.4 | 33.9 | |
| No or other method, % | 19.9 | 28.0 | |

^aSignificance tested by chi-square.

TABLE 6—Substance Use before Sex and Behaviors over the Last 12 Months^a among Sexually Experienced Males Aged 17 through 22 Years, 1991

| | How Often "High" during Sex? | | | | | P |
|--|------------------------------|-----------|---------------------|-------|--------|---------|
| | Never | Sometimes | About Half the Time | Often | Always | |
| Consistency of condom use in last 12 mo (mean % of times used) | 55.3 | 35.4 | 45.8 | 41.6 | 32.3 | } <.001 |
| Mean no. partners in last 12 mo | 1.9 | 2.7 | 4.1 | 4.5 | 3.5 | |
| Mean no. acts of intercourse in last 12 mo | 45.0 | 77.9 | 74.8 | 61.9 | 63.1 | |

^aSignificance tested by analysis of variance.

be as similar as possible, a key difference is that in 1991 the respondents were participating in the survey for a second time. The respondents may have been "conditioned" by having been interviewed in 1988. Respondents may have been more restrained in their responses to the first survey and less restrained in the second survey, leading to higher reports of sexual activity in the second survey. This could mean that reports in 1988 were understated or that reports in 1991 were overstated. We examined and ruled out the possibility that these findings were caused by attrition bias among those lost to follow-up; there were no significant differences in 1988 behaviors among those who were followed up and those who were not.

The most likely explanation is that period-related increases in sexual activity did occur. This possibility is corroborated by the fact that the national rate of births to teenaged females rose between 1988 and 1990.¹⁶ In contrast to our findings, the Centers for Disease Control's (CDC's) Youth Risk Behavior Survey, a nationally representative survey of high school students, found modest reductions in the proportion of students who had ever had intercourse and also found a reduced number of lifetime partners between 1989 and 1991.¹⁰ The discrepancies may be due

to the fact that the CDC high school sample was younger than our sample, to the fact that it pooled male and female students, or to the fact that it used a slightly different time frame.

Although there were large increases in condom use by adolescent males between 1979 and 1988,⁴ there were essentially no increases between 1988 and 1991. The CDC also failed to find significant overall changes in the rate of condom use at last intercourse between 1990 and 1991.¹⁰ There are also some signs that the sales of condoms slowed: market research data indicated that condom sales fell between 1990 and 1991¹⁷; other data showed declines in sales between 1991 and 1992.¹⁸

Higher-Risk Behaviors

The reported levels of intravenous drug use by males aged 17.5 through 19 years rose between 1988 and 1991. Changes in question wording make interpretation difficult. The National Household Survey on Drug Abuse indicates that drug injection among adolescents (aged 12 through 17 years) rose from 0.4% in 1988 to 1.6% in 1990, although there were no significant changes among people aged 18 through 25 years.^{19,20} The CDC survey of high school students found no changes in level of reported drug injection between

1990 (1.5%) and 1991 (1.6%).¹⁰ Although the percentage of adolescents using intravenous drugs is small, any apparent increase in drug injection is a cause for concern. Intravenous drug users are at greater risk not only for HIV infection but also for other serious health and social problems.

Our findings about homosexual behavior should not be interpreted as indicating a decline in the prevalence of homosexual activity. As discussed above, young men provided inconsistent responses to these questions. Although researchers can and should be willing to ask about sensitive behaviors, some methodological problems remain. The apparent reversal in responses among respondents who acknowledged homosexual intercourse in the first interview is troubling. Although we made strong efforts to be sensitive and to safeguard respondents' confidentiality, there was evidence that males were very reluctant to report engaging in sex with another man. Perhaps other methods, such as randomized response or item count techniques, are better suited to obtaining this information; however, it may be that men suppress this information so strongly that no interview process will obtain valid results. Further methodological research may help inform survey researchers about the best ways to study these important but highly stigmatized behaviors. The controversy about a recent report on adult male sexual behavior²¹ indicates the level of interest in and methodological concerns about the measurement of these risk behaviors.

