Among Sexually Experienced Male Adolescents, Those With Partners of Both Sexes Exhibit Riskiest Behavior

Male adolescents who have sexual contact with both males and females are more likely to report AIDS-related risk factors and a history of sexually transmitted disease (STD) than are males who have sexual contact only with females. Compared with young men who have only heterosexual contact, those who engage in bisexual behavior have three times the odds of having injected drugs and five times the odds of having had an STD. Among young men progressing to sexual intercourse, those with partners of both sexes have reduced odds of using a condom and elevated odds of having had multiple lifetime partners. In contrast, men who have exclusively homosexual relationships are no more likely than heterosexually active men to report these AIDS-related risk factors. These findings, based on an analysis of data from a Massachusetts survey of high school students,[1] suggest that bisexually active young men deserve specific attention in prevention programs.

Past studies of AIDS-related risk behaviors among young men have yielded limited information, because they have grouped together homosexually and bisexually active males as "young men who have sex with men" and because they have not included adolescents. To gain detailed insight into AIDS-related risk among male adolescents, researchers compared the behaviors of youths who had engaged in bisexual, homosexual or heterosexual activity. The researchers studied data from the Massachusetts Youth Risk Behavior Survey, a population-based survey of students in randomly selected public high schools throughout the state, which was conducted in 1995, 1997 and 1999. The investigators combined information from all three surveys and examined responses from the 3,267 male students who reported any "sexual contact."

Of the study sample, 94% reported sexual contact with only females, 3% with only males and 3% with both males and females. The average student age was 16.4; the youngest male was about 12, and the oldest was about 18. Heterosexually active males were, on the whole, older than the males in the other two groups.

Nearly half of heterosexually and homosexually active respondents attended urban schools (46–49%), whereas bisexually active youths were less likely to come from urban schools (30%) and more likely to attend suburban schools (50%). More than 60% of each study group reported white ethnicity.

Chi-square analyses showed that adolescents reporting bisexual activity were significantly more likely than the others ever to have injected drugs (39% vs. 4–6%), had sexual contact under coercion (59% vs. 8–21%), had an STD (35% vs. 3–4%) and missed school in the previous month for fear of safety (36% vs. 7–10%). Although these youths were less likely than others to have received AIDS education at school (67% vs. 83–93%), about one-half of all three groups had been taught how to use condoms.

More than 85% of all three study groups had had sexual intercourse. Among these respondents, a significantly higher proportion of bisexually active males than of others had had intercourse before they were 13 (54% vs. 15–17%). The trend was similar for the following risk behaviors: having had four or more lifetime partners (63% vs. 19–28%), having had four or more partners in the previous three months (43% vs. 6–7%) and having used drugs or alcohol at the most recent intercourse (60% vs. 26–27%). In addition, bisexually active males were the least likely group to have used a condom at most recent intercourse (33% vs. 61–66%).

Logistic regression analyses that controlled for ethnicity, age and school type revealed that bisexually active youths had significantly higher odds of having had an STD (odds ratio, 5.4), having used injectable drugs (3.1) and having had four or more lifetime partners (2.9) than youths reporting only heterosexual contact. They also had reduced odds of reporting condom use (0.4). Males who had only homosexual contact, however, were no more likely than those who engaged only in heterosexual behavior to report these risk factors.

Recipients of AIDS education or condom instruction had significantly higher odds of con-

dom use at last intercourse than did nonrecipients (1.5 and 1.3, respectively), but homosexually and bisexually active males were less likely than heterosexually active males to have received AIDS education (0.2–0.4). Moreover, students who did not attend school for fear of safety—commonly males who had any same-sex contact, the researchers note—had reduced odds of receiving AIDS education (0.7). The investigators suggest that students who miss school for fear of victimization miss out on AIDS education and its protective benefits. Nevertheless, they do not rule out the possibility that the quality and content of AIDS education among schools varied so that some students with same-sex experience who did attend the classes may not have found them relevant.

