

HIV-Related Behaviors and Perceptions Among Adults in 25 States: 1997 Behavioral Risk Factor Surveillance System

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As we move into the new millennium, it is important to ask what effect the AIDS epidemic has had on the US general adult population. Which adults are at risk for HIV? Do they know they are at risk? Do they make an effort to protect themselves from infection? Although many studies have examined HIV-related risk behavior among select US populations (e.g., those with HIV infection or at high risk for HIV infection), few studies have investigated these behaviors among the general adult population.¹⁻³

Risk behavior data among the general population are an important adjunct to data from AIDS and HIV case reporting. These data can show the effect the epidemic has had on most Americans. They can indicate the level of risk in the population and identify changes in patterns of risk or protective behavior across different subgroups; confirm whether we are targeting appropriate groups in the population for prevention; and provide some indication that large-scale interventions, such as guidelines and policies, might be affecting behavior. Furthermore, these data can enhance understanding of relations among factors found for more select groups. Finally, they can provide an indication of progress in meeting national and state health objectives. This study adds to the small but growing body of work in this area and compares our findings with data from prior surveys of the general population.

As the US AIDS epidemic enters its third decade, changing patterns in the epidemiology of the disease have been observed. In the second half of the 1990s, both the incidence of and the mortality due to AIDS decreased.⁴ These decreases are no doubt largely attributable to the effect of new treatments, which have improved survival for those with HIV infection and AIDS. As a result, the number of persons living with AIDS has increased.⁵

Objectives. To assess the level of HIV-related risk behavior among the general US adult population, we analyzed data from the first sexual behavior questions available for states to use with the Behavioral Risk Factor Surveillance System.

Methods. The Behavioral Risk Factor Surveillance System is a state-specific, population-based, random telephone survey. In 1997, 25 states collected sexual behavior data. Annual prevalence estimates for selected behaviors were calculated and examined by sociodemographic characteristics. The correlation between actual and perceived HIV risk also was determined.

Results. Most (77.1%) of the respondents reported just 1 sexual partner in the past year; 26.0% reported using a condom at last intercourse. Males, persons who were younger, and Blacks were more likely to report 2 or more partners but also more likely to report using a condom at last intercourse. Only 4.1% of the respondents reported a risk factor for HIV infection; 7.7% reported that they were at medium or high risk for HIV. Actual and perceived HIV risk were positively associated.

Conclusions. Most US adults do not engage in HIV-related risk behavior; those that do are more likely to report protective behavior. (*Am J Public Health.* 2001;91:1882-1888)

Because of these changes, AIDS incidence and even AIDS prevalence no longer accurately reflect trends in the epidemic.⁵ A better measure of the AIDS epidemic is reporting of the full spectrum of HIV infection, which would include AIDS. Not every state currently conducts HIV surveillance, but efforts are under way to establish surveillance systems in all states so that HIV reporting can be conducted on a national level. Even the data collected from such surveillance, however, would not truly represent the epidemic, because only HIV-infected persons who had been tested for the virus would be counted. HIV surveillance data coupled with risk behavior data would best define the epidemic and capture persons in need of preventive intervention as well as treatment and services. Thus, as the epidemic continues to evolve, it is also important to monitor associated risk behavior to help explain the trends in HIV and AIDS. Furthermore, risk behaviors should be monitored among 3 groups: the general population, persons at increased risk, and persons who are infected.⁶

The purpose of this study was to describe HIV-related behaviors and perceptions

among the general population of US adults aged 18 to 49 years. In addition, we wanted to determine the association between actual HIV risk and perceived HIV risk. Our expectation was that the prevalence of sexual risk behaviors for HIV infection is low among the general US adult population.

METHODS

Data

The Behavioral Risk Factor Surveillance System is a unique state-based surveillance system that was initiated in 1984 and currently includes all 50 states, the District of Columbia, and Puerto Rico. The system gathers information on health behaviors related to the leading causes of death from chronic diseases and includes topics such as physical activity, injury, weight control, alcohol consumption, tobacco use, and, since 1990, HIV and AIDS. In each participating state, data are collected monthly through telephone interviews with a random sample of the adult population 18 years or older. The questionnaire includes a standard set of questions used by all states, optional sets of

questions on particular topics, and questions added by each state at its own discretion. Additional details about the survey can be found in prior reports.^{7,8} For 1997, 23 states, the District of Columbia, and Puerto Rico (referred to as 25 states) added an optional set of HIV-related sexual behavior questions to their surveys. (The list of participating states is available from the lead author.) These questions were asked only of persons aged 18 to 49 years.

