About Half of U.S. Adults Have Had an HIV Test, But Testing Often Occurs Late in the Course of Infection

Nearly half of Americans aged 18 or older have ever been tested for HIV, and nearly two-thirds of those were tested voluntarily, primarily to learn their infection status, according to a 2001 Centers for Disease Control and Prevention (CDC) survey.[1] In nine states, women were more likely than men to have ever been tested, and in all but three states, they were more likely than men to have been tested voluntarily. In another study conducted by the CDC, people tested late in the course of HIV disease were more likely than those tested early to be young, black or Hispanic; to have acquired HIV through heterosexual contact; and to have had a high school education or less.[2] Findings from these two studies provide an important backdrop to the CDC's new emphasis on increased and early HIV testing.

HIV Testing in the United States

To determine the proportion of Americans who have ever been tested for HIV and the proportion who were tested voluntarily, the CDC analyzed data from the 2001 Behavioral Risk Factor Surveillance System—a telephone survey of people aged 18 or older in the 50 states, the District of Columbia, Guam, Puerto Rico and the U.S. Virgin Islands. In addition to questions about HIV and AIDS knowledge and attitudes, participants were asked "As far as you know, have you ever had your blood tested for HIV?" Those who reported ever having been tested were also asked "What was the main reason you had your test for HIV?" Respondents who answered "just to find out if infected," "routine check-up," "doctor referral," "sex partner referral," "because of pregnancy," "because I am at risk" or "other" were considered to have been tested voluntarily; those who were tested because of illness, hospitalization or surgery, or for insurance, employment, a marriage license, military service, immigration or occupational exposure were considered to have been tested involuntarily. Data were weighted by demographic characteristics.

Overall, 170,412 survey participants aged 18–64 answered questions regarding HIV and AIDS. A median of 46% had ever been tested for HIV; respondents in South Dakota had the lowest testing rate (32%), and those in the District of Columbia had the highest (65%). The median age of those who had ever been tested was 35.1. Of respondents who had been tested, a median of 28% had done so in the year before the survey; Maine had the lowest recent testing rate (19%), and the Virgin Islands had the highest (40%).

Of respondents who had ever been tested for HIV, a median of 64% had been tested voluntarily; the highest rate of voluntary testing was found in the District of Columbia (80%), and the lowest in South Dakota (53%). Overall, comparable proportions of men and women had been tested for HIV (44% and 48%, respectively) and had been tested in the last 12 months (29% and 27%). However, women were significantly more likely than men to have been tested in nine states—California, Kentucky, Louisiana, Minnesota, Mississippi, Montana Tennessee, Texas and Washington—and in Puerto Rico, and to have been tested in the last year in Hawaii. Among those who had ever been tested, 55% of men and 72% of women reported having been tested voluntarily; women were more likely than men to have been tested voluntarily in 47 states, Guam, Puerto Rico and the Virgin Islands.

The researchers comment that the geographic variations in HIV testing may be caused by "area-specific differences in the prevalence of HIV infection and AIDS" and in the scope of interventions, whereas the gender variations are likely a result of testing during pregnancy. They add that gender differences may be an important consideration in the development of HIV prevention and education programs.

Early vs. Late Testing

In the other study, researchers interviewed people aged 18 or older with HIV or AIDS between May 2000 and February 2003 at 16 sites in different states. Using the date on which AIDS was diagnosed as supplied by state or local reporting systems, they defined participants as early testers (those who had had their first positive HIV test five or more years before the diagnosis of AIDS, or had gone five or more years without a diagnosis of AIDS after their first positive HIV test) or late testers (those who had had their first positive HIV test one year or less before the diagnosis of AIDS). Chi-square analyses were used to determine the association between characteristics and early or late testing.

Overall, 5,980 participants completed the interview; nearly three-fourths (72%) were men. Fifty-six percent were black, 22% were white and 19% were Hispanic. In 38% of cases, HIV transmission was attributed to male homosexual activity, 36% to heterosexual activity, 17% to injection-drug use and 8% to a combination of male homosexual activity and injection-drug use.

More than two-thirds (69%) of participants had AIDS, whereas nearly one-third had HIV that had not progressed to AIDS. Of the latter, 28% were classified as early testers; the remainder were excluded because of inadequate follow-up time. Among respondents with AIDS, 24% were classified as early testers and 45% were classified as late testers; the 21% who tested positive for HIV more than one year but less than five years before AIDS diagnosis and the 8% for whom it was not possible to determine the relationship between HIV testing and AIDS diagnosis dates were excluded. Late testers were more likely than early testers to be aged 18–29 (odds ratio, 1.7), to be black or Hispanic (1.8–2.2), to have acquired HIV through heterosexual contact (2.4), to have had a high school education or less (1.3–1.4), to ever have been tested for HIV before the first positive result (2.0), to have had confidential testing (3.3), and to have received their first positive result from an HIV testing site or an acute or referral care setting (1.7–4.2). Sixty-five percent of late testers were tested for HIV because of illness; among early testers, 29% were tested because of self-perceived risk and 19% because they wanted to know their HIV status.