Finally, the investigators found significant differences in how the three groups reported sexual identity: Bisexually active teenagers indicated a spread of identities (31% heterosexual, 11% homosexual, 35% bisexual and 23% unsure or none), whereas most other students indicated a heterosexual identity (96% and 69% of those reporting heterosexual and homosexual experience, respectively). The authors comment that the low proportion of homosexually active males with a homosexual identity (12%) is "not unusual, given the stigma attached to nonheterosexual identities."

Although the researchers acknowledge that the terms "sexual contact" and "sexual intercourse" were not defined in the survey and that the study was limited to a public high school setting, they conclude that male adolescents who are bisexually active display higher levels of AIDS-related risk behavior than do other adolescents. According to the investigators, bisexually active young men place themselves and their partners at high risk of AIDS and other STDs, thus creating an "urgent need for prevention programs addressing these youths' specific concerns." Given the different identity profiles between bisexually and homosexually active young men and the tendency of both groups to label themselves heterosexual, the authors suggest that future intervention

efforts are unlikely to be successful if they target self-defined "gay" or "bisexual" youths. One possibility, they propose, is "to make mainstream classroom instruction more inclusive and more culturally appropriate for sexual minority adolescents."— *T. Lane*

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Use of Any Combined Pill Type Confers an Elevated Risk of a First Heart Attack

The use of any oral contraceptive significantly raises the likelihood of a first myocardial infarction, according to a nationwide study from the Netherlands.[1] The results of the study also suggest, although inconclusively, that women who use third-generation pills (those containing the progestogen gestodene or desogestrel) are less likely to have a heart attack than those using pills containing the second-generation drug levonorgestrel, and that the use of third-generation pills is not associated with the risk of heart attack.

The investigation aimed to address a flaw that existed in most similar published studies, by recruiting sufficient numbers of women using second- or third-generation pills so that effects on the risk of myocardial infarction could be compared. The researchers note that these two types of contraceptive are commonly used in the Netherlands, so the population of potential study subjects was large. The analysis also included the use of first-generation pills (those containing the progestogen lynestrenol or norethindrone).

The investigators conducted the population-based case-control study by sending a standardized questionnaire to women aged 18–49 who had been hospitalized for a first myocardial infarction between January 1990 and October 1995, and to a randomly selected group of controls who had not had a myocardial infarction. Controls were matched to women who had had a heart attack by five-year age-group and area of residence, and they were asked to respond to the questionnaire with reference to a specific year between 1990 and 1995.

In all, 248 women who had had a myocardial infarction and 925 controls completed the survey. Women in the study group were, on average, older than the controls (43 vs. 38). They were also more likely to be current smokers (84% vs. 43%); have a history of hypertension (24% vs. 6%), high cholesterol (11% vs. 3%) and diabetes (6% vs. 1%); and have a family history of cardiovascular disease (65% vs. 36%).

Women were more likely to be current users of second-generation pills than of any other type: 24% of the study group and 19% of controls, compared with 8% of the study group and 12% of controls who used third-generation pills, and 4% of the study group and 3% of controls who used first-generation pills. After adjustment for confounding factors (age, area of residence, calendar year and risk factors for cardiovascular disease), logistic regression analyses showed that current users of any pill type and current users of first- and second-generation pills were significantly more likely than nonusers to have a heart attack (odds ratios, 2.1, 2.7 and 2.5, respectively). In contrast, users of third-generation pills seemed to be as likely as nonusers but less likely than users of second-generation pills to have a heart attack (1.3 and 0.5, respectively); the researchers concede, however, that the 95% confidence intervals for these results were too wide for a definite conclusion to be drawn.

The study also analyzed the effect of other cardiovascular risk factors. Logistic regression analyses showed that the likelihood of myocardial infarction was elevated among both pill users and nonusers if they had hypertension (6.1 and 5.1, respectively) or were obese (5.1 and 3.4, respectively). The likelihood was dramatically higher for pill users, but not nonusers, if they had high cholesterol (24.7 vs. 3.3) or diabetes (17.4 vs. 4.2), or if they were current smokers (13.6 vs. 7.9).

