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Advance Data

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Human Immunodeficiency Virus Antibody Testing in Women 15–44 Years of Age: United States, 1990

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Highlights

In 1990, an estimated 20.4 million women 15–44 years of age had been tested at some time in their lives for antibodies to human immunodeficiency virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS). This includes 5.5 million women who had donated blood since March 1985 but did not recognize that this donation also involved a test for HIV infection. Women 20–29 years of age were most likely to have been tested, as were formerly married women and women with the most education. Women with specific risk characteristics were also more likely to have been tested for HIV infection: never-married women who had a positive history of sexually transmitted diseases (STD's), and formerly and never-married women with six or more sexual partners in their lifetimes.

Most women reported that they had been tested through the American Red Cross or other blood bank or by a doctor in a private practice or a health maintenance organization (HMO). Women who reported that they were tested in clinics were more often black and had lower incomes than women tested at other locations. A majority of women reported that the test was done when they saw a doctor for some reason other than an HIV test, usually as part of the blood donation process or a medical examination. Testing for antibodies to HIV infection among women at risk for infection remains an important part of the Centers for Disease Control and Prevention's program to prevent the spread of HIV (1).

Introduction

The findings presented here are from the National Survey of Family Growth (NSFG) 1990 telephone reinterview, conducted by the National Center for Health Statistics (NCHS). This survey was not focused exclusively on AIDS-related behavior; rather, it was designed to provide data on a wide range of topics related to childbearing, including pregnancies and their outcomes, contraception, infertility, use of medical services for family planning, infertility and prenatal care, and other selected aspects of maternal and infant health. Questions on AIDS-related behaviors, including testing for HIV infection, were included in the 1990 interview in response to requests for AIDS-related information from other agencies in the U.S. Public Health Service.

The 1988 NSFG was based on a national sample of 8,450 women 15–44 years of age. The women were interviewed in person at home by professional female interviewers between January and August 1988. This sample was obtained from households participating in the National Health Interview Survey (NHIS) between October 1985 and March 1987. A complete description of the 1988 survey methodology has been provided elsewhere (2). The findings on AIDS-related knowledge and behavior for 1988 were summarized in a previous report (3).

Between July and November 1990, 5,686 women were interviewed for the NSFG telephone reinterview. The overall response rate was 67.5 percent. All interviews were conducted by telephone; 5,359 were reinterviews of women previously interviewed in person in 1988. The other 327 were first-time interviews with women 15–17 years of age, who had reached the age of 15 in the 2½ years since the 1988 interview.

The average length of interview in 1990 was 20 minutes, compared

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with 70 minutes in 1988. In order to minimize the interview time and make room for additional questions, the 1990 sample was split into two "half-samples." About 10 of the 20 minutes of the interview time was devoted to questions that were asked of all respondents. In the other 10 minutes of the interview time, one-half of the sample (2,854 respondents, called "half-sample I") were asked detailed questions about the use of contraception and family-planning services. The other half of the sample (2,832 respondents, called "half-sample II") were asked a series of detailed questions related to HIV and AIDS. However, women were not asked about intravenous drug use or types of sexual intercourse. This report includes analyses on half-sample II only (which includes 2,672 women who were reinterviewed and 160 young women from the teenager supplement), because only these respondents were asked questions on HIV testing and other AIDS-related behaviors. Further details on the methodology of the telephone reinterview survey are provided in the Technical notes section of this report. The nonresponse adjustments and procedures for weighting the data for the 1990 survey are described in detail in a separate paper (4).

Data on HIV antibody testing are also collected in the NHIS for men and women 18 years of age and over. Although the NHIS sample is considerably larger than the NSFG sample and the questions are worded somewhat differently, NSFG data offer an opportunity to see how some characteristics not covered in the NHIS are associated with HIV testing. These include data on history of STD's, lifetime number of sexual partners, and age at first sexual intercourse. A comparison of NHIS and NSFG data on HIV testing appears later in this report.

The data presented in this report cover four areas related to HIV testing:

- HIV testing by demographic characteristics including age, race, education, marital status, region of residence (in 1988), and residence in a metropolitan statistical area (MSA) (in 1988)
- Location of testing and reasons for testing
- Behaviors and conditions associated with HIV testing—ever having an STD, ever having pelvic inflammatory disease (PID), lifetime number of sexual partners, and age at first sexual intercourse
- Attitudes and perceptions, including ever knowing someone with HIV, perception of chances of becoming infected with HIV, and level of knowledge about transmission of HIV or AIDS.

Data are shown by race and Hispanic origin in the tables and figures. This does not imply that differences shown are racial or genetic per se. Differences between non-Hispanic white women on the one hand and black women (regardless of Hispanic origin) on the other are often associated with the lower income and educational levels of minority women, their limited access to health care and health insurance, the neighborhoods in which they live, and other factors. The causes of these differences merit further investigation in future research; describing characteristics of subgroups of the population can help focus AIDS education and prevention efforts more effectively.

Findings

In the NSFG 1990 telephone reinterview, all women in half-sample II were asked: "Have you ever had your blood tested for infection with the AIDS virus?" Table 1 shows the percent tested for HIV infection by selected demographic characteristics. About 26 percent answered "yes" to this question. Positive responses to this question are labeled as "self-reported tests" in table 1.

Since March 1985, the U.S. blood supply has been screened for HIV infection (5). If a respondent did not report that she had ever had her blood tested for infection with the AIDS virus, she was still counted as having been tested if she answered "yes" to the question: "Have you donated blood since March 1985?" Including tests done as part of the blood donation process since 1985, 35 percent of women have been tested for HIV infection (these tests are included in table 1, the "all tests" column). In the remainder of this report, past experience with HIV testing includes all women tested for HIV infection, including those who did not report ever having been tested but who had donated blood since 1985. A description of the reasons for including blood donors in the total count of women receiving HIV antibody testing is included in the Technical notes section of this report.