The researchers note that "Approximately half of the persons with AIDS had their first positive HIV result [within one] year of AIDS diagnosis, reflecting the need for greater emphasis on earlier diagnosis of HIV infection."

They comment that "persons who test late in the course of HIV infection are not able to benefit fully from antiretroviral therapy and prophylaxis to prevent opportunistic infections and, thus, are more likely to progress to AIDS." *–J. Rosenberg*

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Early Prenatal Care May Not Ensure Improved Outcomes Among Poor, Rural Infants

Being white, 20–34 years of age or a high school graduate was associated with receiving early prenatal care (in the first trimester of pregnancy) in a study of all Medicaid recipients giving birth in rural Williamsburg County, South Carolina, in 1994–1995.[1] Early prenatal care was not associated with improved outcomes: Newborns of mothers not receiving such care had reduced odds of having a medical condition (odds ratio, 0.4–0.5). The authors note that given the current emphasis in health care on cost-effective service delivery, "the cost implications of infant morbidity make it an important public policy issue."

The researchers studied 558 births using data from birth certificates and state and hospital records. They looked primarily at whether the mothers' timing of prenatal care (in the first trimester or later) and background characteristics were associated with various birth outcomes—low birth weight (less than 2,500 g) and preterm delivery (before 37 weeks' gestation), which the authors note are "the primary determinants of infant morbidity"; infant morbidity (selected diagnoses at birth or medical problems within 30 days); hospital costs; and duration of hospital stay. The researchers used chi-square and Student t-tests and logistic regression to assess statistical significance.

Eighty-three percent of the mothers were nonwhite; virtually all of these women were black. In general, racial differences in the demographic makeup of the mothers were statistically significant. Half of white mothers (51%), compared with two-thirds of nonwhite mothers (66%), had completed high school. A significantly higher proportion of whites than of nonwhites were living with a spouse (43% vs. 10%). Among white mothers, 34% were younger than 20, and 66% were 20–34; among nonwhite mothers, 34% were younger than 20, 59% were 20–34 and 6% were older. However, comparable proportions of white and nonwhite mothers (43% and 45%) had had no previous births.

White and nonwhite women did not differ significantly in the proportions having preterm delivery (14% and 11%) or low-birth-weight infants (15% and 16%); however, infants of white mothers weighed more at birth, on average, than infants of nonwhite mothers did (3,232 g vs. 3,130 g).

Two-thirds of the women received early prenatal care (67%). Timing of the initiation of prenatal care varied according to race, age and education. Seventy-six percent of whites, compared with 65% of blacks, received first-trimester care; 70% of high school graduates, versus 61% of less-educated women, received such care. The age-group with the highest proportion of first-trimester care was 20–34-year-olds (73%), followed by women 35 or older (59%) and teenagers (58%). Three-quarters of women receiving early prenatal care (74%), and nearly two-thirds of those not receiving such care (65%), were living with a spouse; this difference was not statistically significant. The mean number of prenatal care visits differed between married and nonmarried mothers (12.5 vs. 10.6), as well as between white and black mothers (13.4 vs. 10.4).

Most newborns had no medical problems, regardless of whether their mothers received first-trimester care (84%) or not (93%). However, the proportion of newborns experiencing poor outcomes was significantly higher among those whose mothers received early prenatal care than among those whose mothers did not. Compared with infants whose mothers did not receive early prenatal care, infants whose mothers received first-trimester care had a higher prevalence of general morbidity (19% vs. 11%) and low birth weight (18% vs. 11%). On average, they also had longer hospital stays (4.3 vs. 2.7 days) and incurred higher hospital charges ($2,628 vs. $1,005).

In multivariate logistic regression analysis, two maternal characteristics, marital status and race, were independently associated with birth outcome. Nonmarried mothers' odds of preterm delivery were three times those of married mothers (odds ratio, 3.2), and their odds of high hospital costs were more than double those of married mothers (2.5). The odds of incurring high hospital charges were lower for nonwhite women than for white women (0.6). Women who had not begun prenatal care in the first trimester had reduced odds of having an infant with a medical problem (0.4–0.5).

