Some Teenage Mothers Place High Priority on Avoiding Repeat Pregnancy in Their Early Postpartum Months

Among sexually active adolescents interviewed at urban clinics in Connecticut,[1] those who were pregnant were more likely than those who were not to report consistent use of hormonal contraceptives or dual methods six months later. By 12 months, the adolescents who were pregnant at baseline were still more likely to be consistent dual-method users, but the proportion reporting hormonal use had decreased substantially. The investigators infer that adolescent mothers may make a concerted effort to avoid a repeat pregnancy during their early postpartum months, but may have difficulty maintaining high levels of preventive behavior in the later postpartum period.

The participants, all aged 14–19 and nulliparous, were recruited in 1998–2000 at 10 clinics serving relatively poor communities in three Connecticut cities. Eligible teenagers were paid to participate in three structured, one-on-one interviews—at baseline, and six and 12 months later. At each interview, participants were tested for sexually transmitted diseases (STDs). Approximately half the 363 participants included in the analyses were pregnant, all in their third trimester, at baseline.

At baseline, researchers collected information on participants' social and demographic characteristics and sexual history. They also asked the women whether and on what proportion of occasions in the previous year they had used a condom or hormonal contraceptive (the pill, injection or levonorgestrel implant); at follow-up interviews, they asked about use in the past six months. At six and 12 months, participants reporting sexual activity in the previous six months were classified according to their consistency of method use—as consistent dual-method users, consistent users of hormonal methods only (used a hormonal, but not a condom, 100% of the time), consistent users of condoms only (used condoms always, but used hormonals less frequently or never) or inconsistent users (used neither method for at least one act of intercourse).

Investigators assessed any use of hormonals and condoms over time by using generalized estimating equations adjusted for social and demographic variables and sexual history. To assess consistency of method use for the two follow-up periods by baseline pregnancy status, they conducted multinomial logistic regression analysis adjusted for social and demographic variables, sexual history and baseline method use.

Among women pregnant at baseline and those not pregnant at baseline, the mean age was 17 years. In both groups, 39–44% of participants were Hispanic and 45–46% were black. Age at first sex was 15 years in each group; 29–30% of participants had had an STD in the past year. The proportion of women with a previous pregnancy was smaller among participants not pregnant at baseline than among those pregnant at baseline (23% vs. 51%). The nonpregnant group also had a smaller proportion of current students or high school graduates (11% vs. 23%). Among all participants, the median duration of sexual activity was 2.5 years, and the median number of partners per year of sexual activity was 1.2.

Of the women not pregnant at baseline, slightly more than half (52–59%) used a hormonal contraceptive in each study period. Pregnant women had predictably low use during the baseline period (18%) but subsequently reported a dramatic elevation in use (87%) for the early postpartum period. Although most of the women who were pregnant at baseline were still using a hormonal method in the later postpartum period (70%), the reduction in use from the first to second follow-up (17 percentage points) was statistically significant. For each follow-up period, the proportion of hormonal users among women pregnant at baseline differed significantly from that among women not pregnant at baseline. In contrast, the proportion of participants using condoms—throughout the study, in the range of 61–68% among women pregnant at baseline and 73–82% among the nonpregnant women—did not differ significantly at any time between the two groups and did not change substantially over time for either group.

In the first six months of follow-up, 23% of women who had been pregnant at baseline and 12% of those who had not been pregnant reported consistent dual-method use; 33% and 27%, respectively, were consistent users only of hormonals, 10% and 12% were consistent users only of condoms, 20% and 42% were inconsistent users, and 14% and 7% were not sexually active. During the second follow-up period, 16% and 10% used dual methods consistently, 30% and 26% used only hormonals consistently, 11% and 12% used only condoms consistently, 31% and 47% used both methods inconsistently, and 12% and 5% were not sexually active.

Pregnancy status at baseline was a strong predictor of contraceptive use throughout follow-up. At both six and 12 months, women pregnant at baseline were more likely than women not pregnant at baseline to be consistent dual-method users (relative risk ratios, 2.2–2.3) and not to be sexually active (4.6–6.0). In the first follow-up period, women pregnant at baseline also were more likely to be consistent users of hormonal methods (1.8).

Few other measures yielded similar results over time. Participants reporting recent hormonal use at baseline were more likely than others to be consistent users only of hormonal methods in each follow-up period (relative risks, 1.6–1.8). Women reporting no recent relationship at the six-month interview were more likely than women reporting a relationship lasting longer than six months to have had no sexual activity during either follow-up period (3.4–3.8).

In the first follow-up period, participants with fewer than 2.5 years of sexual activity or fewer than 1.2 sexual partners per year were more likely than others to use only condoms consistently (2.2–2.3). Participants aged 14–16 were more likely than older adolescents to be consistent users only of a hormonal method or to be consistent users of dual methods (1.7–1.8), and participants who had not been in a recent relationship were less likely than participants partnered for longer than six months to use dual methods consistently (0.3).

During the second follow-up period, young

women sexually active for fewer than 2.5 years were more likely than other participants to be consistent users only of hormonal methods (1.5). Reporting consistent use only of condoms at 12 months was more likely if the participant was Hispanic rather than white (2.6), or if she had had a recent STD (1.9).

