DIGESTS

Young Mothers' Disadvantage, Not Their Age Itself, Accounts for Their Children's Educational Problems

The children of teenage mothers have an elevated risk of educational problems and disabilities when they reach kindergarten, but this risk is not directly attributable to the mothers' young age.[1] Rather, a population-based study of Florida youngsters shows, their deficits are caused by socioeconomic and demographic factors that place their mothers at a disadvantage—particularly having a low level of education, being unmarried and being poor. By contrast, children born to women older than 35 have impairments and academic problems in kindergarten even when their mothers' background characteristics are taken into account.

The study was based on the records of 339,171 Florida-born children who entered public school kindergartens between the 1992–1993 and 1994–1995 academic years. From these records, the researchers determined whether a child was in a regular kindergarten class, a class for those with academic problems (i.e., mild educational difficulties) or a special education class designed for pupils with one of seven disabilities (physical or sensory impairment; profound, moderate or mild mental handicap; learning disability; or emotional handicap). Birth certificates yielded information on the mothers' age (which the researchers categorized as 11–17, 18–19, 20–35 or older than 35) and other characteristics; the child's receipt of free or reduced-price lunch at school was used as an indication of poverty.

Regardless of maternal age, the majority of children (62–70%) were in regular kindergarten classes, and most of the rest (28–35%) were in classes for youngsters with academic problems; fewer than 1% were in any type of special education class. To assess the association between maternal age and children's placement in a class geared toward academic problems or special needs, the investigators estimated odds ratios, using children born to 20–35-year-olds as the reference group.

In the first set of analyses, which did not control for any maternal background variables, children of both 11–17-year-olds and older teenagers had elevated odds of being in classes for pupils with profound mental handicaps (odds ratios, 1.9 and 1.6, respectively), mild mental handicaps (2.0 and 1.6), emotional handicaps (1.8 for both groups) and academic problems (1.4 and 1.3). Children born to women older than 35 had higher odds than those born to women aged 20–35 of being placed in classes for youngsters with physical impairments (1.5), moderate mental handicaps (2.3) and academic problems (1.1).

However, controlling for mother's education, marital status, poverty and race, as well as the child's sex, produced striking changes in the results for teenagers' children. In this set of analyses, these youngsters did not have increased odds of any adverse outcome and had significantly reduced odds of some: Compared with children born to women aged 20–35, those born to teenagers had lower odds of being placed in classes for pupils with moderate mental handicaps (0.6–0.7) and academic problems (0.90–0.96); youngsters born to older teenagers also had reduced odds of placement in classes for those with learning disabilities (0.7). Results for children born to women older than 35, by contrast, were essentially unchanged in the multivariate analysis, although these youngsters now had significantly elevated odds of being placed in classes for children with mild mental handicaps (1.4).

Adding perinatal factors (e.g., birth weight, labor complications and prenatal care) to the control variables did not affect the results for children born to either teenagers or older women. When parity was included, however, the protective effects of having a teenage mother disappeared. This finding, the researchers suggest, may reflect that children of teenage mothers have fewer siblings and therefore get more of their mothers' attention than youngsters with older mothers.

Further analyses, aimed at determining the relative importance of each control variable, showed that maternal education had the greatest effect on odds ratios. When this factor was dropped from the set of controls, all but one of the protective effects of being born to a teenager lost significance. Moreover, without maternal education as a control, children born to older teenagers had significantly elevated risks of being placed in classes for pupils with sensory impairments (odds ratio, 1.4) or emotional handicaps (1.2). Marital status, poverty and race also played important roles in predicting which children born to teenagers would have difficulties in kindergarten.

In a final set of analyses, the researchers explored the possibility of an effect of age among the youngest mothers. (Since all women who gave birth at ages 11–17 had a high school education or less, it was not possible to separate the effects of age and education in this group.) Basing their calculations on the children of women who were unmarried and poor (the vast majority of the youngest mothers), they found that for each year younger a teenager was when she gave birth, her child's chances of being placed in a class designed to address emotional handicaps increased by 44%, and the chances of placement in a class for youngsters with mild mental handicaps rose by 24%. White children suffered only from an increased risk of academic problems the younger their mothers were, but black kindergartners were increasingly likely to have moderate or mild mental handicaps, learning disabilities or emotional problems. Noting the lack of an association between maternal age and the most severe disabilities, the researchers conclude that environmental, rather than behavioral, factors may explain the disadvantages found among children of the youngest mothers.