The "most surprising finding" of this study, according to the authors, was the observation of poorer birth outcomes in women with early prenatal care than in those without first-trimester care. The authors believe this finding suggests that "high-risk mothers were appropriately identified and obtained earlier prenatal care." Moreover, they conclude that "adequate prenatal care is complex, involving more than simply assuring that mothers initiate prenatal care early in pregnancy."

The authors suggest that future studies examine several variables not included in their analyses. For example, details of the prenatal care services delivered (such as whether the woman received coordinated, enhanced services) and the mother's health characteristics (including nutritional status and the presence of multiple medical conditions) could be assessed for associations with birth outcomes. *–C. Coren*

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For Low-Risk Women, Care From a Nurse-Midwife Is A Safe Option in Pregnancy

For women with a low risk of perinatal complications, care involving collaboration between a certified nurse-midwife and a physician, and the option of delivering at a birth center, is as safe as traditional physician-based care and entails the use of fewer medical procedures.[1] In a prospective study of nearly 3,000 low-income women, those who received collaborative care and those who received traditional care had similar rates of major maternal and neonatal complications. Interventions such as cesarean delivery and the use of epidural anesthesia were significantly less common in the collaborative care group than among women who received traditional care.

Study participants were low-income women who enrolled for prenatal care before 33 weeks' gestation at any of several San Diego sites in 1994–1996. Those in the collaborative care

group attended sites where obstetricians and nurse-midwives were part of the same practice, comprehensive services (including case management and social services) were offered and women at low perinatal risk were given the option of delivering at a large freestanding birth center. Those in the traditional care group saw obstetricians or obstetric residents at prenatal clinics or private physician offices, and delivered in hospitals.

The analyses, including 1,808 women receiving collaborative care and 1,149 receiving traditional care, were based primarily on data from medical records. Analysts examined maternal and neonatal medical outcomes and use of resources; they calculated risk differences, adjusted for potentially confounding variables, to assess the statistical significance of apparent disparities between the groups.

Because enrollment criteria were designed to ensure comparability of the two groups at baseline, their background profiles were generally similar. In each group, about one in five women were teenagers and most of the rest were in their 20s or early 30s, slightly more than half had given birth before, four in 10 were married and fewer than one in five had a postsecondary education. The proportions who were Hispanic, came from Mexico and spoke only Spanish were significantly larger among women receiving collaborative care (55–86%) than among those getting traditional care (26–61%). Similar proportions of both groups reported smoking during pregnancy, but the proportions reporting alcohol use while pregnant and a history of substance abuse were higher among those being cared for in a traditional practice than among those receiving collaborative care. Overall, 16–17% of each group were at risk of adverse perinatal outcomes because of complications in a previous pregnancy or a major medical problem (chronic hypertension or renal disease, diabetes, heart disease of HIV infection).

Major complications before, during and after delivery occurred at the same rate in both groups of women, but abnormalities in the fetal heart rate were significantly more common in the traditional care group (19%) than in the collaborative care group (11%). Technical interventions such as oxytocin augmentation, epidural anesthesia, narcotic analgesia, intravenous fluid, fetal monitoring and episiotomy were used significantly more frequently in the traditional than the collaborative group; less-technical resources (oral fluids or food, ambulation, and tub bath or shower) were used more often in the collaborative group.

Women in collaborative care had a higher rate than others of normal vaginal delivery (81% vs. 63%), and lower rates of cesarean (11% vs. 19%) or assisted vaginal delivery (8% vs. 18%). Forty-four percent of women receiving collaborative care, compared with 12% receiving traditional care, spent less than 24 hours in the birth center or hospital; 10% and 16%, respectively, spent more than 72 hours at the facility where they delivered.

A number of characteristics were related to the type of care women received. During pregnancy, emergency-room visits were more common among women getting physician-based care, and use of comprehensive services was more common among those in collaborative care. The proportions of women beginning prenatal care in the first trimester and receiving an intermediate level of care were lower among those attending a collaborative practice (37% and 7%, respectively) than among those seeing physicians (44% and 12%); the proportion receiving inadequate prenatal care, however, did not differ between groups. Finally, 92% of women in collaborative care breast-fed after leaving the delivery site, compared with 83% of those who received physician-based care.

Infants born to women in the two study groups were similar with regard to gestational age, birth weight and size; Apgar scores and rates of major neonatal complications also were the same regardless of type of care received. Rates of admission to neonatal intensive care, use of ventilation and readmission of the infant did not differ by type of care; however, sepsis workup with up to three days of antibiotic treatment occurred more frequently in the traditional care group than in the collaborative care group (5% vs. 2%).