Although the authors concede the potential for bias in self-reported data, they comment that their study reveals noteworthy findings. In particular, they suggest that the results reveal "an active attempt to prevent repeat pregnancy," but not necessarily STDs, in adolescents' early postpartum months. They also observe, however, that "the effect of becoming a mother on subsequent contraceptive use weakens over time." Therefore, they conclude that "a 'booster' intervention may be needed in the later postpartum period to further reinforce contraceptive behavior and maintain consistent contraceptive use."–*C. Coren*

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Women with HIV Have Changing Odds of Antiretroviral And Substance Abuse Treatment Around Time of a Birth

Patterns of treatment for HIV infection and substance abuse among pregnant, low-income women with HIV infection or AIDS are likely to change during the months before and after childbirth.[1] In an analysis of matched data from Medicaid records and an HIV/AIDS registry in New Jersey, the odds of using antiretroviral drugs among pregnant women with HIV or AIDS were elevated in the six months before delivery (odds ratio, 1.8), and the odds of obtaining treatment for substance abuse among those who had misused drugs or alcohol were elevated in the six months after delivery (1.5). Women who received obstetric and gynecologic care were more likely than those who did not to receive antiretroviral therapy or substance abuse treatment, regardless of the timing of care relative to delivery (1.5–1.9).

Using matched data from paid Medicaid claims and the New Jersey HIV/AIDS registry, researchers identified women with HIV or AIDS who had given birth between 1992 and 1998, and investigated how their receipt of any antiretroviral regimen, substance abuse treatment (among those with a history of substance abuse), and obstetric and gynecologic care varied in the six months before and after delivery. The analysis included women who had HIV infection or AIDS diagnosed before becoming pregnant, but not before 1992 or 1991, respectively; and who had filed a Medicaid claim between diagnosis and the end of 1998. The researchers classified women as having a history of substance abuse if they had Medicaid records of drug or alcohol abuse or dependence, drug withdrawal syndrome, hepatitis, opiate poisoning, drug or alcohol detoxification, or referral for rehabilitation from drug addiction. In addition, women who had contracted HIV through injection-drug use were assumed to have a history of substance abuse. To predict the likelihood of receiving antiretroviral therapy or substance abuse treatment during each month, the analysts converted data to person-months and performed multivariate logistic regressions that controlled for the time taken to enroll in Medicaid, demographic characteristics, year of diagnosis, initial diagnosis (HIV infection or AIDS), residence in a county with high HIV and AIDS prevalence, and receipt of obstetric and gynecologic care.

In all, 346 women gave birth during the study period. Some 67% of women were black, 21% Hispanic and 11% white. Roughly one-half were aged 21–29 at the time of delivery (52%) and diagnosis (53%). Seventy-eight percent of women had HIV infection as their primary diagnosis, whereas the remainder had AIDS. Nearly one-half (46%) of women had a history of substance abuse.

The proportion of women who were receiving antiretroviral therapy was significantly higher in the six months before delivery than in the six months after (45% vs. 37%). Similarly, the receipt of obstetric and gynecologic care was more common before delivery than after (71% vs. 38%). Substance abuse was less common before childbirth than after (20% vs. 25%), although the proportion of women with a history of substance abuse who obtained relevant treatment remained at roughly one-quarter.

In a logistic regression limited to women who had ever misused drugs or alcohol, the odds of treatment for substance abuse were 50% higher during a postpartum month than during a month outside the year surrounding a delivery (odds ratio, 1.5). The odds of treatment in a given month were also elevated among women older than 29 and those who received obstetric and gynecologic care (4.2 and 1.5, respectively). Black women were less likely than white women to be treated for substance abuse (0.4). All of these findings were essentially unchanged in a regression that also tested whether the timing of obstetric and gynecologic care relative to delivery was associated with the receipt of substance abuse treatment.

In a separate logistic regression that included all women and controlled for substance abuse, timing of obstetric and gynecologic care and substance abuse treatment, and months in which women had no history of substance abuse, the odds of receiving antiretroviral therapy were higher in an antepartum month than in a month outside the year surrounding a delivery (odds ratio, 1.8). In addition, women who received diagnoses after 1993 and those with AIDS rather than HIV infection had elevated odds of obtaining antiretroviral treatment (2.0–2.3). Black women and those who had never misused drugs or alcohol had a reduced likelihood of using antiretroviral drugs (0.5–0.6). However, not misusing drugs or alcohol during the six months before and after a delivery was positively associated with receipt of antiretroviral treatment (2.1–2.4). Finally, the likelihood of using antiretroviral drugs in a given month was higher among women who received obstetric and gynecologic care than among those who did not, and among women with a history of substance abuse who obtained treatment for this problem than among those with a similar history who did not obtain treatment (1.9 for each). However, the timing of obstetric and gynecologic care and of treatment for substance abuse did not predict whether women received antiretroviral therapy.

