Risk of Adverse Pregnancy Outcomes Associated With Diabetes Varies by Women's Race and Ethnicity

Women with diabetes have an increased risk of adverse pregnancy outcomes, but the level of risk associated with the condition varies by racial and ethnic group, according to an analysis of births in New York City.[1] Among white, black, Hispanic and Asian groups alike, women with chronic or gestational diabetes had higher odds than their nondiabetic counterparts of having a first cesarean delivery (odds ratios, 1.2–2.9) or a preterm birth (1.2–3.4). Chronic diabetes was positively associated with the likelihood of having a low-birth-weight infant among white, Hispanic and Asian women (1.6–2.3), and gestational diabetes was negatively associated with this outcome among black and Hispanic women (0.7–0.8).

Using data from birth certificates, researchers studied births during 1999–2001. They conducted logistic regression analyses to test associations between two maternal risk factors—obesity and diabetes—and three adverse pregnancy outcomes—a first cesarean delivery, preterm birth (delivery before 37 weeks of gestation) and birth of an infant with a low birth weight (less than 2,500 g). The regression models were adjusted for social and demographic factors potentially affecting pregnancy outcomes (maternal age, marital status, birthplace and education; parity; payer for prenatal care; trimester in which prenatal care began; smoking and use of alcohol and drugs; and, in parts of the analysis, preeclampsia).

Analyses were based on live singleton births to 329,988 women, of whom 33% were Hispanic, 29% were white, 26% were black and 12% were Asian. The women were 28 years old, on average. Six percent were overweight or obese (weighing 200 lbs. or more) before becoming pregnant, and 18% gained excess weight (41 lbs. or more) during pregnancy. Fewer than 1% had chronic (type 1 or type 2) diabetes, but 4% developed gestational diabetes. In addition, about 1% each had chronic hypertension and pregnancy-induced hypertension, and 2% developed preeclampsia. Overall, 15% of the women had a first cesarean delivery, 8% had a preterm birth and 6% had an infant with a low birth weight. In general, black women had the highest prevalence of risk factors and poor pregnancy outcomes; white and Asian women tended to have the lowest prevalence.

In the overall population, relative to women who had a normal weight (100–149 lbs.) before pregnancy, women who were overweight or obese had increased odds of having a first cesarean delivery (odds ratios, 1.9–2.6), reduced odds of giving birth to an infant with low birth weight (0.7–0.8) and similar odds of preterm birth. And compared with their counterparts who did not gain excess weight during pregnancy, women who did had an increased likelihood of a first cesarean delivery (1.4), but a reduced likelihood of preterm birth (0.5) and of delivering a low-birth-weight infant (0.4). Chronic diabetes was positively associated with the odds of first cesarean birth (2.4), preterm birth (2.5) and delivery of a low-birth-weight infant (1.6). Gestational diabetes was also positively associated with the odds of a first cesarean birth (1.5) and preterm birth (1.3), but was negatively associated with the odds of a having a low-birth-weight infant (0.9).

In each racial or ethnic group, women who had chronic diabetes had elevated odds of a first cesarean delivery relative to their nondiabetic counterparts; odds were least elevated among Asian women (odds ratio, 2.0) and most elevated among Hispanic women (2.9). Similarly, women in all four groups who had chronic diabetes were more likely to have a preterm birth than were their counterparts without diabetes; odds were increased least among black women (2.0) and most among Hispanic women (3.4). White, Hispanic and Asian women who had chronic diabetes were more likely than their nondiabetic racial and ethnic counterparts to give birth to an infant with low birth weight (1.6, 1.7 and 2.3, respectively).

Racial and ethnic variations in risks associated with gestational diabetes were less marked. In all four groups, women with gestational diabetes had increased odds of a first cesarean delivery (odds ratios, 1.2–1.6) and of preterm birth (1.2–1.3). Black women and Hispanic women who developed gestational diabetes were less likely to have a low-birth-weight infant than were their racial and ethnic counterparts who did not develop diabetes during pregnancy (0.8 and 0.7, respectively).