Non-Hispanic white women were slightly but not significantly more likely to have been tested for HIV infection than any other group of women (36 percent, versus 30 percent for Hispanic women and 35 percent for non-Hispanic black women). These results are similar to demographic data on HIV testing from the NHIS (6).

Women with 13 or more years of education were significantly more likely to have been tested than women with less education (40 percent versus 31 percent). Published data from the NHIS also show that persons with more education are more likely to be tested for HIV infection; however, these data are not shown separately for women (6).

Formerly married women were more likely than women of any other marital status to have been tested for HIV infection. This may be because formerly married women were more likely to have been sexually active for a longer period of time and to have had more sexual partners.

Women 20–29 years of age were also more likely to report testing for HIV infection, and the largest proportions tested were for women 20–39 years of age. This is important because two-thirds of female AIDS patients are women 20–39 years of age (63 percent are non-Hispanic white women 20–39 years of age, and 66 percent are non-Hispanic black women 20–39 years of age) (7).

In short, demographic characteristics are not highly

Table 1. Number of women 15–44 years of age and percent ever tested for human immunodeficiency virus infection, by source of test information and selected demographic characteristics: United States, 1990

Characteristic	Number of women in thousands	Percent ever tested	
		Self-reported tests[1]	All tests[2]
All women[3]	58,381	25.6	34.9
Race and ethnic origin			
Hispanic	5,547	23.8	29.8
Black, not Hispanic	7,526	28.5	34.8
White, not Hispanic	42,836	25.4	35.8
Education[4]			
Less than 12 years	5,618	24.6	31.0
12 years	17,247	23.1	31.3
13 years or more	27,033	28.6	39.9
Marital status			
Never married	20,123	26.0	35.7
Married	31,417	23.6	32.5
Formerly married	6,841	33.5	43.4
Age			
15–19 years	8,483	21.5	28.7
20–24 years	9,154	27.0	40.8
25–29 years	10,637	33.4	40.9
30–34 years	11,091	27.5	37.1
35–39 years	10,111	22.0	31.5
40–44 years	8,905	20.3	28.5
Residence in metropolitan area[5]			
MSA, central city	12,727	31.9	39.9
MSA, other	29,981	26.1	36.4
Non-MSA	11,979	21.4	32.4
Region [5]			
Northeast	11,226	28.2	36.9
South	18,603	28.0	39.5
Midwest	14,453	23.8	34.0
West	10,405	25.4	33.5
Poverty-level income[6]			
0–149 percent	7,918	28.1	35.5
150 percent or more	41,980	25.9	36.0

[1]Includes only tests reported in response to the question: "Have you ever had your blood tested for infection with the AIDS virus?"
[2]Category includes all tests for HIV infection, including those done in connection with blood donation.
[3]Includes "other" races and women whose HIV testing status was unknown; not shown separately because of small sample size.
[4]Women 20–44 years of age only.
[5]This variable was collected during the 1988 survey.
[6]Ratio of total family income to poverty level. Women 20–44 years of age only.

NOTES: MSA is metropolitan statistical area. AIDS is acquired immunodeficiency syndrome. HIV is human immunodeficiency virus.

associated with HIV testing. However, the groups most likely to be tested are the college-educated, the formerly married, women 20–29 years of age, and women from a central city of an MSA.

Location of testing

Women who indicated that they had been tested for HIV infection were asked: "Where did you go to have that test done?" More than one-half (55 percent) of the tests were done through the American Red Cross or other blood bank (table 2). Other, less common sources included private doctors (20 percent), clinics (14 percent), hospitals or emergency rooms (12 percent), health departments (10 percent), and other locations (5 percent) (figure 1). (Women could report more than one location, if applicable.) In this report, testing at community and public health departments was counted separately from testing at other types of clinics because health departments provide partner notification and other services related to testing for HIV infection that some other clinics do not (8).

Among non-Hispanic respondents, black women were 2½ times as likely as white women to report having been tested at clinics (27 percent versus 11 percent, table 2). Conversely, black women were less likely than white women to have been tested at the Red Cross (34 percent compared with 60 percent, respectively). There were no clear patterns of difference by age in the sources of tests, but teenagers had higher levels of testing at health departments (21 percent for women 15–19 years of age) than did women of other ages. (See table 2.)

Women who did not finish high school were much more likely (28 percent) to have been tested at a hospital or emergency room than were women with 12 years of education (11 percent) and 13 or more years of education (10 percent), and much less likely to be tested at the Red Cross (30 percent, versus 52 and 62 percent, respectively).

Income appeared to play an important role in the location of HIV testing: Lower income women were more likely than higher income women to have received testing at a clinic, hospital or emergency room, or health department, and much less likely to have received testing through the Red Cross or other blood bank. For example, 37 percent of tested low-income women received their tests at the Red Cross or other blood banks, compared with 59 percent of higher income women. There was no difference by income in the percent tested at private doctors' offices.

In summary, women with less education and income were more likely to get their HIV tests at clinics, hospitals, or emergency rooms, and less likely to be tested at the Red Cross or other blood bank than were

Table 2. Number of women 15–44 years of age ever tested for human immunodeficiency virus infection and percent tested at specified locations, by selected demographic characteristics: United States, 1990