Concluding that "patterns of care before and after delivery are distinct" among pregnant, low-income women with HIV or AIDS, the researchers suggest that receipt of antiretroviral therapy may be greater before childbirth than after because of ongoing efforts to reduce mother-to-child HIV transmission, and that receipt of substance abuse treatment may be greater after childbirth because of efforts to reduce substance abuse during pregnancy and to minimize fetal exposure to drugs used in substance abuse therapy. The analysts also note that postpartum stress and depression may contribute to the decreased adherence to antiretroviral regimens, as well as to a "relapse to drug abuse for women with drug abuse his-

tories." Citing the association between obstetric and gynecologic care and the increased likelihood of treatment for HIV or AIDS and substance abuse, the investigators suggest that providers of obstetric and gynecologic care may have "untapped opportunities" to educate pregnant women with HIV or AIDS about antiretroviral therapy and to make referrals for substance abuse treatment when needed.–*T. Lane*

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Long-Term Use of Female Condom May Hinge Partly On Depth of Instruction

In the month after they were randomly assigned to an intervention that included the female condom in an array of strategies aimed at preventing unprotected intercourse, participants perceived the method to be more effective than nonparticipants did, were more likely to talk to their partners about it and were more likely to try it. However, data gathered during a trial of the intervention show that over the next several months, most differences disappeared, and most women who tried the female condom did not continue using it. The odds of continued use were increased if women felt sure of their ability to use the method, if they or their partners were satisfied with it, if they had negative or neutral feelings about male condoms, and if they had ever used the diaphragm.[1]

The 360 study participants were recruited from a family planning clinic in New York City in 1994–1997; after completing baseline interviews, they were randomly assigned to an eight-session intervention group, a four-session group or a control group. Women in both intervention groups were taught skills for negotiating with partners about male and female condoms; they also received information about the female condom, practiced inserting it into a pelvic model, received female condoms and strong encouragement to use them, and talked with other participants about their experiences in using the method. At baseline and in three follow-up interviews (at one, six and 12 months), women provided information about their sexual behavior, method use, communication with their partner about safer sex, perceptions of male and female condom effectiveness, overall impressions of these two methods and perceptions of their ability to use the female condom.

Participants were predominantly black (72%) and never-married (90%); their average age was 22 years. Before enrolling in the study, 58% had ever had a sexually transmitted disease (STD). Although 75% had used a male condom at some point in the previous three months, only 25% reported consistent use. Fourteen women had ever used a female condom. The majority of participants (76%) had had only one male partner in the past three months, but a substantial minority (41%) knew or suspected that their partner was not monogamous, and 18% said that he had recently had STD symptoms.

During follow-up, 109 women reported having used a female condom for the first time; most of them (76) had done so before the one-month interview. The main reasons women cited for first-time use were that they wished to try something new (47%) and they had attended the intervention (43%). Fifty-nine percent of first-time users were somewhat or very satisfied with the method, and 50% reported that their partners were at least somewhat satisfied with it. Half of those who tried the method considered it easy to use; most of those who found it difficult to use reported problems inserting the device. Of the 93 women who reported first use at the one- or six-month interview, only 21 also reported use at a subsequent interview.

At the one-month follow-up, intervention participants and controls reported significantly different attitudes and behaviors related to the female condom. Women in both the four- and the eight-session intervention groups gave the method higher effectiveness ratings than did those in the control group; women in the eight-session group also had significantly more positive views of it than did controls. Intervention participants had significantly elevated odds of having negotiated female condom use with their partner (odds ratios from logistic regression analysis, 10.3 for the eight-session group and 3.9 for the four-session group) and of having tried the method for the first time (9.5 and 4.4, respectively). Among first-time users, significantly higher proportions of women from the intervention groups than of controls were very or somewhat satisfied with the method (69–70% vs. 33%).

Far fewer differences were observed between intervention participants and controls later in the follow-up period. At six months, women in the eight-session group had significantly elevated odds of saying that they had talked with their partner about the female condom since the previous interview (odds ratio, 2.4); women in both intervention groups were likelier than controls to give this response at 12 months (3.6–3.7). Also at 12 months, women in the four-session group rated the female condom as more effective than did controls. Participation in the intervention was not associated with first-time use of the female condom at six or 12 months.

The researchers used logistic regression to examine the predictors of first-time and continued use of the female condom. Results indicated that the likelihood of first-time use was elevated among women who participated in the intervention (odds ratios, 5.4 for the eight-session group and 3.0 for the four-session) and those who had negotiated safer sexual behavior with their partner before enrolling in the study (1.8); it was lower among white women and those of other races than among blacks (0.2). Among the factors associated with continued use, several were related to the method itself: Women had increased odds of using the female condom more than once if they considered themselves able to use it (1.9), if they had an overall positive impression of it (3.5), if they were satisfied with it (2.3) or if their partner was (4.3). Other significant predictors of continued use were ever having used the diaphragm before entering the study (5.4), having negative or neutral feelings about the male condom at study entry (2.9), and having talked with a partner about the female condom between baseline and the one-month interview (5.3).

The researchers conclude that the female condom is "difficult for women to adopt without...extensive training in its use," including the opportunity to practice inserting the device. Additionally, they observe that although the method has been promoted as a feasible one to use in the absence of partner support, the finding that partner satisfaction predicted continued use suggests a need to make the female condom acceptable to men. They call for both individual-level interventions and policy changes such as increased promotion to help ensure that the method's potential to contribute to STD prevention is realized.–*D. Hollander*

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Relationship Type, Goals Predict the Consistency Of Teenagers' Condom Use

Adolescents who consistently use condoms during sex differ from those who do not in terms of the types of relationships in which they are involved, their goals in relationships and their motivations for having sex, according to a 2001 study of Dutch vocational high school students.[1] Among young people who had had sex with a steady partner but had never had casual intercourse, those who used condoms consistently had a more positive attitude about condom use and perceived more social pressure to use condoms, but needed less intimacy in a relationship and less often had sex to express love than those who engaged in unsafe sex. For those who had had casual sex, consistent condom use was positively correlated with perceived ability to use condoms in difficult situations, attitude regarding condoms and perceived social pressure to use condoms.