"Although careful monitoring of diabetes during pregnancy can improve pregnancy outcomes for diabetic women," the investigators contend, "the longer-term public health approach should be to prevent type 2 diabetes and gestational diabetes by controlling women's weight over their lifetimes." They add that pregnancy and the postpartum period are a "window of opportunity" for counseling women about healthy behavioral changes. They suggest that "lifestyle changes in nutrition and exercise be promoted by all primary care providers, including obstetricians." —*S. London*

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Lesbians, Bisexual Women: Misperceptions of Risk Jeopardize Sexual Health

Women of all sexual orientations engage in sexual behaviors that put them at risk for acquiring HIV and other STDs, and should therefore receive counseling on prevention, although patterns of behavior differ by orientation.[1] In a cross-sectional survey among women in primary care settings, the reported prevalence of lack of condom use with a male partner was highest among heterosexual women (54%), the prevalence of regular substance use during sex was highest among bisexual women (36%), and the prevalence of sex with bisexual men was highest among lesbian women (36%).

Investigators administered anonymous surveys to women visiting 33 primary care medical facilities in 11 states and the District of Columbia during 1996–1997. Sampling was designed to achieve roughly equal numbers of heterosexual respondents and of bisexual or

lesbian respondents. The surveys asked about access to health care, use of screening tests, general health, substance use and demographic information. In addition, women were asked to indicate their sexual orientation, to provide information on sexual behaviors and on testing for HIV and other STDs, and to rate their perceived susceptibility to HIV infection.

The 1,304 women studied were, on average, 40 years of age. Most were white (83%) and had had at least some college education (92%). The majority (61%) had an annual household income of $40,000 or more. Some 49% of women reported that they were heterosexual, 40% that they were lesbian and 11% that they were bisexual.

Overall, 71% of women were married or in committed relationships. In the past year, 49% had had sex with men and 43% had had sex with women; on average, they had had 1.4 male and 1.5 female partners during this time. Among women who had had sex with men in the past year, 49% had never used condoms; 6% had had intercourse with bisexual men, and 2% with men who were injection-drug users. In addition, 23% of all women who had been sexually active in the past year said that they were always drunk or high on drugs during sex. Only 1% of women had had sex in exchange for money, drugs or shelter in the year before the survey. Some 59% of all women perceived their chance of HIV infection to be high, while 36% perceived that they had no chance of infection; 62% had ever been tested for the virus. In addition, 78% of women had ever been tested for another STD.

The prevalence of most of the sexual behaviors studied differed significantly by sexual orientation. The proportion of women who were married or in a committed relationship was highest among lesbians (78%), intermediate among heterosexuals (69%) and lowest among bisexuals (60%). Relative to other women, bisexual women had had more male sexual partners, and lesbians had had more female partners, in the past year. The proportion ever having used condoms with male partners in the past year was 94% among lesbian women, 75% among bisexual women and 46% among heterosexual women. Intercourse with bisexual men in the past year was markedly more prevalent among lesbians and bisexuals (36% and 22%) than among their heterosexual counterparts (3%). Some 6% of lesbian women had had sex with male injection-drug users in the year before the survey, while 4% of bisexual women and 2% of heterosexual women had done so. A greater proportion of bisexuals than of heterosexual and lesbian women reported always having been drunk or high during sex in the past year (36% vs. 24% and 19%).

Perceived susceptibility to HIV infection and testing patterns also differed significantly by sexual orientation. Thirty-nine percent of heterosexuals, 36% of lesbians and 23% of bisexuals perceived that they had no risk of HIV infection. The prevalence of HIV testing was 77% among bisexuals, 68% among lesbians and 54% among heterosexuals. Bisexual women also had the highest prevalence of STD testing (91%), followed by heterosexuals (79%) and then lesbians (73%).

Subsequent analyses focused on women who had had sex with men in the past year. Compared with their bisexual and heterosexual counterparts in this subgroup, lesbians averaged more male sexual partners during the year (2.4 vs. 2.2 and 1.4) and reported the highest prevalence of intercourse with bisexual men (36% vs. 22% and 4%). Some 38% of bisexual women were always drunk or high during sex, compared with 24% of heterosexuals and 12% of lesbians.