Characteristic	Number of women in thousands	Location of test					
		Clinic[1]	Hospital or emergency room	Private doctor's office	Red Cross or other blood bank	Health department[2]	Other[3]
All women[4]	20,363	13.6	12.1	19.5	54.7	9.7	4.7
Race and ethnic origin							
Hispanic	1,653	*13.2	*11.8	29.0	50.0	17.9	*0.8
Black, not Hispanic	2,619	26.5	15.0	19.8	34.4	17.9	*1.4
White, not Hispanic	15,348	10.8	11.7	19.4	59.8	6.5	5.5
Education[5]							
Less than 12 years	1,743	21.2	27.9	18.8	29.6	*6.9	*1.2
12 years	5,399	14.5	10.9	23.9	52.2	8.8	*4.0
13 years or more	10,784	12.4	10.4	17.6	61.5	8.0	6.5
Marital status							
Married	10,209	12.0	12.7	19.9	58.1	7.5	6.3
Formerly married	2,967	17.5	11.9	19.4	50.3	10.0	*5.5
Never married	7,187	14.2	11.4	18.9	51.5	12.6	*1.9
Age							
15–19 years	2,437	*10.7	11.4	18.5	47.7	20.7	---
20–24 years	3,735	17.1	*7.0	22.5	53.9	9.9	*2.6
25–29 years	4,347	14.1	15.0	23.1	51.5	11.5	*3.9
30–34 years	4,120	12.2	8.9	17.7	55.9	10.6	7.7
35–39 years	3,184	15.4	15.6	13.5	58.7	*4.0	8.9
40–44 years	2,539	*9.8	16.6	20.2	60.7	*1.0	*3.2
Residence[6]							
MSA, central city	5,083	19.1	10.1	19.3	45.9	13.9	5.8
MSA, other	10,917	11.6	11.6	19.1	60.7	6.3	5.0
Non–MSA	3,883	11.2	13.6	21.8	55.4	10.4	*2.8
Region[6]							
Northeast	4,140	14.7	15.5	16.5	53.4	*4.6	*6.5
South	7,352	12.6	8.0	23.1	57.1	10.4	6.1
Midwest	4,910	12.6	16.0	18.7	56.5	6.9	*2.2
West	3,481	14.9	8.6	17.6	55.3	14.7	*3.6
Poverty-level income[7]							
0–149 percent	2,811	23.7	18.3	19.2	37.4	13.2	*1.7
150 percent or more	15,115	12.1	11.1	19.7	59.0	7.3	6.0

[1]Includes acquired immunodeficiency syndrome (AIDS) clinic, hospital clinic, company clinic, and other types of clinics.
[2]Includes community health department and public health department.
[3]Includes testing by an insurance company, at school or work, and testing somewhere not mentioned in previous categories.
[4]Total includes "other" races not shown separately because of small sample size.
[5]Women 20–44 years of age only.
[6]This variable was collected only in the 1988 survey.
[7]Ratio of total family income to poverty level. Women 20–44 years of age only.

NOTE: MSA is metropolitan statistical area.

women with higher education or income.

Reasons for testing

In 1990, women who reported testing for HIV infection were asked: "When you went to (place where you were tested) to have the AIDS test done that time, was that your only reason for going?" If that was not the only reason for the visit, they were then asked: "Did you have the test done as part of a routine medical examination, as part of a family-planning visit, as part of the procedure when you donate blood, or as part of some other kind of visit?"

As table 3 shows, only 16 percent of ever-tested women reported testing as the sole reason for such a visit. By far, the most common occasion for an HIV test was during blood donation (55 percent). About 1 in 4 tested women received the test as part of a routine medical examination (23 percent). Only 5 percent of women ever tested had their tests done during family-planning visits.

Non-Hispanic black women were much more likely to receive an HIV test as part of a medical examination than were non-Hispanic white women (36 percent versus 20 percent) and much less likely than non-Hispanic white women to have been tested