To examine whether certain behaviors, attitudes and motives regarding sex and condom use are associated with consistent condom use within casual and steady adolescent relationships, researchers recruited students from five Dutch vocational high schools to complete a questionnaire. Participants answered questions about their sexual history, condom use, attitude toward condom use, perceived social pressure to use condoms, perceived ability to use condoms in difficult situations (i.e., while drunk or highly aroused, when their partner does not want to and during unexpected sex), need for intimacy within relationships and motivations for having sex. The researchers analyzed the data using Pearson correlations, Student's t-tests and discriminant analyses.

Of the 701 students interviewed, 60% were male and 40% were female; their ages ranged between 15 and 23, and averaged 18. The vast majority (89–91%) were born in the Netherlands and still lived at home. Eighty-six percent had ever had a relationship, and 43% were involved in a relationship at the time of the study. Two-thirds of respondents had ever had sex; of these, one-third had had one partner, nearly a third had had two partners and slightly more than a third had had three or more partners. Almost all sexually experienced students (93%) had ever had a steady partner, whereas fewer than half (46%) had ever had a casual partner (defined as "someone with whom you do not have a relationship, 'one night stands'"). Respondents who were not sexually experienced were excluded from the analyses.

Among those who had had a steady partner, 23% reported using condoms always, 16% most of the time, 14% sometimes and 47% rarely or never; use of the pill and having known a partner for a long time were the most often cited reasons for inconsistent use or nonuse of condoms with steady partners. Among those who had had sex with a casual partner, 48% reported using condoms always, 28% most of the time, 10% sometimes and 14% rarely or never; use of the pill, unavailability of a condom, substance use and "it did not cross our minds" were the most often cited reasons for inconsistent use or nonuse of condoms. A greater proportion of men than of women had ever had casual sex (56% vs. 39%), and a greater proportion of women than of men had had unprotected sex (85% vs. 68%).

Lifetime number of sexual partners was negatively correlated with students' perceived ability to use condoms in difficult situations and need for intimacy within relationships ($r=-.13$ for both), and was positively correlated with the frequency with which they had sex to please others (.10), to enhance their mood (.15) and to experience pleasure (.14). Lifetime number of casual partners was positively associated with having sex to please others (.20) and to enhance their mood (.23).

Compared with respondents who had ever had casual sex, those who had never had casual sex considered themselves better able to use condoms in difficult situations and were more inclined to seek intimacy in relationships. Respondents who had had a casual partner, however, more frequently had sex to please others, to enhance their mood or to experience pleasure.

Among respondents who had had sex only with a steady partner, those who used condoms consistently had a more positive attitude about condom use and perceived greater social pressure to use condoms, but needed less intimacy in a relationship and less often had sex to express love than those who did not use the method consistently. Having a more positive attitude about condoms, perceiving greater social pressure to use condoms and having sex to express love were correlated with consistent condom use among both males and females. In addition, women who used condoms consistently, compared with those who did not, were more confident that they could use condoms in difficult situations and less often had sex to experience pleasure.

Among respondents who had had casual sex, consistent condom users were more certain that they could use condoms in difficult situations, had a more positive attitude regarding condoms and perceived greater social pressure to use condoms than those who used condoms inconsistently or not at all. Men who consistently used condoms within their casual relationships tended to have a more positive attitude about condoms, a greater perceived ability to use condoms in difficult situations and a stronger perception of social pressure to use condoms than those who had unsafe casual sex. Women who consistently used condoms within their casual relationships had a greater perceived ability to use condoms in difficult situations, expressed a greater need for intimacy within a relationship and were more motivated to have sex to please others or to express love than women who had unsafe casual sex.

The authors comment that according to their findings, the type of relationships in which adolescents are involved and the motivations adolescents have for engaging in sex are associated with consistent condom use. They suggest that interventions that "target specific subgroups and as such take into account the type of relationships (e.g., steady or casual) and the meaning of the relationship and sex itself would be even more effective in promoting safe sex."–*J. Rosenberg*

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Maternal Mortality Risk Rises with Cesarean Birth, Falls with Prenatal Care

Among the factors associated with maternal mortality, the "most mutable" are those to do with health care services. Two examples are the level of use of prenatal care and the rate of cesarean delivery, according to a population-based case-control study conducted in North Carolina.[1] Among women who had had a live birth, those who had a cesarean section were more likely than those who had a vaginal delivery to die within one year of childbirth because of the pregnancy or its management (odds ratio, 3.9). However, pregnancy-related mortality was less likely among women who

received any prenatal care than among those who did not (0.2).

To explore associations between pregnancy-related death and various aspects of health care service, researchers analyzed data from a North Carolina maternal mortality surveillance system, which matched death certificates, records of live births and fetal deaths, and autopsy or other medical reports. The researchers identified 400 women aged 10–50 who had died within one year of childbirth during 1992–1998, of whom 118 had had a live birth and died of causes directly related to or aggravated by the pregnancy or its management. To obtain unmatched controls, the researchers randomly selected 3,697 women from the 731,217 women who had had live births registered in the state in 1992–1998, ensuring that study and control groups were equally distributed over the seven-year period.

Overall, 55 deaths per 100,000 live births occurred during the study period and were attributable to any cause, and 21 per 100,000 live births were attributable to pregnancy-related causes.