Conclusions

We examined a wide range of risk behaviors for HIV infection and sexually transmitted diseases among a nationally representative sample of young men in the United States from 1988 to 1991. Insofar as these behaviors are self-reported sensitive behaviors, there is potential for intentional and unintentional misreporting that may bias findings. On the other hand, many survey researchers believe that trend data are more reliable indicators, because biases present in one time period probably affect the other time period as well. Thus, even if an estimate for one time period is biased, trends between two time periods may be valid.

A great deal of policy and research attention has focused on teenagers. This study suggests that the transition from adolescence to adulthood is a period of even greater risk. As young men age, they tend to have more sexual activity, to use con-

doms less, and to engage in riskier sex (sex with prostitutes and substance use before sex). There has been a gratifying and potentially important increase in the prevalence of school-based AIDS education. From a public health perspective, we need to develop better means to reduce risk among older youths and young adults who are no longer in school, whether because they have dropped out or because of graduation. It is important to develop programs that can continue to provide educational messages and reinforcement in the community.

Previous studies have indicated that young Americans modified their behaviors during the late 1980s to reduce their risks of HIV or sexually transmitted disease transmission, including increasing condom use,⁴ reducing the number of partners,¹³ and reducing intravenous drug use.²² The data reported here indicate that the trend toward safer behaviors has, at the very least, slowed. Indeed, there is evidence that the movement has stopped or even reversed. When similar cohorts of males aged 17.5 through 19 years were compared, there were signs that sexual activity (number of partners and frequency of intercourse) had increased between 1988 and 1991 and there were no significant increases in condom use. Although there were nonsignificant increases in condom use, they certainly do not compare in magnitude to the large increases witnessed earlier in the decade. It is of serious public health concern that there were signs, albeit imperfect, that intravenous drug injection rose among teenagers. Although intravenous drug use affects a very small proportion of youth, it is an extremely serious risk factor for HIV, as well as being a serious problem unto itself.

Why has the progress in behavioral change slowed and possibly even reversed? We posit two possible reasons. First, AIDS is no longer a new disease and therefore it has begun to shift in people's perception from being a dread disease toward being more commonplace.²³ Second, publicity about AIDS appears to have fallen off in the past few years. Although general publicity about AIDS has been declining, it appears that school-based AIDS education continues to grow.¹⁰ Regardless of the cause, public health officials are faced with the challenge of renewing public interest in safer behaviors associated with AIDS and sexually transmitted diseases. Such an effort would not be futile, especially if it were directed at the youth who are most at risk.

There was strong evidence that teenagers developed safer behaviors during the 1980s. Other research has indicated that AIDS education and sex education are associated with safer behaviors.^{24,25} Over the years, public health policy has developed many tools to foster more responsible behaviors, but the effort needs reinvigoration. Although prevention messages should be directed at all groups, there is a special need to reach older youth and young adults. □

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National Environmental Tobacco Smoke Conference to Be Held in December

The National Environmental Tobacco Smoke Conference, "Programs, Policy, Litigation and Liability," will be held December 16 and 17, 1993, at the Hyatt Regency on Capitol Hill, Washington, DC. Sponsored by IAQ Publications, the conference will cover the entire spectrum of secondhand smoke issues, including federal, state, and local policies and programs; options for in-place management of environmental tobacco smoke; litigation and liability; smokers' rights; tenant and employee rights; model programs and environmental tobacco smoke legislation; response to environmental tobacco smoke issues from the restaurant, hospitality, and tobacco industries; and the agendas of public interest and consumer groups.

Technical and general sessions will feature special appearances by US Environmental Protection Agency, Occupa-

tional Safety and Health Administration, National Institute for Occupational Safety and Health, and Centers for Disease Control and Prevention officials, along with building managers, attorneys, evaluation and mitigation authorities, public health officials, and representatives from the US House and Senate.

Those who should attend include environmental lawyers, federal and state government policymakers and officials, public health officials, building owners and managers, hospitality and restaurant industry executives, industrial hygienists, occupational health and safety personnel, environmental health professionals and consultants, and insurance executives and underwriters.

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