According to the analysts, the study's findings highlight the need for HIV and STD prevention programs for all women, regardless of their sexual orientation. They recommend a combination of nonjudgmental history-taking and counseling tailored to a woman's risky behaviors. "Universal principles of sexual risk reduction (applying to sexual partners of either gender) should also be discussed, particularly for younger patients or patients whose sexual identity is in flux," they assert.

The author of an accompanying editorial recommends that health care providers and researchers discard assumptions about lesbians, which contribute to the perception that this group is at low risk for STD transmission.[2] Such assumptions, she contends, stand in the way of effective prevention efforts and research. Greater insight into lesbians' social and sexual dynamics not only would help advance understanding of STD transmission in general, "but more immediately, would inform a cogent approach to counseling lesbians and other 'low-risk' women, and educating healthcare providers about STD-related risk and prevention," the editorialist concludes.—*S. London*

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Consistent Condom Use Reduces the Risk Of Type 2 Herpes Virus

The more consistently that sexually active men and women use condoms, the lower their risk of becoming infected with herpes simplex virus type 2 (HSV-2).[1] In a prospective cohort study among individuals at risk for infection, 6% became infected during an 18-month period. The risk of acquiring the virus decreased by almost 30% with each increase across three categories measuring how frequently condoms were used (during 0–25%, 25–75% and 75–100% of sexual acts). In contrast, the risk of acquiring herpes simplex virus type 1 (HSV-1) did not vary by pattern of condom use.

The men and women studied were participants in a trial of an HSV-2 vaccine subsequently found to be ineffective. The trial took place in 22 centers located in STD clinics. To be eligible, individuals had to be seronegative for both HSV-2 and HIV, and must have had in the past year at least four sexual partners or at least one STD. Participants provided demographic information and sexual history at baseline. Over the next 18 months, they made 11 visits, during which they gave blood samples for HSV testing, were asked about their sexual behavior (including condom use) and sexual partners since the last visit, received counseling about safer sexual behavior and were offered condoms. Associations between various factors and infection with HSV were assessed with Kaplan-Meier curves, log-rank tests, and bivariate and multivariate Cox regression models.

Analyses were based on 1,843 participants who were sexually active at some time during the study period. Three-quarters were men, and half were younger than 27. Almost two-thirds were white, nearly one-third were black and the rest were of other races or ethnicities. The majority of men (66%) and women (70%) were eligible for enrollment because they had had at least four sexual partners in the past year; the rest had had at least one STD (12% of men and 19% of women) or met both criteria (22% and 11%, respectively). One-third of participants were seronegative for HSV-1.

Participants' average level of sexual activity declined significantly during the study, from 2.2 sexual acts per week in the study's first quarter to 1.7 in its last quarter. The level of condom use also fell, from use during 49% of sexual acts to use during 43%, on average; the decline was mainly due to falling use among participants reporting no new partners. Condoms were used 0–25% of the time by 40% of participants, 25–75% of the time by 31% of participants and 75–100% of the time by 29% of participants; 12% of participants never used condoms, and 13% always did. The median number of new sexual partners during the study differed significantly among heterosexual men (three), men who had sex with men (seven) and women (two). In these subgroups, 15–17% of participants had at least one partner who had genital herpes.

During the study period, 6% of participants became infected with HSV-2. Men and women had a similar rate of infection (5.1–5.7 per 100 person-years), but blacks had a higher rate than whites (9.4 vs. 3.5 per 100 person-years). In multivariate analyses, the risk of HSV-2 infection was significantly higher among both women (hazard ratio, 1.8) and men who had sex with men (2.7) than among heterosexual men. Blacks' risk of acquiring the virus was almost four times that of whites' (3.8), and participants aged 27 or younger had more than half again the risk of their older counterparts (1.6). In addition, risk was roughly doubled among individuals who had a partner with genital herpes (2.3) and among individuals who had sex more than twice a week, on average (1.8).