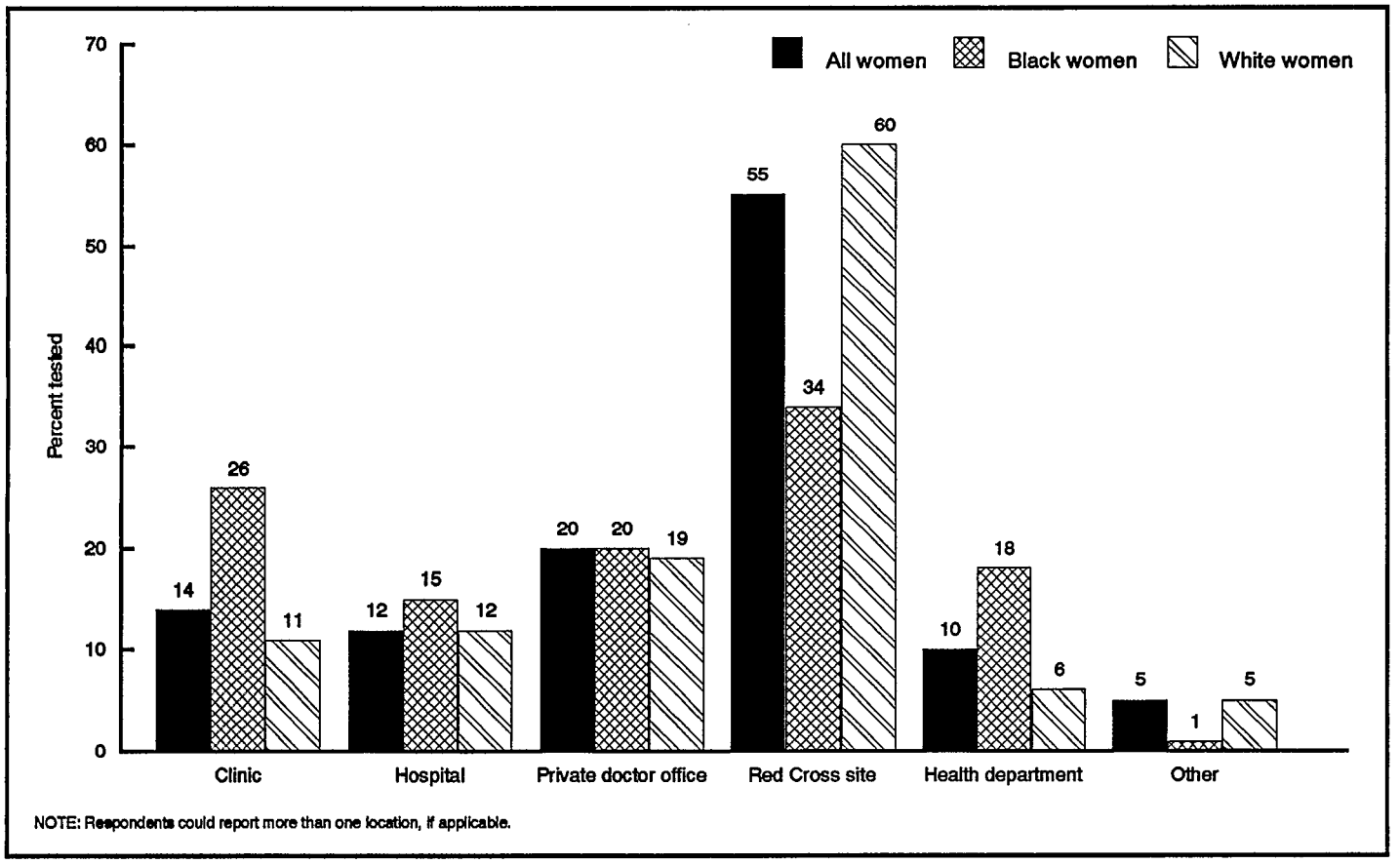

Figure 1. Location of testing for acquired immunodeficiency virus infection for women 15–44 years of age, by percent tested at specified locations: United States, 1990

because they donated blood (35 percent versus 60 percent). The greater proportion of non-Hispanic white women reporting testing as part of a blood donation is the result of the fact that these women were more likely to report having donated blood than were other women.

Women who did not finish high school were much more likely to have been tested as part of a medical examination than were women with more education (34 percent versus 20 percent for women with some college education) and much less likely than those with some college education to report testing as part of a blood donation (31 percent versus 62 percent for women with some college education); however, the sample of women who did not finish high school is small.

Younger women, especially teenagers, were more likely to be tested at a family-planning visit than were older women (11 percent for women 15–19 years old versus 1 percent for women 35–39 years old), although the sampling errors for these percents are relatively large.

Income also seemed to have some association with the reason for HIV testing. Women with lower incomes were more likely to report that the HIV test was the only reason for the visit than were higher income women (26 percent versus 16 percent) and much less likely to have received the test because they donated blood (38 percent versus 59 percent).

In summary, black women and less-educated women were more likely to receive their HIV test as part of a medical examination, and less likely to receive it as part of a blood donation, than were white women and those with more education. Low-income women were more likely than others to report that the HIV test was the only reason for the visit.

Risk characteristics for infection

History of STD or PID is a risk factor for HIV infection (9). The data in table 4 suggest that formerly married women who had a positive STD history (ever had an STD) were much more likely to have been tested for HIV infection than were formerly married women who had never had an STD (54 percent versus 41 percent). This difference was also found for never-married women—never-married women with a history of STD were more likely (50 percent) to be tested for HIV than were never-married women with no history of STD (34 percent). However, there was no significant difference for currently married women. Although STD's are frequent causes of PID, ever having had a PID was not significantly associated with having been tested among women of any marital status (the difference for never-married women, 43 percent versus 35 percent, was not significant).

Number of sexual partners in a lifetime has also been associated with increased risk of exposure to STD's, including HIV infection (10). In 1990,

Table 3. Number of women 15–44 years of age ever tested for human immunodeficiency virus infection (all tests, including those for blood donation) and percent with specified reasons or circumstances for the test, by selected demographic characteristics: United States, 1990

Characteristic	Number of women in thousands	Test only reason for visit[1]	Other reasons for test			
			Medical examination	Family planning visit	Blood donation	Other visit[2]
All women[3]	20,363	16.1	22.9	4.7	55.0	12.7
Race and ethnic origin						
Hispanic	1,653	26.2	25.6	*3.3	50.4	*12.7
Black, not Hispanic	2,619	21.2	35.5	*4.6	34.5	14.3
White, not Hispanic	15,348	13.3	20.1	5.0	60.1	11.9
Education[4]						
Less than 12 years	1,743	19.1	33.8	*3.1	30.8	*14.9
12 years	5,399	13.8	24.9	5.1	51.5	17.0
13 years or more	10,784	18.4	19.6	3.3	62.1	9.2
Marital status						
Married	10,209	14.2	21.5	4.7	58.1	14.4
Formerly married	2,967	20.2	20.7	*0.7	50.8	14.1
Never married	7,187	16.2	25.7	6.3	52.3	9.8
Age						
15–19 years	2,437	*6.5	24.6	*10.7	48.4	17.6
20–24 years	3,735	16.2	23.2	*6.3	54.2	9.0
25–29 years	4,347	19.3	26.2	7.7	51.4	13.6
30–34 years	4,120	17.9	18.1	*1.8	55.9	15.1
35–39 years	3,184	16.8	23.4	*1.3	60.0	9.7
40–44 years	2,539	12.8	22.1	–	60.9	12.1
Residence[5]						
MSA, central city	5,083	26.3	25.4	*3.6	45.3	11.4
MSA, other	10,917	12.2	19.6	4.5	61.5	13.4
Non–MSA	3,883	14.5	26.4	*4.6	55.4	11.0
Region[5]						
Northeast	4,140	19.6	23.1	*2.5	53.1	10.8
South	7,352	15.7	25.7	4.4	57.4	9.6
Midwest	4,910	11.8	19.5	6.6	57.5	14.3
West	3,481	18.5	18.7	*3.2	55.3	17.7
Poverty-level income[6]						
0–149 percent	2,811	25.5	27.2	*6.0	37.6	15.5
150 percent or more	15,115	15.5	21.8	3.4	59.3	11.5

[1]Includes a visit to any location where the HIV test was the only reason for the visit.
[2]Includes reasons such as pregnancy visits, marriage requirement, illnesses other than AIDS, and other reasons.
[3]Total includes "other" races not shown separately because of small sample size.
[4]Women 20–44 years of age only.
[5]This variable was collected only in the 1988 survey.
[6]Ratio of total family income to poverty level. Women 20–44 years of age only.