The investigators point out that while maternal age per se does not appear to have an adverse effect on educational outcomes, it may have an indirect effect by influencing educational attainment, marital status and poverty status. "Fortunately," they conclude, "factors such as maternal education are [remediable], and intervention programs targeted at teenage moth-

ers…ameliorate some of the negative consequences of teenage parenting. These findings underscore the importance and value of high school graduation programs for teenage mothers."—*D. Hollander*

Reference

1. Gueorguieva RV et al., Effect of teenage pregnancy on educational disabilities in kindergarten, *American Journal of Epidemiology,* 2001, 154(3):212–220.

Condoms Reduce Women's Risk of Herpes Infection, But Do Not Protect Men

Using condoms during sexual intercourse significantly decreases the likelihood that men infected with herpes simplex virus type 2 (HSV-2) will transmit the infection to their female partners, according to the first study to examine the effectiveness of condoms in preventing this infection.[1] Women are almost six times as likely as men to acquire HSV-2. Increased frequency of sexual intercourse, younger age and having a partner who is infected with both herpes simplex virus type 1 (HSV-1) and HSV-2 increase the likelihood of acquiring HSV-2. Although using condoms more than 25% of the time offers women a high degree of protection against acquiring HSV-2, men do not receive the same benefits.

To assess whether using condoms reduces the transmission of HSV-2, researchers analyzed behavioral and demographic data from participants in two multisite HSV vaccine trials conducted in the mid-1990s. The study included adults who, at enrollment, tested negative for both HSV-2 and HIV ("susceptible partners"), and had been involved in a monogamous relationship for at least six months with an individual infected with HSV-2 ("source partners"). Susceptible partners were interviewed during an initial screening, where they were instructed to keep a diary of their sexual activity for the duration of the study. The diary was to include number of sex acts, whether condoms were used during intercourse, the partner's use of antiviral medication and number of new partners. The susceptible partners returned over the subsequent 18 months for routinely scheduled herpes testing.

Overall, 528 couples were included in the study. Of the susceptible partners, 267 were women and 261 were men, with a median age of 36 years. Ninety-two percent were white, and 98% were in a heterosexual relationship. Participants' median frequency of intercourse was twice weekly; half said that they had used condoms no more than 10% of the time since becoming sexually active. Of the source partners, 62% were seropositive for only HSV-2, while 38% were seropositive for both HSV-1 and HSV-2.

During the study's observation period, 31 (6%) of the 528 susceptible partners acquired HSV-2: 26 (10%) of the women and five (2%) of the men. Women acquired the virus at a rate of 8.9 per 10,000 sex acts—almost six times the rate of men (1.5 per 10,000 sex acts).

Using proportional hazards analyses stratified by gender and controlling for age, partner's serostatus and number of sex acts per week, the researchers investigated the influence of baseline characteristics on HSV-2 acquisition. They found that the susceptible partners' likelihood of acquiring the virus increased with each additional sex act per week (hazard ratio, 1.1) and each five-year reduction in age (1.6); the risk was doubled if the source partner was seropositive for both HSV-1 and HSV-2 (2.3). Participants who reported having used condoms more than 50% of the time throughout their lives were less likely to acquire the virus than those who reported less condom use (0.1).

The participants' mean frequency of sexual activity declined from 2.3 to 1.5 sex acts per week over the study's observation period. Condom use was low overall, with 61% of couples reporting ever using condoms. The use of condoms also declined throughout the study, from 27% to 21% of sex acts. Data on condom use were available for 22 people who acquired HSV-2 during the study; of these, 46% never used condoms, 36% used condoms for 1–25% of sex acts, 14% used condoms for 26–99% of sex acts and 5% always used condoms.

In a multivariate analysis of risks for HSV-2 acquisition during the study's observation period, controlling for age, condom use and number of sex acts per week, increased number of sex acts was again associated with an elevated risk of HSV-2 acquisition (hazard ratio, 1.2). Using condoms for more than 25% of sex acts was associated with a decreased risk of HSV-2 acquisition (0.3); however, when the data were analyzed by gender, condom use was highly protective for women (0.1) but had no significant effect for men.

The researchers note, "Our data indicate that condoms markedly reduce the risk of acquisition of HSV-2 in women, but not in men." They deduce that the reason for the difference may be that when used correctly, condoms fully cover the skin of the penis, from which the virus is shed, but do not protect men against exposure to all female genital sites from which the virus may be shed. The researchers point out that "contact with vulvar or perianal areas, the most common sites of viral shedding in women, may be a factor in the lower effectiveness of condoms in transmission from women to men." On the basis of their findings, the researchers estimate that more than 300,000 new cases of HSV-2 infection among women could be averted each year in the United States alone if condoms were used more consistently.—*J. Rosenberg*

Reference

1. Wald A et al., Effect of condoms on reducing the transmission of herpes simplex virus type 2 from men to women, *Journal of the American Medical Association,* 2001, 285(24):3100–3106.