Measures

HIV-related measures in the current analysis included (1) the number of sexual partners in the past 12 months (including number of new partners); (2) whether a condom was used at last intercourse and, if so, the reason it was used; (3) HIV risk status (referred to as *actual* HIV risk and determined by whether any of the following applied: use of intravenous drugs in the past year, treatment for a sexually transmitted disease [STD] or venereal disease in the past year, an HIV-positive test result, or anal intercourse without a condom in the past year); (4) the perceived effectiveness of a condom for preventing infection with HIV; and (5) whether the respondent had received treatment for an STD in the past 5 years.

Also included in the analysis (from the standard component of the questionnaire) were measures for *perceived* risk of HIV infection, which ranged from high to no risk; whether the respondent had been tested voluntarily for HIV; and sociodemographic characteristics.

Statistical Analysis

Data for each state were weighted by demographic characteristics and selection probabilities, and results were representative of adults (aged 18–49 years) in each state in 1997. For the purpose of this analysis, data were aggregated across participating states. All analyses were conducted with SUDAAN, which accounts for the complex sample design.⁹ Annual prevalence estimates and 95% confidence intervals (CIs) were calculated for each HIV-related measure. Selected risk and protective measures were then examined by sociodemographic categories. In addition, we compared our measure of perceived risk with

actual risk, by direct correlation and then by an examination of the patterns of these 2 variables by sociodemographic characteristics and by other HIV-related measures.

RESULTS

A total of 35 484 respondents provided usable data across participating states. According to methodology developed by the Council of American Survey Research Organizations, the median response rate was 61.7% (range = 44.2%–88.9%).¹⁰ A comparison of the demographic profile of the sample for the 25 states closely matched that for all states in 1997.

When reporting the number of sexual partners in the past 12 months, 77.1% of the respondents reported 1 partner, and 13.7% reported no partners (Table 1). Only 2.1% reported 4 or more sexual partners. Of those who reported 1 or more sexual partners, 26.0% reported that they used a condom at last intercourse. Of these adults, 54.9% indicated that the condom was used to prevent both pregnancy and diseases; just 8.7% reported that they used a condom solely to prevent diseases.

When asked how effective they thought a condom was for preventing HIV, about an equal percentage, 44.6% and 46.2%, said that a condom was very effective or somewhat effective, respectively (Table 1). Only 3.7% of the respondents said that it was not at all effective. Twelve percent of the adults reported that they had 1 new partner in the past 12 months, 6.0% reported 2 or more new partners, but most (82.0%) reported no new partners in the past 12 months.

Respondents also were asked whether they engaged in any of several risk behaviors for HIV or whether they had received a positive test result for HIV (i.e., actual risk for HIV) (Table 1). Only 4.1% of the respondents answered yes to this question. Similarly, slightly fewer than 3% indicated that they had been treated for an STD in the past 5 years. In addition to actual HIV risk, respondents were asked what they thought their chances were of getting infected with HIV; 7.7% reported their chances as medium or high, and 31.0% said that their chances were low. The remainder (61.4%)

TABLE 1—HIV-Related Risk Measures for Respondents Aged 18–49 Years: 25 States, 1997 Behavioral Risk Factor Surveillance System