NOTES: HIV is human immunodeficiency virus infection. AIDS is acquired immunodeficiency syndrome.

formerly married women who had each had six or more male sexual partners were far more likely to report HIV testing than formerly married women with only one partner in a lifetime (47 percent for women with six or more partners, versus 12 percent for women with one lifetime male sexual partner) (table 4). This pattern also held true for never-married and currently married women.

Women who begin sexual intercourse at a young age are also considered at increased risk for exposure to STD's, including HIV infection. There was no significant difference in the proportions of never-married women receiving testing regardless of their age at first intercourse. Nearly one-fifth of women who had never had intercourse (17 percent) had been tested for HIV infection. This is a plausible finding, because there are nonsexual reasons for HIV testing (for example, immigration, insurance, blood donation).

In summary, unmarried women (that is, formerly married and never-married women) with positive STD histories and six or more male sexual partners in a lifetime were far more likely to have been tested for HIV infection than were unmarried women without STD's and those with

Table 4. Number and percent of women 15–44 years of age ever tested for human immunodeficiency virus infection by marital status and selected risk factors: United States, 1990

Risk factor	Total	Currently married	Formerly married	Never married	Currently married	Formerly married	Never married
	Number in thousands				Percent		
All women[1]	20,363	10,209	2,967	7,187	32.5	43.4	35.7
Ever had a sexually transmitted disease[2]							
Yes	2,670	1,039	652	978	34.7	54.1	49.5
No	17,693	9,169	2,315	6,209	32.3	41.1	34.2
Ever had pelvic inflammatory disease							
Yes	2,673	1,326	590	757	30.0	36.6	43.3
No	17,690	8,883	2,377	6,430	32.9	45.5	35.0
Number of lifetime male sexual partners							
Never had intercourse	871	---	---	871	---	---	*17.4
1 man	3,919	2,953	36	929	29.7	12.2	33.7
2–5 men	8,959	4,299	1,457	3,203	30.9	42.9	41.5
6 or more men	6,615	2,957	1,474	2,184	39.1	46.9	47.2
Age at first intercourse							
Never had intercourse	871	---	---	871	---	---	*17.4
Under 15 years	1,858	781	320	756	39.1	40.7	35.7
15–17 years	8,381	3,829	1,224	3,328	33.0	39.4	42.7
18–19 years	5,550	3,025	1,189	1,336	31.7	52.5	43.4
20 or more years	3,703	2,573	234	896	31.1	34.5	41.9

[1]Includes women with missing data on row variables.
[2]A woman is identified as having had a sexually transmitted disease if she indicated that she had ever had one or more of the following: genital warts, gonorrhea, chlamydia, or genital herpes.

one partner. Differences were smaller, but in the same direction for married women.

HIV knowledge and attitudes

The items on knowledge of HIV in the 1990 survey included a series of questions that asked:

> What would you say are the ways in which a person can get the AIDS virus? Would you say that a person can get the AIDS virus by:
>
> A. Shaking hands or hugging?
> B. Sharing hypodermic needles?
> C. Sharing an apartment, classroom, or office?
> D. Receiving a blood transfusion?
> E. Sexual intercourse between men?
> F. Sexual intercourse between a man and a woman?
> G. Giving a blood donation?
> H. Being bitten by an insect that had bitten someone with the AIDS virus?
> I. Sharing personal items like dishes or toilets?
> J. Being born to a mother with AIDS?
> K. Swimming in a pool in which someone with AIDS has also been swimming?
> L. Kissing with exchange of saliva?

Each item was answered "yes" or "no."

Another question was: "Can a person get AIDS from someone who has only the AIDS virus but does not have the disease?" Women who indicated a high level of knowledge on these questions (see the Technical notes for scoring of the knowledge items) were more likely (37 percent) to have been tested for HIV infection than were women who had a medium (33 percent) or low level of knowledge (26 percent) (figure 2).

In 1990, women were also asked:

> What would you say are the chances that you yourself could get AIDS? Would you say you have:
>
> A. A very strong chance?
> B. A strong chance?
> C. Some chance?
> D. Not much chance?
> E. No chance at all?

Women who said they had some chance or more of becoming infected with HIV were slightly but not significantly more likely (38 percent) to report HIV testing than women who said they had no chance of becoming infected (36 percent) (figure 2). However, the data suggest that women who said they had some chance or more of becoming infected were more likely (38 percent) to have received an HIV test than were women who did not know their chances of becoming infected (16 percent).

In 1990, women were also asked:

> Have you ever personally known anyone with AIDS or the AIDS virus?

Women who said they knew someone with AIDS or the AIDS virus were more likely (44 percent) to report that they had been tested for HIV infection than were those who did not know anyone with the virus (32 percent) (figure 2).