New Analgesia Techniques For Labor Raise Chances Of Normal Vaginal Birth

Two alternatives to traditional epidural analgesia effectively reduced pain during labor and, moreover, increased the likelihood that women would have a normal vaginal delivery in a randomized controlled trial conducted in the United Kingdom.[1] Whereas 35% of women who were given a traditional epidural had a normal delivery, the proportion was significantly higher—43%—among women who received either of two newer types of pain relief that combine an opioid with a reduced concentration of the local anesthetic. The alternative techniques' benefits for delivery, however, were somewhat offset by the possibility that they have adverse effects on a small proportion of newborns.

Between February 1999 and April 2000, researchers at two maternity units randomly assigned 1,054 nulliparous women who requested pain relief during labor to receive one of three types of analgesia: a traditional epidural; a low-dose solution administered by spinal injection and followed by intermittent delivery of additional epidural analgesia (combined spinal epidural); or the same low-dose mixture delivered through continuous infusion. Women receiving traditional or low-dose injections could request additional doses as the analgesia wore off. Detailed information about labor and delivery were gathered by the anesthetist and midwife attending each delivery, and through interviews with participants conducted within 48 hours after the birth.

Thirty-five percent of women who received a traditional epidural had a normal vaginal delivery, compared with 43% in

each of the other groups; the differences were statistically significant. Instrumental vaginal delivery was required by 37% of women in the traditional epidural group, but by only 28–29% of those receiving low-dose alternatives; again, the differences were statistically significant. In all three groups, 28–29% of women delivered by cesarean section.

Slight variations in the characteristics of labor were noted among groups. The second stage of labor was more likely to be one hour or less for women who received a low-dose infusion (34%) than for those who had a traditional epidural (26%). Women in the infusion group also were more likely than those who had a traditional epidural to push for one hour or less (63% vs. 51%) and to say that they were able to push throughout labor (38% vs. 28%). In the postpartum interview, women in all three groups gave similar reports of the severity of pain they had experienced during labor.

Whereas a traditional epidural produces motor paralysis, the low-dose alternatives preserve muscle tone and permit women to remain mobile during labor. Thus, 30 minutes after receiving a low-dose combined spinal epidural or beginning low-dose infusion, the vast majority of women were able to flex their hips (89% and 80%, respectively), and about half (59% and 52%, respectively) could bend their knees; few were unsteady on their feet at this time. Nearly four in 10 women in both low-dose groups walked or stood during labor.

The researchers assessed the effects of the different regimens on newborns by comparing their Apgar scores five minutes after birth, need for resuscitation and rates of admission to neonatal intensive care units. Low Apgar scores (seven or less) were rare, and while differences were not statistically significant, the researchers point out that more infants in the low-dose groups than in the traditional epidural group scored in this range. Infants whose mothers had received a low-dose infusion were more likely than those whose mothers had a traditional injection to need high-level resuscitation efforts (5% vs. 1%), but rates of admission to intensive care units and the need for any resuscitation were similar for all three groups of infants.

According to the researchers, a number of mechanisms might explain why low-dose epidural techniques increase a woman's chances of having a normal vaginal delivery. The ability to walk during labor might, they note, aid the descent of the infant's head; the preservation of motor function also might help both "voluntary and involuntary maternal efforts to give birth" late in labor. Acknowledging that the benefits to women of low-dose epidural techniques must be weighed against "possible adverse effects" on a few infants, the researchers conclude that "continued routine use of traditional epidurals might not be justified."—*D. Hollander*

Reference

1. Comparative Obstetric Mobile Epidural Trial (COMET) Study Group UK, Effect of low-dose mobile versus traditional epidural techniques on mode of delivery: a randomised controlled trial, *Lancet,* 2001, 358(9275):19–23.

Factors Influencing Condom Use Depend Upon Whether A Woman Has Had a Sexually Transmitted Disease

Factors associated with condom use differ depending on whether a woman has a history of sexually transmitted disease (STD), according to a study of women attending public STD clinics in Alabama.[1] Women reporting a history of any STD had an increased likelihood of using condoms with their main partner if they viewed condom use as important in a long-term relationship, considered condom use common among their peers or perceived themselves to be at risk for STDs. On the other hand, women with no STD history had an increased likelihood of using condoms if they thought condom use was important in a trusting relationship, and a reduced likelihood of doing so if they were in a long-term relationship or had experienced violence in their relationship.