	% (95% CI)
No. of sexual partners, past 12 mo	
1	77.1 (76.3, 77.8)
2–3	7.1 (6.6, 7.6)
4–5	1.2 (1.0, 1.4)
≥6	0.9 (0.8, 1.1)
0	13.7 (13.1, 14.3)
Condom used at last intercourse	
Yes	26.0 (25.2, 26.8)
No	74.0 (73.2, 74.8)
Why condom was used	
To prevent pregnancy	34.3 (32.5, 36.1)
To prevent diseases	8.7 (7.7, 9.7)
For both pregnancy and diseases	54.9 (53.1, 56.8)
For some other reason	2.1 (1.6, 2.5)
Perceived condom effectiveness to prevent HIV	
Very effective	44.6 (43.7, 45.5)
Somewhat effective	46.2 (45.3, 47.1)
Not at all effective	3.7 (3.4, 4.0)
Do not know how effective	4.8 (4.5, 5.2)
Do not know method	0.6 (0.5, 0.8)
No. of new sexual partners, past 12 mo	
1	12.0 (11.3, 12.6)
2–3	4.3 (3.9, 4.7)
4–5	0.9 (0.7, 1.1)
≥6	0.8 (0.6, 1.0)
0	82.0 (81.3, 82.7)
At high risk for HIV	
Yes	4.1 (3.8, 4.5)
No	95.9 (95.5, 96.2)
Treated for an STD in past 5 y	
Yes	2.8 (2.5, 3.1)
No	97.2 (96.9, 97.5)
Perceived risk for HIV infection	
High	2.3 (2.0, 2.5)
Medium	5.4 (5.0, 5.8)
Low	31.0 (30.2, 31.8)
None	61.4 (60.6, 62.2)
Voluntarily tested for HIV	
Yes	27.5 (26.8, 28.3)
No	72.5 (71.7, 73.2)

Note. CI = confidence interval; STD = sexually transmitted disease.

TABLE 2—Percentage of Respondents With 2 or More Sexual Partners in the Past 12 Months and Who Used a Condom at Last Intercourse, by Sociodemographic Category, for Respondents Aged 18–49 Years: 25 States, 1997 Behavioral Risk Factor Surveillance System

	≥2 Sexual Partners		Condom Used, Last Intercourse	
	%	95% CI	%	95% CI
Age group, y				
18–24	21.6	(19.6, 23.5)	53.3	(50.8, 55.8)
25–34	8.9	(8.0, 9.7)	26.9	(25.6, 28.3)
35–44	4.8	(4.3, 5.4)	16.9	(15.8, 18.0)
45–49	3.9	(3.1, 4.6)	12.9	(11.4, 14.4)
Sex				
Female	5.5	(5.0, 6.0)	22.8	(21.8, 23.8)
Male	13.0	(12.1, 13.9)	29.1	(27.8, 30.4)
Race/ethnicity				
White	8.7	(8.1, 9.3)	23.8	(22.9, 24.7)
Black	15.4	(13.3, 17.6)	39.1	(36.1, 42.1)
Hispanic	8.2	(6.6, 9.7)	26.8	(24.3, 29.3)
Other	6.4	(4.4, 8.5)	32.2	(27.3, 37.1)
Marital status				
Married, unmarried couple	1.6	(1.3, 1.8)	12.9	(12.2, 13.6)
Single, separated, divorced, widowed	20.7	(19.5, 21.9)	51.6	(50.0, 53.2)
Educational level				
<High school graduate	12.6	(10.2, 15.0)	27.2	(23.8, 30.6)
High school graduate/GED	9.7	(8.8, 10.7)	25.1	(23.6, 26.5)
Some college/technical school	9.9	(8.9, 10.9)	27.8	(26.2, 29.3)
≥College graduate	7.1	(6.3, 7.9)	24.9	(23.5, 26.3)

Note. CI = confidence interval; GED = general equivalency diploma.

reported that they had no chance of infection with HIV.

Furthermore, respondents were asked whether they had ever been tested for HIV and, if so, the reason for their last test (Table 1). From these questions, we determined the percentage of respondents who said they had been voluntarily tested, primarily to find out their infection status. More than one quarter (27.5%) of the respondents reported voluntary testing for HIV.

We then examined our main risk variables—multiple sexual partners in the past 12 months (defined as 2 or more) and condom use at last intercourse, by sociodemographic groups (Table 2). A total of 9.2% of our sample reported 2 or more partners. By age group, we found that younger adults were more likely than older adults to report 2 or more sexual partners and condom use at last intercourse. In fact, there was an inverse linear trend for both variables. As age

increased, the prevalence of multiple sexual partners and condom use decreased. Men were more likely than women (13.0% vs 5.5%) to report 2 or more sexual partners, but men also were more likely to report having used a condom at last intercourse (29.1% vs 22.8%).