Limitations of the data

Although previous research has shown that HIV-testing information

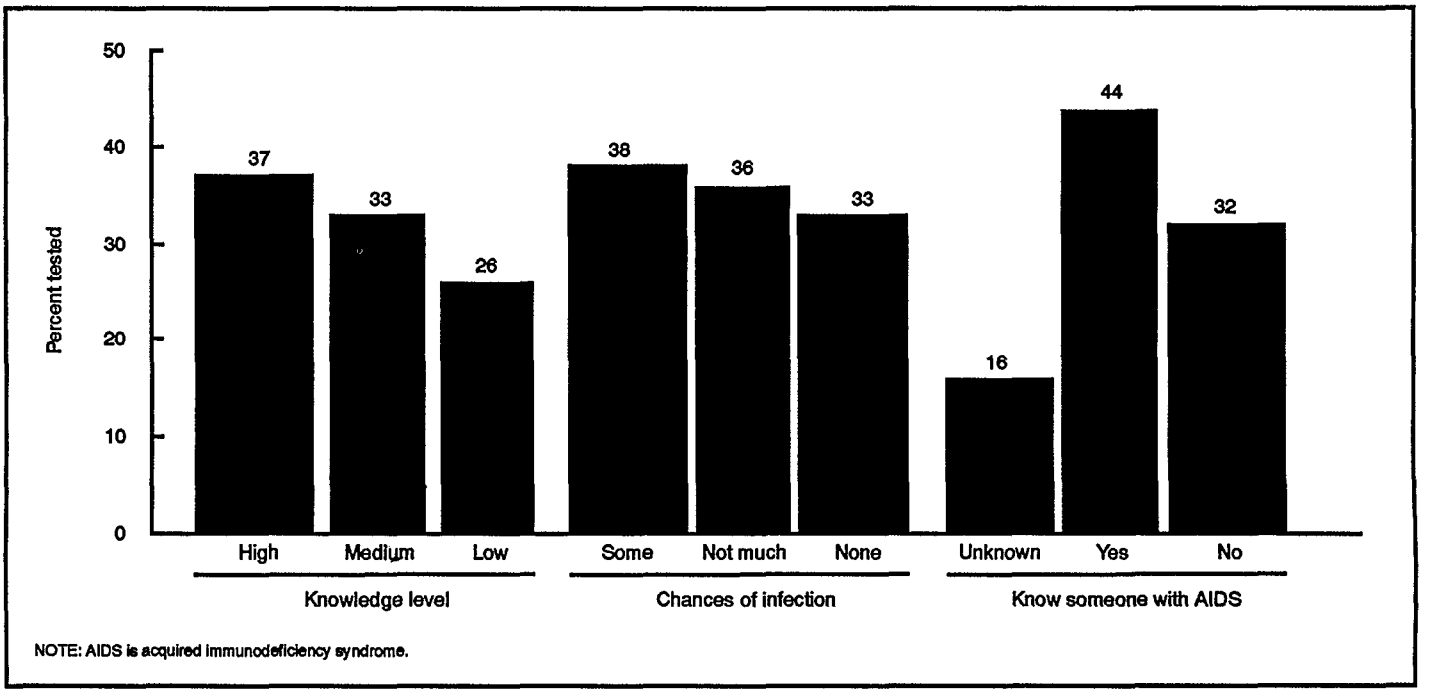

Figure 2. Level of knowledge of acquired immunodeficiency syndrome, chances of infection with human immunodeficiency virus, and knowing someone with acquired immunodeficiency syndrome, in women 15–44 years of age, by percent tested for human immunodeficiency virus infection: United States, 1990

can be accurately reported by patients who have been tested (11), these data should be interpreted with caution. Some of the HIV-testing rates in this report are somewhat higher than those found in the 1990 NHIS, which are the most similar data to the NSFG that are available for comparison. This may be attributable to a number of factors, including the fact that the NSFG is a survey about childbearing, sexual activity, and reproductive health, and the NHIS is a general health survey. In addition, the HIV-testing questions are not identical on the two surveys. A methodological study is under way comparing the NSFG with the NHIS data to examine the differences in reported HIV antibody testing.

One methodologic difference between the NSFG and the NHIS is that, in 1990, the NHIS asked a series of questions about blood donation and HIV testing that began with the lead-in question: "Have you ever heard of a blood test than can detect the AIDS virus infection?" People who responded "yes" to this question were then asked a series of questions on blood donation and were then asked: "Except for blood donations since March 1985, have you had your blood tested for the AIDS virus infection?" People who responded that they had never heard of a test to detect the AIDS virus were skipped out of the entire series of questions on HIV testing.

The initial comparison of these NHIS data with the 1990 NSFG data showed some significant differences between rates of HIV testing reported in the surveys. Women in the NSFG reported testing at higher rates than women in the NHIS, and this difference was especially apparent for non-Hispanic black women in the two surveys. However, this lead-in question in the NHIS was dropped in 1991, so that all respondents in the NHIS were asked: "Except for blood donations since March 1985, have you had your blood tested for the AIDS virus infection?" Because all respondents were asked about having been tested for HIV infection, overall reporting of HIV testing in the NHIS increased. When 1991 NHIS testing data were compared with the 1990 NSFG data, the differences in the rates of self-reported testing were smaller and were virtually identical when all tests (including blood donation) were considered. Further analyses are being conducted to account for whatever differences remain. The entire series of questions from the 1990 and 1991 NHIS surveys are included in the Technical notes section of this report.

One important distinction that cannot be made from the NSFG data is the difference between voluntary and nonvoluntary tests for HIV infection. It is unclear to what extent self-reported tests were specifically requested by the respondents or were done as part of routine screening. Questions to clarify who requested the test and why would be useful additions to future surveys.

Because the 1990 NSFG reinterview did not ask about recent HIV testing (for example, in the past year), it is not possible to connect HIV testing with other risk behaviors, such as current condom use, that are considered important in evaluating the risk of acquiring HIV infection. However, lifetime behaviors such as ever having had an STD or PID and lifetime number of sexual partners can be evaluated in relationship to HIV testing.

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Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

Technical notes

Survey design

The National Survey of Family Growth (NSFG) is a periodic survey conducted by the National Center for Health Statistics (NCHS) to collect data on fertility, infertility, contraception, and related aspects of maternal and infant health. Fieldwork for Cycle IV was conducted in 1988, and the NSFG telephone reinterview was conducted in 1990. The contractor for the 1988 and 1990 surveys was Westat, Inc., of Rockville, Maryland.

For the 1988 NSFG, personal (face-to-face) interviews were conducted between January and August 1988 with a national sample of women who were 15–44 years of age as of March 15, 1988. Interviews were completed with 8,450 women in 1988, including 2,771 black women, 5,354 white women, and 325 women of other races. The sample for the 1988 NSFG was selected from households that had participated in the National Health Interview Survey (NHIS)—also conducted by NCHS—between October 1985 and March 1987. Respondents were interviewed by trained female interviewers.