The researchers conclude that collaborative care with the option of delivering at a birth center and traditional prenatal care "are different health care service routes to a common end point: safe outcomes for mothers and infants." They add that because collaborative care uses fewer expensive resources and procedures than traditional care, "managed care organizations, local and state governments, and obstetric providers should consider inclusion of collaborative management/birth center programs in their array of covered or offered services." *–D. Hollander*

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Despite Profile Suggesting Low Risk, Indian-Born U.S. Mothers Have High Levels of Some Poor Birth Outcomes

Compared with white mothers born in the United States, Asian Indian mothers who have immigrated to the country have a lower prevalence of several social and demographic risk factors for poor birth outcomes; nevertheless, according to a population-based study conducted in California, they are more likely to have a low-birth-weight or premature infant, or to experience fetal death.[1] Foreign-born Mexican mothers have a higher prevalence of risk factors than white mothers, but fare better on some birth outcomes. U.S.-born black mothers also have a higher prevalence of risk factors than white mothers, but their rates of most poor birth outcomes are the highest. Factors associated with reduced odds of white and black mothers' having a low-birth-weight infant do not show a similar pattern of associations among Asian Indian and Mexican mothers.

Researchers analyzed data from California's infant birth and death certificate files for the years 1995–1997. Ethnicity was self-reported. The birth outcomes assessed were low birth weight (less than 2,500 g); very low birth weight (less than 1,500 g); preterm birth (before 37 weeks' gestation); intrauterine growth retardation (birth weight less than the third percentile); and fetal and infant mortality. Analyses were based on about one million births, of which 48% were to U.S.-born non-Hispanic white women, 41% to foreign-born Mexican women, 10% to U.S.-born black women and 1% to foreign-born Asian Indian women.

Risk factors differed significantly, and often dramatically, by ethnic group. Larger proportions of Mexican and black mothers than of white mothers were teenagers (11% and 19%, respectively, vs. 8%), began prenatal care in the third trimester or had no prenatal care (7% and 6% vs. 4%), had deliveries that were paid for by Medicaid (72% and 55% vs. 23%), had a high school education or less (69% and 21% vs. 10%), and had a partner who had no more

than a high school education (61% and 11% vs. 7%). In contrast, smaller proportions of Asian Indian than of white mothers were teenagers (1% vs. 8%), had at most a secondary education (8% vs. 10%) and had deliveries that were paid for by Medicaid (18% vs. 23%).

During pregnancy, black women had a higher incidence of hypertension and a lower incidence of diabetes than white women. Among the immigrant groups, the incidence of diabetes was somewhat elevated, but Mexican mothers had a lower incidence of hypertension and placental bleeding problems than white mothers.

Rates of most poor birth outcomes were lowest in white mothers and highest in black mothers. Despite the sharply contrasting risk profiles, Asian Indian mothers' rates of poor birth outcomes were fairly similar to those of black mothers, and rates for Mexican mothers more closely resembled those of white mothers.

Larger proportions of Mexican and black mothers than of white mothers gave birth prematurely (18% and 25%, respectively, vs. 17%) and had an infant with intrauterine growth retardation (3.3% and 7.2% vs. 3.0%). Similarly, Mexican and black mothers experienced higher fetal death rates (5–7 per 1,000 births) than did white mothers (four per 1,000). A larger proportion of black than of white mothers had infants with a low birth weight (13% vs. 6%) or very low birth weight (3% vs. 1%), whereas a smaller proportion of Mexican than of white mothers had low-birth-weight infants (5% vs. 6%). In contrast, larger proportions of Asian Indian than of white mothers gave birth prematurely (20% vs. 17%) and had an infant with a low birth weight (9% vs. 6%), a very low birth weight (1.4% vs. 1.0%) or intrauterine growth retardation (7% vs. 3%). In addition, Asian Indian mothers experienced a higher fetal death rate than white mothers (seven vs. four per 1,000 births).

The rate of deaths in the neonatal period (i.e., by four weeks of age) was higher among black than among white infants (five vs. three per 1,000 live births), but rates were similar for Mexican and white infants. Somewhat unexpectedly, Asian Indian infants also had a neonatal death rate similar to that of white infants. This was explained by a lower neonatal death rate among Asian Indian infants who had a low or very low birth weight, which compensated for the larger proportion of infants born at these weights. In the postneonatal period (four weeks to one year of age), black infants had a markedly higher death rate than whites (4.5 vs. 1.9 per 1,000 infants alive at four weeks), whereas Mexican infants had a lower rate (1.6). Asian Indian infants appeared to have the lowest mortality rate in this period (1.3), but the difference between this rate and the rate for white infants was not statistically significant.