When the data were examined by race/ethnicity, we found that Black adults were more likely than other racial/ethnic groups to report 2 or more sexual partners in the past 12 months (15.4% vs 8.7% or less) and to report having used a condom at last intercourse (39.1% vs 32.2% or less) (Table 2). Furthermore, those who were single, separated, divorced, or widowed were significantly more likely than those who were married or living together as a couple to report 2 or more sexual partners (20.7% vs 1.6%), but they also were more likely to report having used a condom at last intercourse (51.6% vs 12.9%). No linear trends in educational

level were found for adults with 2 or more sexual partners or those who reported using a condom at last intercourse, but those who were college graduates or had had postgraduate training (7.1%) were somewhat less likely than those with less than a high school education (12.6%) to report 2 or more sexual partners. Similar to the other demographic patterns, condom use at last intercourse was slightly more prevalent among those with less than a high school education (27.2%), compared with those at the highest educational level (24.9%), but this difference was not statistically significant.

In addition, we wanted to determine whether those who reported that they were at high risk for HIV as a result of engaging in certain behaviors or who reported having received a positive test result for HIV (actual risk for HIV) were similar to those who perceived themselves to be at risk for HIV. First, we examined a correlation between the 2 measures and found a statistically significant, positive correlation (Table 3). Among those who reported that they were at increased risk for HIV because of their behavior or antibody status, the proportion who perceived themselves to be at risk for HIV increased steadily from none (3.1%) to high (11.9%).

We then examined each of these risk measures (actual and perceived) by sociodemographic characteristics, number of sexual partners, condom use, and HIV test. Similar patterns were found for the 2 measures (Table 4). Adults who were younger, male, Black, Hispanic, and not married or not living together as a couple and who had less than a high school education were more likely to be at increased risk for HIV (actual risk) and to perceive themselves to be at high or medium risk rather than low or no risk for HIV.

When actual and perceived risk for HIV were examined in relation to the number of sexual partners in the past 12 months, condom use at last intercourse, and voluntary testing for HIV, again the patterns were the same (Table 4). Those who reported that they were at increased risk for HIV (actual risk) and those who perceived themselves to be at high or medium risk (vs low or no risk) for HIV were more likely to have 2 or

TABLE 3—Percentage of Respondents Who Reported Being at High Risk for HIV (Actual Risk), by Perceived Chance of HIV Risk for Respondents Aged 18–49 Years: 25 States, 1997 Behavioral Risk Factor Surveillance System

High Risk for HIV	Perceived Risk for HIV			
	High	Medium	Low	None
Yes	11.9	8.0	4.8	3.1
No	88.1	92.1	95.2	96.9

Note. $R^2 = 0.1$ ($P = .0001$). High risk for HIV (actual risk) was determined by whether any of the following applied: use of intravenous drugs in the past year, treatment for a sexually transmitted or venereal disease in the past year, an HIV-positive test result, or anal intercourse without a condom in the past year. The respondent was to answer "yes" if any of the 4 was applicable. Because a positive test result for HIV does not technically identify someone at high risk for HIV (he or she already has HIV infection), those who answered "yes" to this question because they were HIV positive should not be included in this group. However, those who responded to the perceived HIV risk question had the option to indicate "not applicable" (rather than high, medium, low, or none) if they were HIV positive. Respondents who answered "not applicable" to perceived risk and reported high risk for HIV (actual risk) represented less than 0.4% of the sample. Thus, despite the problem with this particular response option ("a positive test for HIV") to the actual risk question, the effect on the results was negligible.

more partners, more likely to report condom use at last intercourse, and more likely to have been tested for HIV voluntarily.