At the extremes of the spectrum of condom use, 8% of never-users and 5% of always-users became infected with HSV-2. Infection occurred in 7% of participants using condoms 0–25% of the time, 5% of those using them 25–75% of the time and 5% of those using them 75–100% of the time. In multivariate analysis, with each one-category increase in condom use, participants' risk of infection fell by nearly one-third (hazard ratio, 0.7); moreover, the benefit was similar among men and women.

Among participants who were initially seronegative for HSV-1, 3% became infected with this virus during the study. Participants who had any new partners during the study had a risk of infection more than three times that of their counterparts with no new partners (hazard ratio, 3.2). Condom use was not associated with the risk of acquiring this virus, but analyses were limited because of the small number of participants who became infected.

Consistent condom use protects sexually active individuals against HSV-2 infection, the researchers contend, although protection is not perfect. (They add that the study did not assess whether participants used condoms correctly.) While antiviral therapy likely plays an important role in lowering the risk of transmission from a partner known to have genital herpes, "the use of condoms remains an important preventive strategy for sexually active persons who are at risk for HSV-2 infection," they conclude.

As recently as 2000, writes the author of an accompanying editorial, good evidence of the effectiveness of condoms for preventing genital herpes, as well as most other common STDs, was lacking; however, research in this area has since made notable gains, giving health care providers evidence to support their recommendations to use condoms.[2] Although other interventions hold promise for reducing STD transmission, the editorialist notes, condoms are "the best proven currently available means" for lowering the risk of infection. "Clinicians should tell their at-risk patients that condoms can substantially reduce their risk for these diseases if they use them regularly," he recommends.—*S. London*

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Easy Access to EC Increases Teenagers' Use, but Does Not Lead to Risky Behavior

Adolescent clinic clients who were given packs of emergency contraceptive pills to have on hand had a higher rate of use of the method during a six-month follow-up period than did their counterparts who had to go to a clinic to obtain it (44% vs. 29%), but the groups did not differ in their routine use of contraceptives or levels of risky sexual behavior.[1] These patterns did not differ from those observed among young adult women, and patterns of use among adolescents younger than age 16 were similar to those among older adolescents.

Researchers studied participants in a 2001–2003 trial among young women using clinics in the San Francisco Bay area who were not pregnant, did not wish to become pregnant and were using oral contraceptives, barrier methods or no method of contraception. Participants were randomly assigned to one of three groups: a pharmacy group, who were given instructions on how to get emergency contraceptive pills directly from a pharmacy without a prescription and free of charge; an advance provision group, who were given three packs of the pills in advance; and a clinic access group, who were told to return to the clinic if they needed emergency contraception, and who served as controls. At baseline and again six months later, participants were questioned about their contraceptive use and sexual behavior, and were tested for pregnancy and for chlamydia and herpes simplex virus type 2.

Analyses compared 964 adolescent women (15–19-year-olds) with 1,153 young adults (aged 20–24). In addition, comparisons were made among three groups of adolescents—youngest (age 15), middle (16–17) and oldest (18–19). Nine percent of adolescents were in the youngest group, 41% were in the middle group and 50% were in the oldest group.

Adolescents were racially and ethnically diverse. One-fifth had used emergency contraception in the past six months. On average, they had been 15 years old at first intercourse, and one-quarter had been pregnant. Twenty-four percent had had an STD or had chlamydia or herpes diagnosed at enrollment. Although 37% strongly wanted to avoid pregnancy, 52% had had unprotected sex in the past six months. Overall, 59% of adolescents used condoms as their only method of contraception, and 8% did not use any method; for both measures, the proportion was highest among the youngest group.

In all, 36% of adolescents used emergency contraception during the six-month study period; the proportion was 44% for the advance provision group, 30% for those given pharmacy access and 29% for the clinic access group. The level of use among adolescents given advance supplies of pills was significantly higher than the level among their counterparts given clinic access; use by the pharmacy access group did not differ from that of either the advance provision group or controls. The level of use was similar across adolescent age-groups: 33–38%.