In multivariate analyses of singleton births, white and black mothers' odds of having a low-birth-weight infant were higher if they had not completed high school than if they had (odds ratio, 1.2 for each); the odds were reduced if they had completed college (0.8 for each) or had some college education (0.9 for each). White and Mexican mothers had an elevated likelihood of this outcome when the infant's father had not completed high school (1.2 and 1.1); the likelihood was reduced for all four ethnic groups when the father had completed college (0.8–0.9), and for black and white mothers when the father had some college education (0.9 for each).

Compared with their counterparts aged 20–34, Mexican and Asian Indian teenagers had increased odds of having a low-birth-weight infant (odds ratios, 1.4 and 3.4), but black teenagers had reduced odds of this outcome (0.8). Women aged 35 or older had increased odds in all four ethnic groups (1.3–1.6). The likelihood was elevated for black and white mothers when prenatal care started in the second trimester (1.1 for each), and for all mothers when this care began in the third trimester or did not occur (1.2–1.8). White, black and Mexican mothers had elevated odds when their delivery was covered by Medicaid (1.1–1.3) or they paid for it themselves (1.3–2.0).

The odds of having a low-birth-weight infant were elevated in black, white and Mexican mothers who had hypertension during pregnancy (odds ratios, 1.9–3.7), but were reduced in white and Mexican mothers who had diabetes during pregnancy (0.9 for each). Mothers of all ethnicities had sharply elevated odds if their pregnancy was complicated by preeclampsia or eclampsia (3.8–7.6) or by a placental bleeding disorder (4.3–9.7). The odds were also increased in each group for mothers whose infants were female (1.0–1.2).

The researchers contend that the findings reveal a new "epidemiologic paradox" in foreign-born Asian Indian women that, like the documented paradox in foreign-born Mexican women, cannot be fully explained by known risk factors. Maternal diet, social support, attitudes toward pregnancy and stress may be among the unidentified factors influencing birth outcomes, they note. The dual paradox highlights "the need for continued research directed at understanding the mechanisms by which social factors influence perinatal outcomes," they conclude.–*S. London*

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Treating Common Vaginal Infections May Lower Women's Herpes Risk

Women have roughly doubled odds of having herpes simplex virus type 2 (HSV-2) infection if they have abnormal vaginal flora or if they have ever had an uncircumcised sex partner, and their odds are increased by half if group B *Streptococcus* is present in the vagina.[1] These "previously unidentified associations," found in a cross-sectional study among young, nonpregnant women in Pittsburgh, could point the way toward new interventions for reducing the incidence of genital herpes, according to the researchers, who describe the disease as "a significant public health concern." Other findings support independent associations between HSV-2 infection and recent smoking or douching (which have received little research attention), as well as more established risk factors.

To identify new and potentially modifiable factors associated with HSV-2 infection in women, researchers conducted a study among gynecologic patients at three Pittsburgh-area health clinics during 1998–2000. Women were eligible for the study if they were aged 18–30, were not pregnant, did not have vaginal bleeding and had not used vaginal products in the 24 hours before their examination. The women provided background information during interviews. Serum samples from the women were assayed for antibodies to herpes simplex virus type 1 (HSV-1) and HSV-2 (the more common cause of genital herpes). Vaginal swab and smear specimens were cultured for an assessment of the presence of various microorganisms; on the basis of these results, women were classified as having normal flora, intermediate flora or bacterial vaginosis. Tests for trichomoniasis and gonorrhea were done in some women.

The majority of the 1,207 women included in analyses were white (62%); about a third were black (34%), and the rest were of other ethnicities (4%). Laboratory test results indicated that 25% were infected with HSV-2; only 14% of these women were aware that they were infected.

At the univariate level, the prevalence of HSV-2 infection varied significantly according to a wide range of demographic and behavioral characteristics, women's history of reproductive tract infections and findings on their vaginal flora. Using these results, the researchers conducted logistic regression analysis to determine which factors were independently associated with HSV-2 prevalence.

In the multivariate analysis, black women's odds of being infected with HSV-2 were more than three times those of white women (odds ratio, 3.2). Compared with 18–20-year-olds, women aged 21–25 had a one-half increase in odds (1.5), while women aged 26–30 had nearly tripled odds (2.7).

The odds were elevated by half for women who reported smoking or douching in the past four months (odds ratio, 1.5 for each) and were similarly increased for women who reported having five or more male sex partners in their lifetime (1.4). Compared with women who had never had an uncircumcised sex partner, women who had ever had such a partner had more than doubled odds (2.2) and women who were unsure had nearly tripled odds (2.9).