Similar proportions of women in the study and control groups had received maternity care coordination assistance (30% and 23%, respectively), maternal and child nutritional services (45% and 42%), and prenatal care in a public rather than a private clinic (23% and 22%). Furthermore, similar proportions had received prenatal care that was classified as adequate according to the standards set by the American College of Obstetricians and Gynecologists (75% and 82%). However, cesarean deliveries were significantly more common among the study group than among the controls (52% vs. 16%), and the receipt of any prenatal care was more common among the control women than among those who died (99% vs. 94%). Univariate logistic regression confirmed that the likelihood of pregnancy-related death was associated with having had a cesarean rather than a vaginal birth (unadjusted odds ratio, 5.6) and with having received any prenatal care (0.2).

Further regression analyses revealed several confounding factors: Six medical conditions—eclampsia, pregnancy-induced hypertension, hypertension not induced by pregnancy, heart disease, fever during labor and diabetes—as well as older age and preterm birth (i.e., occurring before 37 weeks) were associated with significantly increased odds both of cesarean delivery and of pregnancy-related death. After adjustment for these factors, the odds of pregnancy-related death remained significantly higher among women who had had a cesarean birth than among women who had delivered vaginally (odds ratio, 3.9).

In addition, an annual income of less than $10,000 and an education below high school level were associated with an increased likelihood of pregnancy-related mortality and decreased likelihood of receipt of prenatal care. When these two confounders were accounted for, the odds of dying within one year of childbirth because of the pregnancy remained 80% lower among women who had received any prenatal care than among women who had not obtained such care (odds ratio, 0.2)

Finally, in a comparison of mortality by cause of death among all women who had had a live birth during the study period, rates for cesarean deliveries were consistently higher than those for vaginal deliveries. Overall, the rates of mortality attributable to pregnancy were approximately 36 per 100,000 cesarean deliveries and nine per 100,000 vaginal deliveries. The analysts therefore estimate that cesarean births quadruple a woman's risk of pregnancy-related death (relative risk, 3.9).

On the basis of these findings, the researchers suggest that the Healthy People 2010 objective of reducing maternal mortality to about three deaths per 100,000 live births "can be achieved through system changes." In particular, they continue, "improving use of prenatal care and lowering the cesarean delivery rate could potentially reduce pregnancy-related mortality in the United States."–*T. Lane*

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Reports to Police of Abuse During Pregnancy Signal Risk of Adverse Outcomes

Pregnant women who call the police to report that their partner has physically abused them are at increased risk of a number of adverse birth outcomes.[1] In a population-based study of women who gave birth in Washington State in 1995–1998, the odds of having a low-birthweight or very low birth weight infant, a preterm or very preterm birth, or an infant who died soon after delivery were significantly elevated among those who reported partner violence during pregnancy. Abused women were of lower socioeconomic status and had poorer obstetric histories than their nonabused peers, but the analyses controlled for these disparities and therefore indicate that these factors alone did not explain the differences in outcomes.

Using data from the Seattle Police Department and statewide birth and fetal death registries, the researchers examined the experiences of women aged 16–49 who had a singleton live birth or a fetal death during the study period. The analyses included 389 women who reported at least one incident of partner violence to the police during pregnancy and 3,090 women, matched by age, race and ethnicity to this group, with no such reports. Six birth outcomes were studied: low birth weight (less than 2,500 g), very low birth weight (less than 1,500 g), preterm birth (20–36 weeks' gestation), very preterm birth (20–31 weeks' gestation), fetal death at 20 or more weeks and neonatal death (before hospital discharge or, for infants delivered in a non-hospital setting, before completion of the birth certificate).

Abused and nonabused women had significantly different demographic and risk-related profiles. The proportions of women who had a high school education or less, received public health benefits, and had subsidized or no insurance were higher among those reporting violence than among others; the proportion who were married was lower among women who had been abused. Smoking and drinking during pregnancy were more prevalent among those reporting abuse than among nonabused women, as was receipt of inadequate prenatal care. Four in 10 abused women had never given birth before, compared with half of nonabused women. One-third of abused women had had an induced abortion, and one-quarter had had a spontaneous abortion; these proportions were all lower among those who were not abused. Likewise, the proportion who had experienced a fetal death, while small in both groups, was lower among nonabused than among abused women.

Findings from unconditional logistic regression analysis controlling for women's background characteristics showed that every study outcome except fetal death was independently associated with partner violence. Compared with women reporting no partner violence, those reporting any had nearly twice the odds of having a low-birth-weight baby or preterm delivery (odds ratios, 1.7 and 1.6, respectively), more than twice the odds of bearing a very low birth weight infant (2.5) and more than

three times the odds of having a baby who was very preterm or who died a short time after birth (3.7 and 3.5).

In addition to studying the overall cohort, the researchers looked separately at outcomes among women who experienced physical and nonphysical (i.e., psychological or emotional) partner abuse. Results for the 72% of women who were physically abused were similar to those for the whole cohort; for women reporting other kinds of abuse, however, most associations were not significant at the multivariate level.

Although the researchers acknowledge that the generalizability of police data is limited, they point out that such data are valuable in establishing that partner violence occurred while a woman was pregnant. They conclude that "when pregnant women are identified at the time of a reported incident, they should be provided health information and referrals to social, health, and crisis intervention services...because partner violence may be a strong marker for high-risk pregnancy." At the same time, the analysts urge health care providers to screen women for partner violence throughout pregnancy and the postpartum period.–*D. Hollander*

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Pregnancy Outcomes and Infant Health Suffer When A Woman's First Two Children Have Different Fathers

Norwegian women, like their counterparts in other developed countries, are increasingly changing partners between their first two pregnancies, and evidence from a population-based study suggests that this trend may have adverse implications for pregnancy outcomes and infant health.[1] The rate of infant deaths within one year and the proportions of infants who were delivered preterm and were low-birth-weight declined between the first two pregnancies if the father was the same, but they increased if different men were involved. Moreover, for the second infant, the odds of each of these outcomes were roughly doubled if the mother had changed partners since her first birth.