Measures of routine contraceptive use and sexual risk-taking did not differ by ease of access to emergency contraception. During the study period, nearly equal proportions of adolescent women in all three access groups had

unprotected intercourse, consistently used condoms, were pressured into having sex, had more than one sexual partner, acquired an STD and became pregnant.

The proportion of adult women who used emergency contraception (24%) was somewhat smaller than that among adolescents. However, as was the case among adolescents, the level of use was significantly higher in the advance provision group than in the clinic access group (32% vs. 14%), while the level did not differ between the pharmacy access and clinic access groups.

Among all women using emergency contraception, the proportions using it only once were similar among adolescents and adults (62% and 65%, respectively). In addition, nearly all users took the pills correctly (93% of adolescents and 94% of young adults); the level of correct use was especially high among the youngest adolescents (97%).

In logistic regression analyses, women given advance supplies of emergency contraception were significantly more likely than those with clinic access to use the method (odds ratio, 2.3); the only difference among access groups in risk-related behavior was that women with pharmacy access had reduced odds of unprotected intercourse (0.7). Adolescents in different age-groups did not differ with respect to use of emergency contraception or with respect to measures of routine contraceptive use and sexual risk-taking. Compared with 16–17-year-olds, young adults were less likely to use emergency contraception, to have unprotected intercourse, to use condoms consistently and to become pregnant (0.5–0.6). Results of interaction analyses indicated that when given advance access to emergency contraception, 15-year-olds were no more likely than 16–19-year-olds to use it. Moreover, when given advance access, the youngest adolescents had a reduced likelihood of acquiring an STD (0.1).

The researchers note that the U.S. Food and Drug Administration specifically cited a lack of data among women younger than 16 when it decided not to make emergency contraception available over the counter. This study, they assert, provides such data and refutes many of the concerns about easing access to this method for adolescents, particularly young adolescents. They contend that the finding that adolescents are more willing than older women to use the method when needed "suggests that a policy change toward greater access to [emergency contraception] could be of particular benefit to this age group."—*S. London*

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Duration of Breast-Feeding Is Up in Swiss Hospitals That Encourage the Practice

In the 10 years after Switzerland introduced the Baby-Friendly Hospital Initiative (BFHI), a program designed by UNICEF to ensure that maternity facilities encourage breast-feeding, the median duration of any breast-feeding increased from 22 to 31 weeks nationwide.[1] Although the change cannot be attributed entirely to the initiative, an analysis of individual and hospital data indicate that use of specific practices to promote breast-feeding on the maternity ward, hospitals' BFHI certification status and hospitals' level of compliance with initiative criteria all were associated with a significantly elevated likelihood of breast-feeding.

In 2003, researchers distributed surveys to a randomly selected national sample of women who had given birth in the past nine months. Mothers were asked for information about their pregnancy and birth and about the hospital where they delivered. They also were asked what they had fed their infant in the past 24 hours and how old the infant had been when they introduced various foods and liquids. Feeding practices were categorized as exclusive breast-feeding (feeding of breast milk only), predominant breast-feeding (feeding of breast milk plus water-based liquids), full breast-feeding (the sum of exclusive and predominant breast-feeding) and any breast-feeding. For comparison, the researchers used selected data from the previous national survey on breast-feeding, conducted in 1994, the year after the BFHI was introduced. In addition, hospitals' BFHI certification status was determined, and monitoring data collected from hospitals that were certified or being evaluated for certification were analyzed to assess their level of compliance with BFHI criteria.

The study sample included 2,812 mothers and their 2,861 infants aged 0–11 months, born in 146 hospitals. The mothers had an average age of 32 years, and 89% were married. A large majority (81%) were Swiss nationals. Some 14% of mothers and 20% of fathers had college degrees. Three-fourths of the mothers were employed before their delivery. For half, the birth was their first. Nine in 10 of the infants were aged 2–9 months. Their birth weight averaged 3,210 g, but 6% weighed less than 2,500 g. Sixty-two percent of infants were born in hospitals that had achieved or were being evaluated for baby-friendly certification; 18% were born in ones with high compliance with BFHI guidelines, 26% in ones with low compliance and 18% in ones with unknown compliance.