DISCUSSION

From our general population survey, we found that most adults were not at risk for HIV infection; more than 90% reported that they had only 1 or no sexual partners in the past 12 months, 82.0% reported no new sexual partners in the past 12 months, and fewer than 3% had been treated for an STD in the past 5 years. Although slightly more than a quarter of the sexually active respondents reported using a condom at last intercourse, most did not engage in behaviors that would place them at increased risk for HIV (i.e., reported they were *not* at actual risk for HIV), nor did they perceive themselves to be at high or even medium risk for HIV. Although fewer than 9% reported that

TABLE 4—Percentage of Respondents at High Risk for HIV and Percentage Who Perceived Themselves to Be at High or Medium Risk (vs Low or No Risk) for HIV, by Sociodemographic Category, Number of Sexual Partners in the Past 12 Months, Condom Use at Last Intercourse, and Voluntary HIV Testing, for Respondents Aged 18–49 Years: 25 States, 1997 Behavioral Risk Factor Surveillance System

	High Risk for HIV (Actual Risk)		Perceived High or Medium Risk for HIV	
	%	95% CI	%	95% CI
Age group, y				
18–24	7.4	(6.3, 8.6)	11.5	(10.0, 13.0)
25–34	4.3	(3.7, 4.9)	7.5	(6.7, 8.3)
35–44	3.2	(2.6, 3.7)	6.6	(6.0, 7.3)
45–49	2.4	(1.6, 3.2)	5.1	(4.3, 6.0)
Sex				
Female	3.8	(3.4, 4.2)	6.5	(6.0, 7.1)
Male	4.5	(3.9, 5.0)	8.7	(8.0, 9.4)
Race/ethnicity				
White	3.5	(3.1, 3.8)	6.4	(5.9, 6.9)
Black	6.3	(4.9, 7.6)	10.8	(9.0, 12.6)
Hispanic	6.3	(4.9, 7.7)	12.2	(10.5, 13.9)
Other	4.9	(2.6, 7.1)	7.3	(5.1, 9.6)
Marital status				
Married, unmarried couple	2.7	(2.3, 3.1)	5.3	(4.9, 5.8)
Single, separated, divorced, widowed	6.9	(6.1, 7.6)	11.0	(10.0, 11.8)
Educational level				
<High school graduate	6.5	(4.8, 8.1)	12.5	(10.2, 14.8)
High school graduate/GED	5.4	(4.6, 6.1)	7.8	(6.9, 8.6)
Some college/technical school	3.4	(2.9, 4.0)	8.1	(7.3, 9.0)
≥College graduate	3.0	(2.4, 3.5)	5.6	(4.9, 6.3)
No. of sexual partners, past 12 mo				
0–1	3.4	(3.0, 3.7)	6.1	(5.6, 6.6)
≥2	10.1	(8.6, 11.7)	20.8	(18.3, 23.4)
Condom used at last intercourse				
Yes	4.7	(3.9, 5.4)	11.8	(10.5, 13.1)
No	4.0	(3.6, 4.4)	6.4	(5.9, 7.0)
Voluntary HIV test				
Yes	6.7	(5.8, 7.5)	9.1	(8.1, 10.1)
No	3.2	(2.8, 3.6)	7.1	(6.6, 7.6)

Note. CI = confidence interval; GED = general equivalency diploma.

they used a condom solely to prevent diseases, most (90.8%) believed that condoms were either very or somewhat effective in preventing HIV.

When we examined our 2 primary HIV-related measures (multiple sexual partners in the past year and condom use at last intercourse), we found that certain groups were more likely to have 2 or more sexual partners but that these same groups were more

likely to report using a condom at last intercourse. Respondents who were younger, male, Black, and not married or not living with a partner and who had less than a high school education were more likely to report 2 or more sexual partners and more likely to report condom use at last intercourse than were others within their groups.

Furthermore, when we looked at those who reported that they were at increased

risk for HIV (actual risk) or who perceived themselves to be at high or medium risk for HIV, the same sociodemographic pattern emerged as for those who reported 2 or more sexual partners. That is, those at increased risk for HIV were more likely to be young, male, Black (but also Hispanic here), not married or not living with a partner, and to have less than a high school education. In fact, positive associations between multiple sexual partners and increased risk for HIV (either actual or perceived) were found. We also found that those who were at increased risk (either actual or perceived) were more likely to report condom use and, confirming prior analyses,¹¹ to have been tested voluntarily for HIV, which can be important for stemming the spread of infection and providing an opportunity for infected individuals to receive treatment.

Although few data on sexual risk behaviors for HIV are available from the general population, the prevalence of these risk behaviors from the Behavioral Risk Factor Surveillance System is similar to that found in other national surveys. Two general population surveys were carried out at the beginning of the 1990s.