Women's odds of having HSV-2 infection were about doubled if they had ever had bacterial vaginosis (1.8), gonorrhea (1.9) or trichomoniasis (2.3); the odds were elevated by half for women who had group B *Streptococcus* present in the vagina (1.5). In addition, compared with women who had normal vaginal flora, women who had intermediate flora or bacterial vaginosis had roughly doubled odds of infection (1.7 and 2.2, respectively). Similarly, among the women who were tested for trichomoniasis and gonorrhea, the odds of HSV-2 infection were twice as high for women who had altered vaginal flora and women who had bacterial vaginosis as for those with normal vaginal flora (2.2 and 1.9).

Some of the factors that this study links to HSV-2 infection are modifiable and could be targeted by prevention interventions, but as the researchers note, longitudinal studies will be needed to determine if they increase women's susceptibility to HSV-2 infection. Confirmation that bacterial vaginosis increases a woman's risk would have important implications because it is the most common vaginal infection, yet it can be effectively and inexpensively treated, the investigators contend. Noting that HSV-2 infection may also promote HIV infection, the researchers conclude that "in the absence of vaccines that effectively prevent the acquisition of HIV or HSV-2, treatment of [bacterial vaginosis] may represent a cost-effective means of slowing the transmission of these viruses."–*S. London*

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Clinician Support May Play A Role in Mothers' Decision To Continue Breast-Feeding

A range of modifiable factors, including clinician support, may encourage mothers to continue breast-feeding their infants. A study in a Northern California health maintenance organization found that women whose health care providers had encouraged breast-feeding had reduced odds of discontinuing by the 12th week postpartum (odds ratio, 0.6).[1] In contrast, women with depressive symptoms, and those encountering difficulties breast-feeding at school or on the job, had elevated odds of discontinuing (1.2–3.2).

The study involved 1,007 low-risk, breast-feeding mothers, along with their infants, enrolled during their postpartum hospitalization at a managed care hospital in Sacramento in 1996–1997. Enrollment criteria included a birth weight of 2,500–4,600 g and anticipated hospital discharge within 48 hours. Data were collected at three study interviews and through patient chart review. At an in-person interview during hospitalization, nurses asked the women about their confidence in their ability to breast-feed, whether they had taken a breast-feeding class and whether they thought breast-feeding is important. In a telephone interview at two weeks postpartum, a researcher administered a validated, 20-item depression instrument and asked about the father's support of breast-feeding and how much difficulty the woman had had breast-feeding during days 2–3. In another telephone interview, at 12 weeks, women reported whether they had returned to work or school, and whether they had problems breast-feeding in these environments; they also reported on whether a clinician had encouraged their breast-feeding. At all interviews, women reported whether they had stopped exclusive breast-feeding (i.e., fed the infant more than 12 oz. of formula daily) and, if so, when and why. Variables showing significance in preliminary analyses were included in multivariate logistic regression analysis to assess which ones were independently associated with breast-feeding discontinuation.

The study cohort comprised mostly white (62%), married (89%) women; the average age was 28. All but 6% of women had completed high school, and three in 10 had an annual household income exceeding $55,000. Almost all the women had received first-trimester prenatal care. Forty-one percent of participants had not given birth before; for 35%, this was their second child. The majority of participants perceived breast-feeding as very important (94%), were very confident in their ability to breast-feed (68%) and had had no serious problems with breast-feeding the infant at days 2–3 (79%). Slightly more than one-third had taken prenatal breast-feeding courses (36%). Most reported receiving "a great deal" of support for breast-feeding from the baby's father (83%), but recalled receiving no encouragement from clinicians (77%). By week 12, nearly half the mothers had returned to school or work (47%); exactly half of those who had returned reported having problems breast-feeding in these environments.

In the first week, 105 women discontinued breast-feeding. For half these women, the reason cited was lack of milk production (the infant was still hungry after being breast-fed) or infant problems with latching on or sucking. Forty-six percent of the 74 women who discontinued in weeks 2–3 cited insufficient milk production, breast pain or soreness, or return to work or school. Of the 112 women who discontinued in weeks 4–6, and the 53 in weeks 7–9, 62–67% cited insufficient milk production or return to work or school. In the three final study weeks, 58% of 19 women who discontinued cited return to work or school.

In multivariate analysis, women had significantly increased odds of stopping breast-feeding at or before the second week if they had lacked confidence in their ability to breast-feed (odds ratio, 2.8) or had had problems breast-feeding early on (1.5). The lower a woman's educational level, the higher her odds of discontinuing (1.5). Asian women were more likely than white women to discontinue (2.6). Odds of stopping within two weeks

were decreased if the woman had considered breast-feeding very important instead of not important (0.3).