The data for this analysis were collected as part of a prospective study of the effectiveness of male and female condoms. Investigators recruited women between July 1995 and August 1997 at county STD clinics in Jefferson and Madison Counties, Alabama. Women were eligible to participate if they were 18–34 years old, were not pregnant or planning to become pregnant in the next six months, had not undergone a hysterectomy and were not receiving a long-term course of antibiotics. A female interviewer asked each participant about her socioeconomic characteristics; relationships with her main partner (i.e., husband or boyfriend) and other partners; condom use in the past 30 days with her main and other partners; sexual, reproductive and medical history; attitudes and beliefs regarding condom use; and perceived risk for HIV or other STDs.

Applying factor analysis to the interview responses, the investigators defined 18 predictive factors for condom use. They measured condom use in terms of the proportion of coital acts in the past 30 days in which a male condom was used; this proportion was calculated separately for main and other partners. In initial bivariate analyses, the investigators assessed the correlation between the predictive factors and condom use. They then used the predictors that were significant at $p<.01$ to construct binomial regression models assessing the factors associated with condom use for women overall and separately for those with and without a history of STD.

In all, 1,159 women participated in interviews. The majority of participants were black (84%) and had a high school education or less (63%); their average age was 24 years. Among the 45% of participants who were employed, median income was between $300 and $600 per month. Women had been in a relationship for 27 months, on average; 104 women reported having engaged in sex with someone other than their main partner during the past 30 days. Almost half (49%) of the women were currently using condoms for birth control.

In the bivariate analysis, use of condoms with one's main partner was significantly correlated with 13 predictive factors. Twelve of these remained significant in the overall regression analysis: Condom use with one's main partner was positively associated with how accepting the woman's partner was of her request to use condoms; the number of times the woman had put the condom on the man in the past 30 days; and the woman's perceptions of the convenience of condom use, the need for use in long-term and in trusting relationships, her risk of contracting HIV or other STDs from her main partner, and her peers' use of condoms (adjusted relative risks, 1.1–1.6). Use also increased as a woman's self-efficacy in using condoms increased (relative risk, 0.6 on a scale on which a low score indicates high self-efficacy). A woman's likelihood of using condoms with her main partner declined as her age, the duration of her relationship, her reported number of risk

factors related to drug use and her experience of violence in her relationship increased (adjusted relative risks, 0.7–0.99).

Only three factors were associated with condom use with a main partner both for women who reported a history of STD and for those who did not: the partner's acceptance of condom use requests (adjusted relative risks, 1.5 and 1.3, respectively), condom use self-efficacy (0.6 and 0.4, descending scale) and perceived convenience of condom use (1.3 and 2.9). In addition to these, a distinct set of factors were significantly associated with condom use for each group of women. Among participants who reported a previous STD, the likelihood of condom use with one's main partner was elevated for those who perceived condom use to be important in long-term relationships (1.5), viewed condom use as normative behavior among their peers (1.6), or felt at risk for acquiring HIV or other STDs (1.3); it also increased with the number of times a woman reported putting condoms on her partner (1.1). Women who reported no previous STDs had an increased risk of using condoms with their main partner if they considered condom use important in a trusting relationship (adjusted relative risk of 1.8); their likelihood of using condoms fell as the duration of their relationship and their experience of violence in the relationship increased (0.98 and 0.6, respectively).

Condom use with partners other than husbands or boyfriends was positively correlated in the bivariate analysis with women's lifetime number of sex partners; educational attainment; perception of the need for condom use in long-term relationships, of the convenience of using condoms and of peers' condom use; the number of times the woman put the condom on the man in the past 30 days; and condom use self-efficacy. One factor, more frequent condom application by the man, was inversely associated with condom use. None of these factors were significantly associated with condom use in the binomial regression analyses.

According to the investigators, their results "support previous findings on determinants of condom use and the need for theoretically based interventions addressing these important predictors." They note that their study is the first to investigate STD history as a modifying factor in condom use, and suggest that a woman's STD history "may be an important factor in targeting public health interventions to increase condom use."
—*A. Hirozawa*

Reference

1. Posner SF et al., Psychosocial factors associated with self-reported male condom use among women attending public health clinics, *Sexually Transmitted Diseases*, 2001, 28(7):387–393.