The median duration of any breast-feeding was considerably longer in 2003 than in 1994 (31 vs. 22 weeks); the median duration of full breast-feeding increased from 15 to 17 weeks over the decade. Maternal age, education and annual income were all significantly and positively associated with the duration of exclusive, full and any breast-feeding.

A variety of practices that are among the BFHI certification criteria and that mothers experienced on maternity wards—feeding breast milk exclusively, rooming in, first suckling within one hour, breast-feeding on demand, absence of pacifiers and no provision of free infant formula—were also significantly and positively associated with median durations of exclusive, full and any breast-feeding. Conversely, in multivariate analyses, lack of each of these practices was associated with a significantly elevated risk that such breast-feeding would not occur. The association was strongest for types of liquids fed on the maternity ward: Compared with infants fed exclusively breast milk at that time, infants also fed formula had a more than doubling of the risk of not being exclusively breast-fed, fully breast-fed and breast-fed at all (adjusted hazard ratios, 2.1–2.3). Similarly, relative to their counterparts fed only breast milk on the maternity ward, infants also fed water-based liquids had elevated risks of these outcomes (1.2–1.5).

Hospitals' BFHI certification status also was significantly associated with breast-feeding practices. For example, among infants younger than four months of age, 60% of those born in BFHI-certified hospitals were exclusively breast-fed, compared with 51% of those born in hospitals being evaluated for certification and 49% of those born in non–baby-friendly hospitals. The corresponding proportions of infants fully breast-fed were 72%, 64% and 60%. Patterns were similar (although proportions were somewhat lower) among infants younger than six months of age.

Finally, hospitals' level of compliance with BFHI criteria was significantly associated with breast-feeding. For example, in adjusted analyses, the median duration of exclusive breast-

feeding was six weeks among infants born in non–baby-friendly hospitals, 10 weeks among those born in baby-friendly hospitals with low compliance and 12 weeks among infants born in baby-friendly hospitals with high compliance. Patterns were similar for full and for any breast-feeding. In Cox regression analyses, the risk of not being exclusively breast-fed was reduced among infants born in hospitals with low compliance (adjusted hazard ratio, 0.9) and more so among infants born in hospitals with high compliance (0.8) relative to infants born in non–baby-friendly hospitals. For full breast-feeding and for any breast-feeding, the association was significant only for infants born in hospitals with high compliance.

Commenting on the results, the investigators assert that introduction of the BFHI in Switzerland about a decade ago has been at least partly responsible for the improvements in breast-feeding practices observed nationally since then. They speculate that the initiative has indirectly influenced practices even at non-certified hospitals and has generally elevated public awareness about the benefits of breast-feeding. However, they add, further effort is needed to meet the goal of exclusive breast-feeding of infants for the first six months of life. Given the evident importance of hospitals' compliance with the initiative's criteria for prolonging the duration of breast-feeding, "monitoring of compliance in designated hospitals is indispensable for promoting the optimal effects of the BFHI," they contend.—*S. London*

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Colorado Prenatal Program Targeted at Specific Risk Factors Helps Reduce the Incidence of Low Birth Weight

Programs targeting specific factors that can increase a woman's risk of having a low-birth-weight infant may help reduce the incidence of this outcome, according to a study of women in Colorado participating in a targeted risk reduction prenatal program.[1] Nine percent of smokers who quit while pregnant had low-birth-weight infants, compared with 14% of those who did not quit. Similarly, among women who had not gained an adequate amount of weight before enrolling in the program, 7% of those who eventually gained sufficient weight, but 17% of those who did not, bore low-birth-weight infants. In addition, a larger proportion of participants who resolved all of their risks while pregnant than of those who had resolved none of them had infants who were low-birth-weight (7% vs. 13%).