The researchers used the national medical birth registry to identify women who had at least two births between 1967 and 1998; the study included 488,141 women, of whom 31,683 had changed partners between their first two pregnancies. Data from the registry and from Norway's vital statistics system permitted the investigators to examine the incidence of infant mortality (deaths by age one), preterm delivery (before 37 weeks' gestation) and low birth weight (less than 2,500 g), as well as maternal characteristics. In logistic regression analyses controlling for mother's age and education, the period in which the birth occurred (1967–1976, 1977–1986 or 1987–1998) and, in the case of second births, the interval between births, the researchers compared the likelihood of these outcomes for women who had changed partners and those who had not.

Over time, the proportion of women whose first two children had different fathers rose steadily from 3% to 10%. Women's level of education also increased, and while a change of partners was most common among those with the least education in each period, the gap grew over the 30 years of the study: In the earliest period, 5% of women with the lowest level of education (10 or fewer years of schooling) and 2% of those with the highest level (more than 14 years) changed partners between pregnancies; in the most recent period, the proportions were 19% and 6%, respectively.

First-born infants of women whose partner did not change had a higher rate of mortality within one year than did second-born infants (8.3 vs. 6.7 deaths per 1,000 births); in contrast, first- and second-born infants with different fathers had nearly identical mortality rates (8.3 and 8.7 per 1,000, respectively). Results of the logistic regression analysis revealed that first-born infants' risk of dying by age one was the same regardless of whether their mother changed partners before conceiving again; for second-born infants, however, the risk was significantly elevated if different men were involved in the pregnancies (relative risk, 1.8).

Similarly, the proportion of deliveries that were preterm declined between the first and second births (from 5% to 4%) among women whose infants had the same father, but it increased (from 6% to 8%) among those who changed partners. Women who changed partners had a slightly elevated risk of delivering their first infant before term (relative risk, 1.2), but the increase in risk was even greater in the second pregnancy (2.0).

This pattern was repeated with regard to low birth weight. Among women whose first two children had the same father, 4% had a low-birth-weight first infant, and 3% a low-birth-weight second infant; however, second infants born to women who changed partners had a higher incidence of low birth weight than first-borns (7% vs. 6%). As was the case for preterm delivery, the risk of this outcome was elevated among women who changed partners, and the difference was more modest with the first birth (relative risk, 1.3) than with the second (2.5).

For second-born infants, the mortality rate decreased as the level of maternal education increased, regardless of whether the mother had changed partners between pregnancies. The incidence of preterm birth and low birth weight declined with increasing maternal education only if both infants had the same father. At each level of education examined, women who changed partners had a greater risk of adverse outcomes than those who had the same partner; the differentials generally were largest among those with the most schooling.

The researchers conclude that "changes in lifestyle or social circumstances may accompany change of partner, and these changes could be important." They stress, however, that whether women who change partners between pregnancies also adopt a "less healthy lifestyle" than others still needs to be investigated. –*D. Hollander*

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Odds of Single Motherhood Are Increased if a Child Is Valued as a Social Resource

Although research on nonmarital fertility has typically focused on economic factors, unmarried women may have children for reasons unrelated to economic motivations. Findings of an analysis of national, longitudinal data[1] suggest that unmarried women who highly value the social capital gained from childbearing may be more likely than other unmarried women to give birth. The analysis also shows that the odds of having a nonmarital birth are increased if the woman intends to

have a child in the near future, but the odds are decreased if she is sure that she does not want to have a child.

The study used data on unmarried, nonsterilized U.S. women participating in the 1987–1988 and 1992–1994 waves of the National Survey of Families and Households. The researchers examined whether selected fertility-related attitudes and intentions at Wave 1 were associated with having a live birth between Waves 1 and 2.

Of the 1,155 women included in the analyses, more than half were white (63%), and the rest were primarily black (28%) or Hispanic (8%). Most women had graduated from high school (86%); more than half (63%) had an annual income of $5,000–25,000. For each woman, the observation period included in the analyses involved the months from baseline until conception, marriage or Wave 2, whichever came first. Of the more than 50,000 person-months observed, 18% involved women who were cohabiting, 37% involved women who were working full-time, 49% involved women who had never given birth and 70% involved women aged 25–39.

In addition to gathering data on background characteristics, the Wave 1 survey asked each woman how important the value of children as a social resource, the economic costs of children and her career are to her when she thinks about potential childbearing. The social resource variable measured the importance of the following considerations in a woman's childbearing decisions: providing herself with something to do, someone to love or someone to care for her in older age; having at least one son and one daughter; providing a current child with a sibling; and providing her parents with grandchildren. The survey also collected data regarding women's attitudes toward nonmarital fertility and childbearing intentions.

Forty percent of women rated the importance of children as a social resource as low, 44% indicated that this consideration was of medium importance and 16% responded that it was highly important. The importance of economic costs was rated as low by 11%, medium by 36% and high by 53%; the importance of career was low for 21%, medium for 32% and high for 47%. Twenty-three percent of women agreed that it was all right to have children outside of marriage, 42% disagreed and 35% were neutral. When asked about their general intention for fertility, 43% felt at least moderately sure that they would have a future birth, 33% felt moderately sure that they would not and 24% were unsure. Fourteen percent intended to have a child in the next four years, whereas 86% did not.