The interviews covered the women's pregnancy history; past and current use of contraception; ability to bear children; use of medical services for contraception, infertility, and prenatal care; marriage and cohabitation; and a wide range of social, economic, and demographic characteristics. More detailed information on the procedures used in selecting the sample, weighting the data to make national estimates, and estimating sampling errors may be found in two other publications (2,4).

For the 1990 NSFG telephone reinterview, 5,686 women were interviewed by telephone between July 23 and November 5, 1990. Reinterviews were conducted with 5,359 women who had been interviewed in 1988, and first-time telephone interviews were conducted with 327 young women who had reached 15 years of age in the 2 years since the main study. The response rate for the initial interviews with those 15–17 years of age was 53 percent. The response rate for the 17–44-year-old women initially interviewed in 1988 was 69 percent of those originally interviewed in 1988. Overall, the response rate was 67.5 percent. The most common causes of nonresponse in 1990 were inability to locate or contact the respondent because she had moved and inability to contact the respondent because she had no telephone or had an unpublished telephone number. The 1990 reinterviews lasted an average of 20 minutes.

The 1990 sample was divided equally into two "half-samples," as discussed in the text. This report is based entirely on the results of half-sample II, which contained the most detailed questions on AIDS-related behavior and HIV testing. The data have been weighted to be representative of the civilian noninstitutionalized population of the United States. However, the use of the half-samples means that sampling errors are larger than in the previous reports based on the 1988 survey (4).

In this report, women 15–19 years of age are excluded from tabulations by education because it generally takes until about age 19 to reach the "13 years or more" education category. This age group is also excluded from tabulations by income because it is generally difficult for teenagers to accurately report the income of their parents and because income information was not collected from 15–17-year-old women in the 1990 telephone reinterview teenager supplement.

Reliability of estimates

Because the statistics presented in this report are based on a sample, they may differ from the statistics that would result if all 58 million women represented by the survey had been interviewed. The standard error of an estimate is a measure of such differences. The standard error of an estimated number or percent is calculated by substituting the appropriate values of A and B from table I in the following equations:

$$SE(N) = \sqrt{(A + B/N)} \bullet N$$

and

$$SE(P) = \sqrt{\frac{B \bullet P\ (100 - P)}{X}}$$

where N = number of women
P = percent
X = number of women in the denominator of the percent

Table I. Estimates of the parameters *A* and *B* for estimating standard errors for percents of women, by race: 1990 National Survey of Family Growth telephone reinterview, half-sample

Race	Parameter	
	A	*B*
All races	.0004284	25,000
White or other	–.0004947	25,000
Black	–.0018417	14,450

The parameters shown in table I were used to generate table II (estimates of standard errors for percents of women of all races), table III (standard errors for white women), and table IV (estimates of standard errors for black women).

The chances are about 68 in 100 that a sample estimate would fall within one standard error, and about 95 in 100 that it would fall within two standard errors, of a statistic based on a complete count of the population represented by the NSFG.

Unless otherwise specified, differences between percents discussed in this report were found to be statistically significant at the 0.05 level using a two-tailed normal deviate test (*z*-test). This means that in repeated samples of the same type and size, a difference between the percents in the population as large as the one observed would occur in only 5 percent of the samples if there were, in fact, no difference. The phrase "the data suggest" indicates that the difference was significant at the 0.10 (10-percent) level but not the

Table II. Standard errors for percents of women of all races: 1990 National Survey of Family Growth telephone reinterview, half-sample

Base of percent	Estimated percent					
	5 or 95	19 or 90	20 or 80	30 or 70	40 or 60	50
500,000	*4.9	*6.7	*8.9	*10.2	11.0	11.1
1,000,000	3.4	*4.7	*6.3	7.2	7.7	7.9
5,000,000	1.5	2.1	2.8	3.2	3.5	3.5
10,000,000	1.0	1.5	2.0	2.3	2.4	2.5
30,000,000	0.6	0.9	1.1	1.3	1.4	1.4
50,000,000	0.5	0.7	0.9	1.0	1.0	1.1

Table III. Standard errors for percents of white women: 1990 National Survey of Family Growth telephone reinterview, half-sample

Base of percent	Estimated percent					
	5 or 95	19 or 90	20 or 80	30 or 70	40 or 60	50
500,000	*4.9	*6.7	*8.9	*10.2	11.0	11.2
1,000,000	3.4	*4.7	*6.3	7.2	7.7	7.9
5,000,000	1.5	2.1	2.8	3.2	3.5	3.5
10,000,000	1.0	1.5	2.0	2.3	2.4	2.5
20,000,000	0.8	1.1	1.4	1.6	1.7	1.8
40,000,000	0.5	0.8	1.0	1.1	1.2	1.3

Table IV. Standard errors for percents of black women: 1990 National Survey of Family Growth telephone reinterview, half-sample

Base of percent	Estimated percent					
	5 or 95	19 or 90	20 or 80	30 or 70	40 or 60	50
500,000	*3.7	*5.1	*6.8	7.8	8.3	8.5
1,000,000	*2.6	*3.6	*4.8	5.5	5.9	6.0
2,000,000	*1.8	2.6	3.4	3.9	4.2	4.3
3,000,000	*1.5	2.1	2.8	3.2	3.4	3.5
4,000,000	1.3	1.8	2.4	2.8	2.9	3.0
7,000,000	1.0	1.4	1.8	2.1	2.2	2.3

0.05 (5-percent) level. Lack of comment in the text about any two statistics does not mean that the difference was tested and found not to be significant.

The relative standard error (or coefficient of variation) of a statistic is the ratio of the standard error to the statistic and is usually expressed as a percent of the estimate. In this report, percents and other statistics with relative standard errors of 30 percent or larger are indicated with an asterisk (*). These estimates may be viewed as unreliable by themselves, but they may be combined with other estimates to make comparisons of greater precision.

Statistics in this report may also be subject to nonsampling error, that is, errors or omissions in responding to the interview, recording answers, and processing data. The data have been adjusted for nonresponse and adjusted to independent control totals obtained from the U.S. Bureau of the Census (4). These adjustments reduce most types of nonsampling error. Other types of nonsampling error were eliminated by a series of quality control procedures.