The researchers analyzed data from the Colorado Prenatal Plus program, a multidisciplinary, Medicaid-funded program that complements medical prenatal care and aims to improve birth outcomes. Women can participate if they are Medicaid-eligible and are at high risk for having a low-birth-weight infant. The program aims to identify specific risk factors for this outcome and target them by providing nutritional and mental health services, and services promoting healthy lifestyles (including smoking cessation). Women receive services during visits or contacts with staff throughout pregnancy. The study focused on three risk factors and their resolution by the end of pregnancy: smoking, for which resolution was defined as self-reported smoking cessation; inadequate prenatal weight gain, for which resolution was defined as achievement of weight within the recommended range; and psychosocial problems (such as depression, domestic violence or homelessness that caused severe stress), for which resolution was defined as addressing these problems so that they no longer existed or no longer caused severe stress.

Analyses were based on 2,377 women who received Prenatal Plus services in 2002 and remained in the program through delivery. Most were Hispanic (46%) or white (43%). One-third (31%) were teenagers, and three-fourths (74%) were single. Half (54%) had had fewer than 12 years of education.

When they enrolled in the program, 43% of women smoked, 57% had gained an inadequate amount of weight during the pregnancy and 81% had psychosocial problems. Moreover, 24–47% had some combination of two of the risk factors, and 20% had all three. By the end of their pregnancy, 51% of smokers had quit, 62% of women with inadequate weight gain had achieved their recommended weight and 55% of women with psychosocial problems had addressed them. Among women who had entered the program with two risk factors, 30–37% resolved both risks before giving birth, and among women who had had all three risk factors, 20% resolved all of them.

Overall, 10% of women gave birth to an infant with a low birth weight (less than 2,500 g). Among women who had initially smoked, a significantly smaller proportion of those who quit than of their counterparts who continued smoking delivered a low-birth-weight infant (9% vs. 14%). Similarly, among women who initially had had an inadequate weight gain, a smaller proportion of those who achieved their recommended weight than of those who did not had an infant who was low-birth-weight (7% vs. 17%). Resolution of psychosocial problems was not associated with the incidence of this outcome.

Among women who had entered the program with two risk factors, significantly smaller proportions of those resolving both risks (5–9%) than of those resolving neither (15–21%) gave birth to low-birth-weight infants. Among women who had had all three risk factors at enrollment, the proportion was markedly smaller among women who resolved all of the risks than among their counterparts who resolved none (3% vs. 19%). Finally, a smaller proportion of women who resolved all of their risks (regardless of number) during pregnancy than of those who resolved none had low-birth-weight infants (7% vs. 13%).

Four in 10 women received the full package of Prenatal Plus services (at least 10 visits or contacts), while the rest received a partial package. Larger proportions of those who received the full package of services than of those who received fewer services were able to resolve all of their risks (47% vs. 39%) or at least some of them (34% vs. 29%).

In contrast to most standard prenatal interventions, the researchers observe, the targeted and multidisciplinary intervention of the Prenatal Plus program reduces the rate of low birth weight among infants born to women at high risk for this outcome. While ensuring access to multidisciplinary support services is one consideration in improving maternal and infant health, they point out, the design of these services is just as important. "Interventions are more likely to influence birth outcomes if they are targeted to the resolution of specific risks," they contend.—*S. London*

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Skills-Oriented Counseling Holds Promise For Increasing Women's Use of Barrier Methods

Women who received skills-oriented counseling at an Alabama STD clinic used condoms and microbicides more frequently during the next six months than did women who received only information about the use and effectiveness of these methods, according to findings from a study comparing the interventions.[1] However, STD rates did not differ between the two groups. Regardless of which intervention women received, those reporting perfect condom use and those who used a vaginal microbicide at least half of the time had reduced STD rates during the follow-up period (relative risks, 0.3 and 0.5, respectively).