The younger a woman was, the less education she had and the lower her household income, the greater her odds of stopping between the two-week and 12-week interviews (odds ratios, 1.2 each). The odds also were elevated for women who were Asian (2.3), had returned to work or school (2.4), had problems breast-feeding at work or school (3.2), or had scored in the lowest quartile on the depression screening instrument (1.2). Participants who had perceived breast-feeding as very important or received encouragement from a provider were less likely than other women to stop between weeks two and 12 (0.2 and 0.6, respectively).

The authors point out that their findings may not be generalizable to all U.S. women, because their cohort had higher levels of education, income and insurance coverage than the general population. In addition, because data on clinician encouragement of breast-feeding relied on retrospective self-reports, recall bias may explain the observed association between encouragement and discontinuation.

Nonetheless, the authors believe that their study "adds to the growing body of literature suggesting that support and encouragement to breastfeed from health care providers is associated with a higher likelihood of breast-feeding continuation." Finally, they note that "attention should also be paid to maternal mental health status...as a potentially modifiable factor in promoting breastfeeding continuation." *–C. Coren*

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Religious Teenagers May Have a Lowered Risk of Engaging in Unsafe Sexual Behavior

Black teenage women who frequently participate in religious or spiritual activities are more likely than those who do not to engage in behaviors and hold attitudes that lower their risk of acquiring HIV and other sexually transmitted diseases (STDs).[1] In a survey of Southern women in an STD prevention trial, young women who indicated a high degree of religiosity had significantly elevated odds of reporting that they felt able to communicate with partners and refuse unsafe sexual encounters, as well as increased odds of having positive attitudes toward condom use. These findings, as the researchers remark, may have implications for the design of faith-based initiatives to prevent STDs among young people.

The survey was conducted between December 1996 and April 1999 among women attending adolescent medicine clinics, health department clinics and school health classes in neighborhoods with high STD rates. To participate, women had to be 14–18 years old and had to have had voluntary vaginal intercourse with a man in the previous six months. The sample consisted of 522 teenagers, who completed self-administered questionnaires exploring their religious involvement and structured interviews focusing on their sexual behavior.

Most participants were older than 15 (65%), were in school (91%) and lived with a single parent (58% with their mother and 2% with their father). Seventy-two percent identified themselves as Baptists, 16% as Protestants and 2% as adherents of other religions; 10% reported no religious affiliation. Overall, the women in the sample reported a high degree of religiosity: Sixty-four percent of respondents scored above the median on a scale reflecting how often women attend religious services, pray or meditate, talk to others about religious or spiritual concerns, and speak with a religious or spiritual leader.

Between 57% and 68% of participants who scored high on the religiosity scale also scored above the median on scales measuring women's confidence in their ability to talk with partners about sex, confidence in their ability to refuse to engage in risky behavior and attitudes toward condoms. By contrast, 38–48% of women reporting low levels of religiosity scored high on the self-efficacy and condom scales, and the differences were statistically significant at the univariate level. Likewise, women with high levels of religious involvement were more likely than those with low religiosity to have begun having sex after age 14 (54% vs. 42%) and to have used condoms in the previous six months (88% vs. 12%).

Results of multivariate regression analysis confirmed most of the associations found at the univariate level. A high degree of religious involvement was associated with significantly elevated odds that women scored high on scales measuring their self-efficacy with regard to talking with a new or steady partner about sex, talking about STD and pregnancy prevention with a partner, and refusing to participate in unsafe sexual activity (odds ratios, 1.9–2.5); it was also associated with positive attitudes toward condom use (1.5). Women scoring high on the religiosity scale were more likely than those scoring below the median to have first had sex after age 14 (1.5); their odds of having used condoms at some time in the last six months appeared to be higher than those of less-religious women, but the difference was only marginally significant.

The researchers acknowledge that the study has a number of limitations; notably, because the sample comprised only black teenage women living in "high-risk social environments" in the South, the great majority of whom were Baptist, the findings may not be generalizable to males or to teenagers of other backgrounds. Nevertheless, the investigators conclude that faith-based programs may have a role to play in preventing HIV and other STDs among some teenagers. They note that their findings are consistent with the literature suggesting that such initiatives may be "acceptable, credible, and...effective ways to reach and educate African-Americans regarding HIV prevention."*–D. Hollander*

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Emergency Contraception Use Increases When Pills Are Provided in Advance

Women who receive an advance supply of emergency contraceptives have four times the likelihood of those who do not of using the method within one year, according to a study of women from an inner-city public hospital.[1] Advance provision of the method did not affect these women's contraceptive consistency or the types of methods they used. At the end of one year, a greater proportion of women provided with emergency contraception than of those in the control group knew of emergency contraception (91% vs. 70%), could correctly name or describe the method (71% vs. 52%) and knew the correct timing of its use (23% vs. 10%).