Twenty-one percent of the women gave birth during the observation period. In a logistic regression model adjusted for numerous background characteristics, cost consideration was not associated with nonmarital conception, but the importance of children as a social resource and of career were. Specifically, nonmarital conception was more likely if the woman had attached high rather than medium importance to the consideration of children as a social resource (odds ratio, 1.5); however, conception was less likely if she had attached high rather than medium importance to the consideration of career (0.7).

In a model that added three variables related to fertility intention and attitude toward out-of-wedlock birth, the importance of career was no longer associated with the outcome variable, and the value for importance of children as a social resource merely approached the level of statistical significance. The three additional variables, however, did show significant associations. In particular, the odds of nonmarital conception were 50% higher for women who had planned to have a child within four years than for other women (odds ratio, 1.5). Women's odds were reduced by 40% if they had been sure of their intention not to have a child, rather than unsure of their fertility plans (0.6), or if they had disagreed that out-of-wedlock birth would be all right (0.6).

When all variables were considered in the logistic regression analysis, several background characteristics also were associated with the outcome variable. The odds of nonmarital conception in a given observation month were increased by 70–80% if the woman had at least two children rather than no children, if she was black instead of white, or if she was currently cohabiting (odds ratios, 1.7–1.8). The odds were increased by approximately 30% if the woman was employed full-time (1.3), and they were more than doubled if she was younger than 25 (2.3). A woman's odds of nonmarital conception were decreased, however, if she was aged 35 or older rather than 30–34, or if she had more than a high school education (0.1–0.6).

The researchers concede that their analysis could have benefited from inclusion of other types of data, such as characteristics of single fathers and the male-to-female ratio of eligible potential spouses. Nonetheless, they note that their findings of associations with background characteristics confirm results of previous studies and, more important, their other findings "break new ground by demonstrating that noneconomic fertility motivations play a significant role in nonmarital fertility." They conclude that "we need to move beyond economic factors and gain a fuller appreciation of the social rewards that induce unmarried women to have children."–*C. Coren*

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Heavy Drinking Is More Strongly Related to Fetal Growth Than Is Bingeing

Certain patterns of alcohol consumption shortly before conception and late in pregnancy are related to a woman's odds of giving birth to a full-term infant who is small for gestational age, according to an analysis of data from a multistate sample.[1] Overall, women who binged on alcohol in the three months before pregnancy had slightly reduced odds of having an undersized infant (odds ratio, 0.9), but among women who drank moderately to heavily in a typical week, bingers had increased odds of this outcome (2.2); heavy drinkers had essentially the same risk as nondrinkers. In contrast, binge drinking in the last trimester of pregnancy was not associated with the likelihood that an infant was small for gestational age, but heavy alcohol consumption at this time was associated with sharply elevated odds (4.3).

To assess relationships between a woman's drinking habits and the risk that her infant will be small for gestational age, researchers retrospectively analyzed data from 19 states participating in the Pregnancy Risk Assessment Monitoring System for the years 1996–1999. Social and demographic information was obtained from infants' birth certificates and from questionnaires and telephone interviews completed within six months after birth. Women were asked how many drinks they consumed in an average week during the three months before they conceived and the last three months of pregnancy, and were classified as nondrinkers, light drinkers (three or fewer drinks per week), moderate drinkers (4–13 drinks) or heavy drinkers (14 or more drinks) for each period. Women were also asked if they binged on alcohol (consumed at least five drinks at one sitting) during each period.

Descriptive analyses were based on 50,461 women who gave birth to a live singleton infant at full term (37–42 weeks' gestation). Most of the women were white (79%), aged 18–34 (83%) and married (66%) and were not receiving public assistance (81%). More than three-fourths had at least a high school education. Nearly half had a normal weight before conceiving, and 82% did not smoke in late pregnancy.

Weighted data from the survey suggested that 44% of women in the study population drank during the three months before pregnancy and 6% during the last trimester, but almost all drank lightly. The proportions of women who binged on alcohol during the same periods were much smaller (13% and fewer than 1%), and about half of these women binged only once.

Sixteen percent of women gave birth to an infant who was small for gestational age (had a birth weight below the 10th percentile for gestational age). The proportion was significantly higher among women who drank heavily before pregnancy than among women who did not drink during this period (12% vs. 8%), but proportions among women who did and did not drink during the last trimester of pregnancy were similar, regardless of the level of drinking. Among women who drank heavily before pregnancy, a significantly larger proportion of those who had binged than of those who had not gave birth to an undersized infant (14% vs. 3%); similarly, among women who drank heavily in the last trimester, a significantly larger proportion of those who also binged than of others had an infant who was small for gestational age (36% vs. 0.4%).

Risk analyses were based on the 39,709 women for whom complete data were available. In a multivariate analysis that took into account maternal age and education, number of cigarettes smoked during the last trimester and other potentially risk-related factors, alcohol consumption before pregnancy, regardless of the level of consumption, was not associated with women's odds of giving birth to an infant who was small for gestational age. In contrast, heavy drinking during the last trimester of pregnancy was associated with a quadrupling of the odds (odds ratio, 4.3).