Risks and Disadvantages Are Raised for Teenage Mothers With Older Adult Partners

Teenage mothers with an older adult partner may engage in more risky behavior and live in less-favorable circumstances than those with a partner close to their age, according to analyses based on a sample of young mothers in Texas.[1] Twelve months after giving birth, young women with an adult partner five or more years their senior were less likely than mothers with a partner about their own age to be in school or working. They also were more likely to say that they use condoms infrequently, that their partner refuses to use condoms and that they had already had another planned pregnancy or were trying to conceive. The proportions reporting these circumstances were highest among young mothers who had an older partner and did not live with a parent or guardian.

All women who gave birth at a hospital in Galveston in the mid-1990s before age 19 were eligible to participate in the study if they identified themselves as Mexican American, African American or white; they planned to keep their baby; they had at least a fifth-grade reading and writing level (in English or Spanish); they had no major psychiatric disorders; and their infant was healthy and weighed more than 1,500 g. Participants were interviewed within 48 hours after delivering and agreed to complete a follow-up survey 12 months later that asked about their demographic and reproductive health characteristics, risk behaviors, experience with intimate partner violence, social support and current partners.

To study the effects on teenage mothers of having older partners, researchers divided the sample into two groups—312 women whose partner at follow-up was within two years of their own age and 184 whose partner was at least 20 years old and was five or more years their senior. They used chi-square analyses and t-tests to compare the two. (Women with partners 3–4 years older were excluded from the analyses.)

In most respects, women with partners close to their age and those with older adult partners at the time of the follow-up survey reported quite similar demographic characteristics: On average, they were about 18 years old; the majority were Mexican American or black and lived in a household headed by someone who worked full-time. Most were still involved with their baby's father; about one-quarter were seeing someone else. However, teenagers with an older adult partner were significantly less likely than those with a similar-aged partner to have completed more than a ninth-grade education before giving birth (63% vs. 83%), to be currently enrolled in school (27% vs. 37%) and to be employed (23% vs. 33%).

The two groups' reproductive health behaviors also were fairly similar. For example, no differences were found in the proportions who had had a repeat pregnancy or an unplanned pregnancy since entering the study, or in the proportions using reliable contraceptives. Yet women with an older partner were significantly more likely than those who were involved with someone roughly their age to say that they either had had a planned pregnancy during the study period or were trying to conceive (9% vs. 2%), that they use condoms infrequently (74% vs. 65%) and that their partner will not use condoms (37% vs. 23%). Levels of intimate partner violence and substance abuse (by the young mother or her partner) were statistically indistinguishable between the two groups.

Regardless of their partner's age, fewer than half of the women were married a year after giving birth, but those with a partner close to their age were more likely than those involved with an older man to be living with an adult authority figure (62% vs. 45%). Although the two groups reported similar levels of contact with their friends, women with similar-aged partners were less likely than their peers with older partners to report having infrequent contact with their mothers (14% vs. 28%). Furthermore, they rated both the support they received from their family and their overall support significantly higher (on a five-point scale) than did those with older partners.

To assess whether living with a parent or guardian affects teenage mothers' behaviors and experiences, the researchers conducted another set of comparisons, according to the young women's living arrangements. These analyses revealed that young women who lived on their own were significantly more likely than those living with an authority figure to be involved with an older man (46% vs. 30%).

Few differences emerged among teenagers living with an adult authority fig-

ure: Those with an older partner were significantly more likely than those with a same-aged partner to say that they had had a planned pregnancy during the past year or were trying to conceive (9% vs. 1%), and were more likely to report that their partner drinks daily (16% vs. 6%).

By contrast, several differences were apparent among young mothers not living with an adult authority figure. Women in this situation who had an older partner were somewhat younger than those with a same-aged partner (17.9 vs. 18.3 years) and were more likely to be Mexican American (53% vs. 33%). They were considerably less likely to have completed 9–11 grades of school before delivering (39% vs. 80%), to be in school (13% vs. 29%), to be working (20% vs. 33%) and to say that they have enough money to live on (62% vs. 78%).

Reproductive health behaviors were poorer among women not living with an adult authority figure who had an older partner than among those involved with someone close to their age: The former group were the more likely to have had or be planning a repeat pregnancy (10% vs. 3%), to say that their partner will not use condoms (40% vs. 25%) and to report that he will not permit the use of contraceptives (12% vs. 3%). Among women living with no parent or guardian, mothers with an older partner had a lower level of substance abuse than others (0% vs. 4%); they rated their overall level of support lower and were more likely to have infrequent contact with their mothers than were women with a similar-aged partner (41% vs. 19%).