Leigh et al.¹ examined data collected in 1990 as part of a household survey of adults, 18 years and older, in the 48 contiguous states. Of 2058 total adults, 98% reported that they were heterosexual, 95% reported that they were sexually experienced, and 90% reported that they had had sexual intercourse in the past 5 years. Of those who reported having had intercourse in the past 5 years, 13.3% reported more than 1 sexual partner in the past 12 months, which is slightly higher than our finding of 9.2% for a younger population. Our results could indicate a decline in the proportion reporting multiple sexual partners, or this difference may not be statistically significant.

Leigh and colleagues found, as did our study, that adults who were younger, male, and divorced or never married were more likely to report 2 or more sexual partners in the past year. In contrast to our analysis, Leigh et al. examined condom use with primary and nonprimary partners, so it is difficult to compare these results with ours. However, a similar pattern emerged be-

tween their study and ours because both showed that among those who reported having had sexual intercourse in the past 12 months, most (77% vs 79.5% in our study) reported having only 1 sexual partner and not always using condoms. Moreover, Leigh and coworkers reported that condom use at last intercourse with a new partner was higher among men, those who were unmarried, and those who were younger—demographic associations with condom use that were similar to those found in our study. When respondents were asked how they perceived their risk for AIDS, most reported that their sexual behavior was safe, but younger respondents were more likely than older respondents to report that their behavior might be risky. Finally, those with more than 1 sexual partner were less likely than those with only 1 sexual partner to rate their sexual behavior as safe, regardless of condom use.

The National AIDS Behavioral Survey conducted from June 1990 to February 1991 collected data from a national probability sample of US adults (48 contiguous states) for the purpose of identifying HIV-related risk factors among the general heterosexual population.² Catania et al.² found that 7.0% (95% CI=5.7%, 8.4%) of their national sample, compared with 9.2% (95% CI=8.7%, 9.8%) in our study, reported 2 or more sexual partners in the past 12 months. Also as in our study, they found that respondents were more likely to report 2 or more sexual partners if they were unmarried, male, younger, and African American or White rather than Hispanic. Because having multiple partners is a more prevalent behavior among younger rather than older adults, and Catania and colleagues' study surveyed adults aged 18 to 75 years, it is not unexpected that our prevalence estimate for 2 or more sexual partners was higher. Like the findings for 2 or more sexual partners, and again comparable to our results, the same sociodemographic associations were found for condom use (i.e., condom use among those at risk for HIV was greater for respondents who were unmarried, male, and younger).

In 2 later reports on the National AIDS Behavioral Survey, Catania et al.¹² and Choi and Catania¹³ again examined sexual risk be-

havior and condom use among heterosexual persons from their national sample but limited their analysis to adults aged 18 to 49 years, the same age group we examined, thus making the findings more comparable. Results from the national sample showed that 10.5% (95% CI=8.2%, 12.7%) of the adults aged 18 to 49 years reported 2 or more sexual partners,¹² which compares favorably with our finding of 9.2% (95% CI=8.7%, 9.8%), and, in fact, the confidence intervals overlap, indicating no significant difference in the estimates. We can conclude, as we could not in our comparison with the findings of Leigh and colleagues,¹ that there has been no change from 1990/91 to 1997 in the proportion of US adults who have multiple sexual partners. As reported in the earlier publication among persons aged 18 to 75 years,² and again as in our study, those aged 18 to 49 years with multiple sexual partners were more likely to be male, Black, young, and separated, divorced, widowed, or never married and to have less than a high school education.¹³

Most recently, Anderson and colleagues³ analyzed data from a special supplement to the National Household Survey on Drug Abuse, which was carried out in 1996. Of those who reported having had sexual intercourse in the past 12 months, 9.2% reported 2 or more partners in the past year, which is the same proportion reporting 2 or more partners in the past year in our study. The authors went on to define a measure of 1 or more sexual risks (≥ 6 partners, intercourse with person who is HIV infected, intercourse in exchange for money or drugs, male same-sexual partner). Although we could not construct a similar measure, relationships with this risk variable were similar to those we found for persons with 2 or more sexual partners and persons at increased risk for HIV (actual and perceived). That is, those with sexual intercourse-related risk (2.8%) were more likely to be male, young, and Black. Like the study by Leigh and colleagues,¹ the study by Anderson and coworkers³ examined condom use within and outside of ongoing relationships, and their findings were not directly comparable to our findings.