Among women overall, those who binged on alcohol before conceiving had a small but significant reduction in the odds of giving birth to an undersized infant relative to those who did not drink or who drank but did not binge (odds ratio, 0.9). However, among the subgroup of women who drank moderately or heavily before pregnancy, binge drinkers had odds that were twice as high as those of non–binge drinkers (2.2). Binge drinking in the last trimester of pregnancy was unrelated to the odds of having an undersized infant among women overall; its relationship to this outcome among moderate to heavy drinkers could not be assessed because few women reported both patterns of drinking at that time. For each time period, the number of binges had no association with the odds.

The researchers speculate that any protective effect of binge drinking near the time of conception may be due to vascular effects of alcohol that aid placental development or to differences in unmeasured dietary factors between drinkers and non- drinkers. "A well-designed prospective study examining the relations between nutrition, alcohol use, prepregnancy weight, pregnancy weight gain, and fetal growth would be valuable in determining what advice about diet and alcohol consumption is appropriate for women planning to become pregnant," the researchers conclude. *–S. London*

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Current Hormone Therapy Use Linked to 30–100% Rise In Risk of Breast Cancer

Postmenopausal women who use hormone therapy have an increased risk of breast cancer, but the elevation of risk varies with the type of therapy, finds a nationwide British cohort study.[1] Current users of estrogen-only therapy had a roughly one-third greater risk of breast cancer than never-users of hormone therapy, while current users of combined estrogen-progestogen therapy had twice the risk of never-users. Among women currently taking hormones, the longer the use, the greater the increase in risk. In contrast, past users were at increased risk for breast cancer only if they had stopped therapy less than one year earlier. Current users of hormone therapy also had an elevated risk of dying from breast cancer, whereas past users did not.

To assess associations between type of hormone therapy and the incidences of breast cancer and fatal breast cancer, researchers recruited women aged 50–64 to the Million Women Study between 1996 and 2001. Women were not eligible if they had ever had cancer other than nonmelanoma skin cancer. All of the women underwent mammography at the start of the study and completed questionnaires that addressed social and demographic factors, menstrual and reproductive history, and use of hormones. The researchers used national registries to ascertain first diagnoses of invasive breast cancers and deaths due to breast cancers over time.

The cohort included nearly 1.1 million women, who were 56 years old, on average, at the start of the study. Overall, half had used or were using hormone therapy. All of the risk analyses were based on the 76% of women who were postmenopausal and for whom the time since menopause was known.

During an average period of almost three years, invasive breast cancer was diagnosed in 9,364 women. In an analysis that took into account age, time since menopause, number of live births, family history of breast cancer and other potentially risk-related factors, women who were using hormone therapy at the start of the study had a significantly higher risk of invasive breast cancer than never-users (relative risk, 1.7). In contrast, among past users, only women who had stopped taking hormones in the previous year had an increased risk (1.1).

Fifty percent of current users were taking both estrogen and progestogen, 41% were taking only estrogen, and the rest were taking other or unknown preparations. Relative to never-users, current users of estrogen-only therapy had a risk of breast cancer that was increased by about one-third (relative risk, 1.3), and current users of combined estrogen-progestogen therapy had a risk that was twice as high (2.0). Past users of these types of hormone therapy were not at increased risk.

For current users, the risk of breast cancer increased with the total duration of hormone use at the start of the study. Women who had been using estrogen-only therapy for less than five years and those who had been using it longer had 20–30% higher risks than never-users (relative risks, 1.2 and 1.3, respectively). Women who had been using estrogen-progestogen therapy for those durations had greater elevations of risk (1.7 and 2.2). Regardless of the total duration of use, the risk for past users was statistically indistinguishable from that for never-users.

The elevated risk of breast cancer in current users of estrogen-only therapy did not vary with the type or dose of hormone, and was the same whether the estrogen was administered orally, transdermally or through implants. Similarly, the relative risk in women using combined estrogen-progestogen therapy did not vary with the type of progestogen or regimen (continuous or sequential). Moreover, current users overall had a similarly elevated risk regardless of their age, family history of breast cancer or ever-use of oral contraceptives. However, current users who were underweight or had a normal body mass index consistently had a greater elevation of risk than current users who were overweight or obese.

During an average follow-up period of about four years, 637 women died of breast cancer. Compared with never-users of hormone therapy, current users at the start of the study had an elevated risk of dying of breast cancer (relative risk 1.2), whereas past users did not.

Physicians recommend combined hormone therapy mainly to women who still have a uterus, because estrogen-only therapy is associated with an increased risk of endometrial cancer. Thus, to put their findings in the larger context of women's health, the researchers estimated numbers of breast cancers and endometrial cancers associated with use of estrogen-only and estrogen-progestogen therapy by women with a uterus. For both types of therapy, 10 years of use by 1,000 women beginning at age 50 would lead to approximately 15–19 additional cancers by age 65. Most of the additional cancers in users of estrogen-only therapy would be endometrial cancers, whereas all of the additional cancers in users of estrogen-progestogen therapy would be breast cancers.

With the exception of the "substantial difference" in the elevation of breast cancer risk between estrogen-only and combined hormone therapy, the elevation of risk is not affected by specific features of the hormone therapy, the researchers note. In light of the estimated risk of breast and endometrial cancers together, they contend that combined hormone therapy seems to offer "little advantage" over estrogen-only therapy for women who still have a uterus. Longer follow-up will be needed to obtain reliable estimates of the influence of different types of hormone therapy on the risk of death from breast cancer, the researchers caution.–*S. London*

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