In the last set of analyses, the researchers compared teenagers whose partner at follow-up was their baby's father with those who were involved with another man. These results indicated that among women who were still seeing their baby's father, those with an older partner were slightly younger than those with a similar-aged partner (17.8 vs. 18.1 years). They also were less likely to have completed grades 9–11 prior to giving birth (45% vs. 76%), to be in school (22% vs. 36%), to have a job (18% vs. 34%) and to live with an adult authority figure (33% vs. 55%), and were more likely to see their mothers less than once a week (33% vs. 15%). In addition, these women rated their family and overall support lower than did young mothers whose partner was about their age.

Among mothers who were currently involved with someone other than their baby's father, a completely different set of factors distinguished those with an older partner from those with a partner close to their age. Women with an older partner were more likely to say that they had had a planned repeat pregnancy or were trying to conceive (8% vs. 1%), that their partner refuses to use condoms (35% vs. 13%), and that he drinks daily (20% vs. 5%) or uses marijuana weekly (18% vs. 8%).

Noting that this study was largely descriptive and that the results may not be widely generalizable, the researchers nevertheless conclude that for teenage mothers, having an older adult partner may produce a "negative educational and financial impact," as well as increase the risk of a planned repeat pregnancy. They point out that given young mothers' "limited educational attainment and family support, a subsequent pregnancy could easily place [them] and their offspring at considerable financial and educational disadvantages."—*D. Hollander*

Reference

1. Agurcia CA et al., The behavioral risks and life circumstances of adolescent mothers involved with older adult partners, *Archives of Pediatric and Adolescent Medicine,* 2001, 155(7):822–830.

BRCA Mutations Lessen Protective Effect of Pill Against Ovarian Cancer

The protective effects against ovarian cancer of parity and oral contraceptive use differ depending on whether women have mutations of the BRCA1 or the BRCA2 gene, according to a study of Jewish women in Israel.[1] Nearly one-third (29%) of women in this population with ovarian cancer have a BRCA1 or BRCA2 mutation, while fewer than 2% of those without ovarian cancer have such mutations. Overall, women who have had children and those who have used oral contraceptives for five or more years have a significantly lower likelihood of developing ovarian cancer than other women. However, while multiparity is protective against the risk of ovarian cancer for both women with BRCA1 or BRCA2 mutations and those without, oral contraceptive use is protective only for women without mutations.

To investigate whether parity and the use of oral contraceptives are as protective against the risk of ovarian cancer in women with mutations of the BRCA1 or the BRCA2 gene as they are in women without such mutations, researchers identified all Jewish women in Israel who had ovarian cancer diagnosed between 1994 and 1999. Women who agreed to participate in the study were interviewed in the hospital, usually 4–6 days after gynecologic surgery. To assess the presence of BRCA1 or BRCA2 mutations, researchers collected blood samples from the participants for molecular testing.

For every study participant with ovarian cancer, researchers chose two controls with similar demographic backgrounds. Controls were interviewed in their homes, and samples were collected from them for molecular testing. The analysts compared the two groups of women using logistic regression, controlling for age, ethnic background, personal history of breast cancer, family history of breast or ovarian cancer, and a history of gynecologic surgery.

Out of the 1,707 women who received a diagnosis of ovarian cancer in Israel during the study period, 1,124 were interviewed and 840 underwent molecular testing; 2,257 women were included in the study as controls, 751 of whom underwent molecular testing. Twenty-nine percent of the women with ovarian cancer who underwent molecular testing were found to have a mutation of either the BRCA1 or the BRCA2 gene. In comparison, fewer than 2% of those without ovarian cancer had a mutation.

An analysis of the women who underwent molecular testing found that the risk of ovarian cancer decreased significantly with increasing number of births. Women who had had one or two births were 40% less likely than nulliparous women to develop ovarian cancer (odds ratio, 0.6), while women who had had three or more births had an even further reduction in risk (0.5). Women who had used oral contraceptives for five or more years were less likely than women who had never used oral contraceptives to develop ovarian cancer (0.7); each year of oral contraceptive use reduced the risk by 4%.

When researchers analyzed the incidence of ovarian cancer accounting for mutation status, they found that increasing parity (odds ratio, 0.5) and five or more years of oral contraceptive use (0.5) remained protective for women who did not have BRCA1 or BRCA2 mutations. Among women with BRCA1 or BRCA2 mutations, each birth was associated with a significant 12% decrease in the risk of ovarian cancer; there was no evidence of protective effects from the use of oral contraceptives.