Definitions of terms

Race—Race refers to the race of the woman interviewed. Each woman was asked: "Which of the (following) groups best describes your racial background?" The categories included black, white, Asian or Pacific Islander, and Alaskan Native or American Indian. Because of the small sample sizes, the last two categories are combined and called "other" in this report.

Hispanic origin—Each woman was asked: "Which of the (following) groups best describes your national origin or ancestry?" Using a list of 15 groups, a woman was classified as being of Hispanic origin if she reported that her only or principal national origin was Puerto Rican, Cuban, Mexican American, Central or South American, or other Spanish. Origin is therefore classified independently of race, and Hispanic women may be of any race.

Marital status—In this report, women were classified according to their legal marital status. "Currently married" means legally married at the date of interview, "never married" means never legally married as of the date of interview, and "formerly married" means widowed, divorced, or separated. Cohabiting women who are not legally married are therefore classified in this report as unmarried.

Ever had sexual intercourse—This refers to a woman who has had sexual

intercourse at least once. Intercourse before the first menstrual period is excluded.

Number of lifetime sexual partners—This refers to the number of men with whom the woman has had sexual intercourse in her life, as of the date of the interview. In the 1990 data, this refers to the number of men with whom she had had intercourse as of the 1990 interview.

Poverty-level income—This is the ratio of the total family income to the poverty-level threshold for a family of specified size, as published by the U.S. Bureau of the Census. In the 1990 survey, 1989 Bureau of the Census weighted average thresholds for householders under the age of 65 years were used. The 1989 thresholds used for 1990 data were $6,451 for one person, $8,343 for a family of two, $9,885 for a family of three, $12,674 for a family of four, and up to $25,480 for a family of nine or more (12). Thus, if a family of four had an income of $25,000, their poverty-level income would be $25,000 divided by $12,674, or 197 percent of the poverty level. In the 1990 NSFG, family income information was not collected from the 327 women 15–17 years of age who were interviewed for the first time in 1990. In the tables of this report, data are not shown for women who did not report the income or poverty level of their families and are not shown for women under 20 years of age.

Education—This refers to the number of years of regular schooling the woman had completed as of the date of interview in 1990. In this report, the following categories are used: 0–11 years, meaning that the woman did not complete high school; 12 years, meaning that she had obtained a high school diploma or general educational development (GED) certificate but had not completed a full year of college; and 13 years or more, meaning that she had completed at least 1 year of college. In all tables containing this variable, women under the age of 20 are excluded from tabulations by education because it generally takes until at least age 19 to reach the "13 years or more" category.

Region of residence—Data are classified by region of residence into the four major census regions: Northeast, Midwest, South, and West. These regions, which correspond to those used by the U.S. Bureau of the Census, are as follows:

Region	*States included*
Northeast	Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania
Midwest	Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas
South	Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, and Texas
West	Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Hawaii, and Alaska

Place of residence—Data are classified by place of residence into three categories, metropolitan area–central city, metropolitan area–other, and nonmetropolitan area, using 1980 census counts.

Ever tested for HIV infection—Women were asked the question: "Have you ever had your blood tested for infection with the AIDS virus?" If they responded "yes" to this item, they were coded as having been tested for HIV infection. In addition, women who answered "no" to this item but who responded "yes" to the question: "Have you donated blood since March 1985?" were also coded as having been tested for HIV infection because the U.S. blood supply has been screened for antibodies to HIV since March 1985 (5). Because women who donated blood since March 1985 (but reported no other HIV test) were not asked questions on the location or circumstances of their test, they were coded as having been tested at the American Red Cross or other blood bank and were coded as having had the test as part of the blood donation process for reasons or circumstances of the test.

Knowledge of HIV/AIDS—This measure was created by scoring each correct answer on the knowledge items with 1 point and each incorrect, refused, or not-ascertained answer with 0 points. These points were totaled, the maximum being 13 points. A score of 12 or more was considered a high level of knowledge on HIV/AIDS, a score of 9–11 points was considered a medium level, and a score of 8 or fewer points was considered a low level of knowledge on HIV/AIDS. The correct answers were:

> What would you say are the ways in which a person can get the AIDS virus? Would you say that a person can get the AIDS virus by:
>
> A. Shaking hands or hugging? (no = 1 point)
> B. Sharing hypodermic needles? (yes = 1 point)
> C. Sharing an apartment, classroom, or office? (no = 1 point)
> D. Receiving a blood transfusion? (yes = 1 point)
> E. Sexual intercourse between men? (yes = 1 point)
> F. Sexual intercourse between a man and a woman? (yes = 1 point)
> G. Giving a blood donation? (no 4= 1 point)
> H. Being bitten by an insect that had bitten someone with the AIDS virus? (no = 1 point)

I. Sharing personal items like dishes or toilets? (no = 1 point)
J. Being born to a mother with AIDS? (yes = 1 point)
K. Swimming in a pool in which someone with AIDS has also been swimming? (no = 1 point)
L. Kissing with exchange of saliva? (no = 1 point)

and

Can a person get AIDS from someone who has only the AIDS virus but does not have the disease? (yes = 1 point)

1990 NHIS questions on HIV testing—

- Have you ever heard of a blood test that can detect the AIDS virus infection?
- To the best of your knowledge, are blood donations routinely tested for the AIDS virus infection?
- Was one of your reasons for donating blood because you wanted to be tested for the AIDS virus infection?
- Except for blood donations since March 1985, have you had your blood tested for the AIDS virus infection?

1991 NHIS questions on HIV testing—

- To the best of your knowledge, are blood donations routinely tested for the AIDS virus infection?
- Was one of your reasons for donating blood because you wanted to be tested for the AIDS virus infection?
- Except for blood donations since March 1985, have you had your blood tested for the AIDS virus infection?

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