Study participants were recruited between 1992 and 1995; women were eligible if they were 18–35 years old, had not had a hysterectomy, were not pregnant and did not wish to conceive within the next six months. At enrollment, participants were randomly assigned to one of two intervention groups (basic or enhanced); completed a baseline interview that covered their background, medical, behavioral and psychosocial characteristics; received a pelvic examination; and were taught to record information about their sexual behavior and barrier method use in a daily diary. They also were asked to return for six monthly follow-up visits; at each visit, they were reinterviewed, received a pelvic examination, had their sexual diaries reviewed and returned unused method supplies.

For the basic intervention, a clinician spent 5–10 minutes with each woman, explaining the importance of using condoms and microbicides to prevent STDs; the women were given free supplies of the methods and two brochures on how to use them. For the enhanced intervention, women watched a 19-minute video that promoted safer sex and received 30 minutes of skills-oriented counseling, which covered the effectiveness of condoms and microbicides (used individually or jointly), how to use them and how to negotiate condom use with a partner. Participants in the enhanced intervention were given free supplies of the method of their choice and a variety of informational and promotional materials, including product samples to share with a friend. They received a supportive letter from the counselor shortly after the intervention, and viewed a video about condom use and negotiation skills at the first follow-up visit.

The researchers analyzed data on 213 women who received the enhanced intervention and 214 in the basic intervention group. The two groups had similar profiles: On average, the women were 25 years old and had had 12 years of education. The majority were black and single, and nearly half received food stamps. Sexual experience began early for these women, and half had been pregnant by age 17; most were using a contraceptive at the time of their initial visit. At enrollment, nearly three-quarters of women in each group reported having had an STD; laboratory tests of specimens taken during the first pelvic examination detected infection in about half of the women. In the 30 days before the baseline interview, one-quarter of women in each group had had more than one sexual partner. Twenty-six percent of women receiving the enhanced intervention and 19% of those in the basic intervention group had used condoms for every act of intercourse in the past 30 days; 42% and 45%, respectively, had not used them at all.

During follow-up, significantly higher proportions of women in the enhanced than of those in the basic intervention group reported keeping condoms at home (97% vs. 94%), carrying condoms with them (79% vs. 61%), asking a male partner to use a condom (63% vs. 57%) and putting a condom on a partner (43% vs. 25%). The frequency of these behaviors was higher after the intervention than at baseline in both groups, but the change was greater for women who had received skills-oriented counseling than for those in the information intervention.

Differences between groups in the use of condoms and microbicides during follow-up were highly significant: Condoms were used 69% of the time by women in the enhanced intervention group and 49% of the time by those in the basic group; microbicides were used 44% and 29% of the time, respectively. Twenty-one percent of episodes of intercourse among women who received the enhanced intervention and 35% among the basic group were not protected by either method. Joint use of the two methods increased more among women who had received skills-oriented counseling than among those who had received only basic information, and use of microbicides alone increased more among the latter.

Despite the behavioral differences between groups during the follow-up period, their rates of various STDs were statistically indistinguishable. To explore this finding, the researchers further analyzed the data according to consistency of method use and reliability of the diary data (as indicated by information collected during interviews and by interviewers' comparisons of supplies dispensed and unused). The findings suggest that women reporting perfect condom use—i.e., those with reliable diary data who used condoms consistently and reported no problems with the method—were significantly less likely than inconsistent users to acquire an STD (relative risk, 0.3). However, levels of perfect use were too low to have a measurable impact on the overall STD rate. Women who used microbicides 50% or more of the time had a lower STD risk than those who used these preparations less frequently (0.5).

The researchers observe that the enhanced intervention was substantially shorter than others that have had comparable results in increasing use of barrier methods. On the one hand, they infer that "it may be possible to teach critical skills in less time than is typically expended." On the other hand, they acknowledge that even 30 minutes may be more time than some clinicians can spend with individual patients. Although interventions excluding some of the components used in the Alabama clinic may yield similar results, the data do not permit an assessment of which elements could be omitted.—*D. Hollander*

REFERENCE

1. Artz L et al., A randomized trial of clinician-delivered interventions promoting barrier contraception for sexually transmitted disease prevention, *Sexually Transmitted Diseases,* 2005, 32(11):672–679.