To determine whether advance provision of emergency contraception is associated with increased use of the method and with changes in contraceptive behavior and knowledge, researchers recruited a sample of 370 postpartum women newly discharged from a San Francisco public inner-city hospital between September 1998 and March 1999. Women were eligible to participate in the study if they had had a live birth, spoke English or Spanish and would be available within the next year for follow-up.

Trained researchers asked participants questions regarding their demographic characteristics, pregnancy history and contraceptive use. In addition, women's knowledge of emergency contraception was determined by their answers to two questions: "If a woman just had sex and thinks she might become pregnant, is there anything she could do in the next few days to prevent pregnancy or not?" and "Have you ever heard of morning-after pills, also called emergency contraceptive pills, or not?"

After women completed the baseline survey, 184 were randomly assigned to the emergency contraceptive group and 186 to the control group. Women in the emergency contraceptive group received one regimen of emergency contraceptive pills (containing levonorgestrel and ethinyl estradiol), a five-minute educational session on how to use the method and an educational brochure; women in the control group received only the standard counseling given to all women prior to discharge. Researchers reinterviewed participants by telephone six months and one year after the baseline survey (78% were available at six months, and 69% at one year). Researchers used bivariate analyses to examine differences between the two groups and within each group over time.

Overall, 72% of participants were Hispanic; the mean age of the sample was 25.6. The majority (73%) were married; 38% of women reported having had a previous unwanted pregnancy, and 17% had had an elective abortion. Two-thirds reported that their most recent pregnancy was unplanned; 29% of those pregnancies were because of contraceptive failure. There were no significant differences between the demographic characteristics of women in the emergency contraceptive group and those of women in the control group.

At baseline, 3% of women had ever used emergency contraceptives. Thirty-six percent reported knowing about emergency contraception; however, only 19% could name or describe a method, and 7% knew the correct timing for its use.

Over the one-year study period, 17% of women in the emergency contraceptive group used the method (88% of whom were first-time users), compared with 4% in the control group (71% of whom were first-time users); women in the emergency contraceptive group were four times as likely as those in the control group to use the method (relative risk, 4.0) and nearly five times as likely to use it for the first time (4.9). The differential in use was even greater among women who had unprotected sex at least once during the year: Women in the emergency contraceptive group had nearly six times the likelihood of those in the control group of having used emergency contraception (5.8). Three women in the emergency contraceptive group and two in the control group used the method more than once during the study period.

Overall, women were using contraceptives more consistently at one year than at baseline: Some 35–37% of women reported having used contraceptives most or all of the time at the initial interview, compared with 81–83% at the one-year interview. In addition, a greater proportion of women reported using very effective methods (i.e., sterilization, IUD, injectable, implant and the pill) at one year than at baseline (67–70% vs. 56–57%). Furthermore, 28–43% of exclusive condom users reported routine use of condoms at baseline, compared with 87–92% at one year. There were no differences between the emergency contraceptive group and the control group with regard to consistent contraceptive use or types of methods used.

Although women in both groups showed greater general and specific knowledge of emergency contraception at one year than at baseline, women in the emergency contraceptive group showed higher levels of knowledge for most measures. For example, at the one-year survey, a greater proportion of women in the emergency contraceptive group than of those in the control group had heard of emergency contraception (91% vs. 70%), could correctly name or describe the method (71% vs. 52%) and knew the correct timing of its use (23% vs. 10%). Interestingly, knowledge measures of the women in the emergency contraceptive group increased mostly between baseline and six months, whereas knowledge measures of women in the control group increased throughout the year. There were no significant differences between the groups and between interviews in either women's willingness or their reluctance to use emergency contraception.

Although advance provision of emergency contraception was associated with a significant increase in women's use of the method and did not affect their contraceptive behavior, the proportions of women who used the method were small. The researchers comment, "These low rates of use suggest that ready access is not the only issue. A lack of recognition of pregnancy risk has been shown to limit emergency contraception use." In addition, they mention that some women may choose not to use the method because they fear negative effects or believe that it is an abortifacient. The researchers suggest that future studies need to examine what motivates women to or prevents them from using the method appropriately. *–J. Rosenberg*

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