The researchers point out that their findings do not agree with those from a previous study in regard to the protective effects of oral contraceptive use in women with

BRCA1 or BRCA2 mutations. They surmise that this discrepancy could have occurred because they were able to directly compare the risk of ovarian cancer in women with and those without BRCA1 or BRCA2 mutations, while the previous study surveyed women at high risk, many of whom had undergone prophylactic surgery. In light of their data and the discrepancy in the literature, the researchers conclude that "it is premature to prescribe oral contraceptives for the chemoprevention of ovarian cancer in carriers of a BRCA1 or BRCA2 mutation."—*J. Rosenberg*

Reference

1. Modan B et al., Parity, oral contraceptives, and the risk of ovarian cancer among carriers and noncarriers of a BRCA1 or BRCA2 mutation, *New England Journal of Medicine*, 2001, 345(4):235–240.

Human Papillomavirus Infection, Benign Lesions Have Different Risk Factors

A type of benign lesion commonly thought to be caused by infection with the human papillomavirus (HPV) appears to have a set of risk factors distinct from those associated with the acquisition of HPV.[1] In a prospective study conducted among family planning clinic patients in San Francisco, when all relevant factors were taken into account, HPV risk was influenced by sexual behavior, infection history and pill use; the risk of developing low-grade squamous intraepithelial lesions, by contrast, was associated with HPV infection and cigarette smoking. Furthermore, one in four women who were HPV-infected at entry to the study developed lesions during the follow-up period.

The study cohort consisted of 13–20-year-old women attending two family planning clinics for HPV testing between 1990 and 1994. At baseline and follow-up visits, women were tested for HPV and cervical abnormalities, and were interviewed about their sexual behaviors and substance use. Follow-up visits were scheduled every four months for women with HPV infection and every six months for those who were HPV-negative. The median duration of follow-up was 50 months, and the median number of visits made was nine.

To assess the factors associated with acquisition of HPV, the researchers examined data on 105 women who tested negative for the virus both at baseline and at the first follow-up visit. Analyses of the factors that increase the risk of developing low-grade squamous intraepithelial lesions were based on 496 women who were HPV-infected at baseline or tested positive later in the follow-up period. Fifty-four women who became infected with HPV during follow-up were included in both sets of analyses. Women in the study of HPV risk had had significantly fewer sexual partners than those in the segment of the cohort used to examine the risk of lesions (median, three vs. five), but the two groups were similar with regard to other sexual behavior factors, history of chlamydia or gonorrhea, age, race and socioeconomic status.

In univariate analyses, the risk of acquiring HPV increased as a woman's number of lifetime partners, number of recent partners and monthly number of new partners increased. It also was elevated among women who had had genital herpes or vulvar warts and among those who had ever smoked marijuana; the risk was reduced among current users of the pill. When the researchers conducted multivariate analyses, controlling for the factors that were significant at the univariate level, most of these factors remained significant predictors of risk. For each new partner a woman had acquired per month, her HPV risk rose dramatically (relative hazard, 10.1). A history of herpes or vulvar warts also continued to be associated with an increased risk (3.5 and 2.7, respectively), and pill users continued to have a lower risk than women not using this method of contraception (0.5).

Of the 496 women in the study of risk factors for low-grade lesions, 109—about one in four—developed lesions during the follow-up period. Univariate analyses suggested that HPV infection was the strongest predictor of this condition, and the risk roughly doubled with each year that a woman was infected with any given type of the virus. Daily cigarette smoking and both current use and ever-use of marijuana also were associated with an increased risk of developing lesions. Again, the multivariate calculations by and large confirmed the univariate results. Women who had had HPV for intervals up to three years had sharply increased risks of lesions (relative hazards, 6.1–10.3); those who smoked cigarettes daily also had an elevated risk (1.7).

Summarizing their findings, the researchers note that they observed "clear differences" in the risk factors for these two conditions, and that while lesion development was strongly associated with HPV infection, it also hinged on the presence of other risk factors. Thus, they conclude that many of the factors that have previously been associated with low-grade squamous intraepithelial lesions were "either risk factors for or surrogate markers of HPV infection."—*D. Hollander*

Reference

1. Moscicki A-B et al., Risks for incident human papillomavirus infection and low-grade squamous intraepithelial lesion development in young females, *Journal of the American Medical Association*, 2001, 285(23): 2995–3002.