However, as in other reports,^{11,14} Anderson and coworkers³ found that HIV testing

was strongly related to HIV risk. Persons at increased risk for HIV were more likely to be tested. Anderson et al. also compared data from the 1996 National Household Survey on Drug Abuse with those from the 1995 National Health Interview Survey, and estimates from the latter were similar to our findings. In fact, our measure of actual risk was similar to and our measure of perceived risk was the same as the measures in the 1995 National Health Interview Survey. The 1995 National Health Interview Survey found that 3.4% (95% CI=3.1%, 3.8%), compared with our estimate of 4.1% (95% CI=3.8%, 4.5%), of the persons aged 18 to 59 years said that they were at risk for HIV. The slightly greater proportion that we found probably resulted from our including only individuals aged 18 to 49 years and the fact that HIV risk is associated with younger age; however, the confidence intervals for the 2 estimates overlap, so the difference is not statistically significant. When asked to rate their chances of getting infected, 4.5% (95% CI=4.1%, 5.0%), compared with 7.7% (95% CI=7.1%, 8.1%) in our study, reported that they were at medium or high risk; again, our slightly younger age group may partially explain our higher estimate. Moreover, as in our study, men were more likely than women to report actual or perceived risk for HIV.

Importantly, and much as in other studies,^{1,3,15} we found good agreement between our measure of actual HIV risk and perceptions of risk. Our findings should complement those from surveys of special populations and give added validity to surveys that have used perceived risk or multiple sexual partners to measure actual risk for HIV infection.

Our data have some limitations. First, because the data were derived from a telephone survey, we did not reach those individuals without telephones. Although telephone coverage is estimated to be quite high in the United States,¹⁶ our findings likely underestimate some proportion of the nation's indigent, including some individuals at increased risk for HIV. Second, because the data are self-reported, there may have been underreporting or overreporting. Third, our data were drawn from only 25 states

and thus may not be representative of the nation. However, the demographic similarity of our sample from the 25 states to that of all the states in 1997 suggests that the data do represent the nation as a whole. Moreover, in view of the similarities with other national surveys, both in estimates of prevalence and in the relations among variables, our findings are strengthened. These similarities also provide support for the validity of our risk measures. Additional evidence from studies that have specifically examined the quality of data for the number of sexual partners and condom use from self-report further suggests that these measures are at least of moderate validity.¹⁷⁻²⁰

As we hypothesized, our data indicate a relatively low prevalence of HIV-related sexual risk behavior among the general population of US adults. That is, most adults in the general population are not at risk for HIV infection, most know they are not at risk, and those who are at higher risk are more likely to engage in protective behavior.

How, then, do our results compare with AIDS and HIV case reporting data? Data from national HIV prevalence surveys and from AIDS and HIV case reporting show that the epidemic continues to disproportionately affect racial/ethnic minorities in the United States; and within these minority populations, women, youth, and children are particularly affected.^{4,21} However, males continue to have the highest HIV infection prevalence rates, AIDS case rates, and HIV infection case rates compared with females. Demographically, our findings were not dissimilar to case reporting data. Persons who reported that they were at high risk for HIV and who perceived themselves to be at high or medium risk for HIV were more likely to be young, male, and Black or Hispanic. However, only through continual monitoring of the population can we detect changes in the behavioral patterns and trends that result in HIV infection and subsequent disease. Ongoing behavioral surveillance of the general population in all areas, including HIV and AIDS, will help us not only to direct our prevention efforts more effectively but also to improve our understanding of important causes of morbidity and mortality in the United States. ■

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Contributors

D. Holtzman conceptualized the analysis and drafted, revised, and finalized the paper. S.D. Bland conducted the analysis and produced the estimates. A. Lansky suggested revisions to the analysis and to the initial draft and provided comments for the revised version. K.A. Mack provided suggestions on writing the initial draft.

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