Labor Induction for Vaginal Birth After Cesarean May Lead to Uterine Rupture

Women who have a first birth by cesarean section are at increased risk of suffering uterine rupture if they try to deliver their second infant vaginally, especially if labor is induced with prostaglandins, according to evidence from a population-based study in Washington State.[1] In a retrospective cohort analysis of more than 20,000 women whose first infant had been delivered by cesarean, only 91 (or 4.5 per 1,000) suffered uterine rupture during their second delivery. However, the risk was elevated among those who had a vaginal second delivery and was particularly high—24.5 per 1,000—among those with prostaglandin-induced labor. As the investigators point out, the issue of whether a woman should attempt to deliver vaginally after having a cesarean has created concern for decades, and previous studies have yielded inconsistent findings about the associated risk of complications.

The researchers used a statewide database that links birth records with maternal and infant hospital-discharge records to identify women who had their first two births between 1987 and 1996, and whose first delivery was by cesarean. This data set permitted them to distinguish the risk of uterine rupture associated with different labor and delivery experiences. Their analyses are based on 20,095 women, of whom 54% went into labor spontaneously before delivering their second baby, 35% had a repeat cesarean and the rest had labor induced, 10% without and 2% with prostaglandins.

Overall, uterine rupture was uncommon, occurring among 4.5 women per 1,000 (91 women). Women who underwent a repeat cesarean had the lowest risk (1.6 ruptures per 1,000 women); the risk was somewhat higher among women whose second labor began spontaneously (5.2) or was induced without prostaglandins (7.7) and was markedly higher

among those who had prostaglandin-induced labor (24.5). The investigators calculated the relative risks of this complication for the four subgroups, and found that women who had spontaneous labor or induced labor without prostaglandins were about 3–5 times as likely as those who had a repeat cesarean to experience uterine rupture (relative risks, 3.3 and 4.9, respectively). Those who had prostaglandin-induced labor, however, were nearly 16 times as likely to suffer this complication (15.6).

Women whose uterus ruptured were more likely than others to experience a number of complications after the birth of their second infant. For example, 6% experienced infant death; 8–11% had a bladder injury, an infection or posthemorrhagic anemia; 26% were hospitalized for more than five days; and 35% suffered surgical complications. By contrast, no more than 5% of women without uterine rupture had these experiences.

According to the researchers, their use of longitudinally linked data represented a major strength of their study: It increased the accuracy and completeness of information on obstetric diagnoses and interventions, and enabled them to examine a large number of occurences of a rare outcome. Their ability to include women who had a repeat cesarean as a comparison group, they add, further improves over the design of earlier studies of this issue and bolsters their conclusion that induction of labor increases the risk of uterine rupture among women who have previously had a cesarean section, particularly if induction involves the use of prostaglandins.

The author of an editorial accompanying the study notes that some women who have had a cesarean section may conclude that the absolute risks of uterine rupture and further complications if they subsequently try to deliver vaginally "are so small that they are worth taking and are outweighed by the benefits of a successful vaginal birth." However, he emphasizes that "these issues must be discussed with each patient, and she must make that decision for herself."[2]—*D. Hollander*

References

1. Lydon-Rochelle M et al., Risk of uterine rupture during labor among women with a prior cesarean delivery, *New England Journal of Medicine,* 2001, 345(1):3–8.

2. Greene MF, Vaginal delivery after cesarean section—is the risk acceptable? editorial, *New England Journal of Medicine,* 2001, 345(1):54–55.

Statement of Ownership, Management and Circulation

Title of publication: *Family Planning Perspectives.* **Publication no.:** 0804-70. **Date of filing:** Oct. 1, 2001. **Frequency of issue:** Bimonthly. **No. of issues published annually:** Six (6). **Annual subscription price:** Individuals, $42.00; institutions, $52.00. **Complete mailing address of known office of publication:** 120 Wall Street, New York, NY 10005. **Complete mailing address of the headquarters or general business offices of the publisher:** Same as above. **Publisher:** The Alan Guttmacher Institute, same address as above. **Editor:** Patricia Donovan, same address as above. **Owner:** The Alan Guttmacher Institute. **Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities:** None.

The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes have not changed during preceding 12 months.

Extent and nature of circulation	Avg. no. copies of each issue during preceding 12 mos.	Actual no. copies of single issue published nearest to filing date
Total no. copies	7,023	6,700
Paid and/or requested circulation		
Mail subscription (paid and/or requested)	4,743	4,900
Other classes mailed through the USPS	0	0
Total	4,743	4,900
Free distribution by mail, carrier or other means (samples, complimentary and other free copies)	1,855	1,540
Total distribution	6,598	6,440
Copies not distributed Office use, left over, unaccounted for, spoiled after printing	425	260
Return from news agents	0	0
Total	7,023	6,700
Percent paid and/or requested circulation	72%	76%

I certify that the statements made by me above are correct and complete.

, Editor