The researchers note that only one other investigation has recruited sufficient users of third-generation oral contraceptives to be able to compare the effect of using third- and second-generation drugs on the risk of myocardial infarction. They argue that although those results suggest that third-generation pills carry the higher risk of heart attack, the 95% confidence interval again was too wide to permit a definite conclusion. The author of an editorial accompanying the Dutch study adds that recall bias may have affected that finding.[2] Recall bias was minimized in this study by including in the questionnaire color photographs of all available oral contraceptives in the Netherlands. In addition, the researchers found no evidence of prescription bias, and they avoided selection bias by selecting patients nationwide and according to the women's hospital discharge diagnosis.

The researchers admit that the absolute risk of heart attack among pill users is small, but "because all combined oral contraceptives are equally effective means of birth control, the issue of safety is paramount." In practical terms, the authors advise that "before prescribing oral contraceptives, clinicians should screen women for conventional risk factors for cardiovascular events."—*T. Lane*

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Disadvantages from Very Low Birth Weight Last Into Young Adulthood

Very-low-birth-weight individuals (those weighing less than 1,500 g at birth) experience educational and intelligence deficits that last into young adulthood, according to data from a longitudinal study in Ohio.[1] For example, they have significantly decreased odds of graduating from high school by age 20 and increased odds of having an IQ in the subnormal or borderline range. However, at age 20, women who were very-low-birth-weight are less likely than their normal-birth-weight peers to report having used alcohol or drugs within the previous year, ever having had sexual intercourse, ever having been pregnant and ever having been involved in a live birth. Very-low-birth-weight men are less likely than control males to report ever having violated a law, not including traffic laws.

The study is based on a cohort of children who were born weighing less than 1,500 g and were admitted between 1977 and 1979 to a health facility in Cleveland. Researchers initially collected physical, behavioral and demographic data from 256 very-low-birth-weight participants and 366 controls who had a normal birth weight at age eight; 242 participants and 233 controls were interviewed again at age 20. The researchers also collected

data on maternal characteristics (marital status, education, and social and demographic information) at the time of the child's birth and eight years later.

When participants reached age 20, the investigators obtained data on their educational attainment, current enrollment in an educational program and health status by using a detailed interview; high school graduation was confirmed by means of school records. The researchers also ascertained the participants' intelligence, verbal comprehension, perceptual-organizational skills and academic skills. They measured risk-taking behavior during the previous 12 months with a self-administered questionnaire, which included a substance abuse checklist, a sexual experience scale and questions regarding contact with the police.

The investigators performed univariate and multivariate analyses to compare very-low-birth-weight participants with controls. The multivariate analyses (logistic and multiple linear regression for dichotomous and continuous outcomes, respectively) controlled for social and demographic variables; separate analyses were performed for men and women to determine if gender significantly affected any outcomes.

Very-low-birth-weight individuals had significantly less educated mothers than controls: When the children were eight, 17% of the mothers of very-low-birth-weight individuals had not graduated from high school, compared with 11% of those of controls. Maternal marital status at eight years of follow-up and maternal race did not differ significantly between the two groups.

Overall, a significantly greater proportion of very-low-birth-weight individuals than of controls suffered from chronic health conditions at age 20 (33% vs. 21%). Neurosensory conditions were significantly more common among very-low-birth-weight men and women (9% and 11%, respectively) than among controls (0–1%). More than one-third (36%) of very-low-birth-weight females had at least one chronic health condition, a significantly larger proportion than among control females (20%).

In multivariate analyses of educational attainment, very-low-birth-weight individuals were significantly less likely than controls to have graduated from high school by age 20 (odds ratio, 0.6), and those who had graduated had done so at an older mean age (18.2 years vs. 17.9 years). In addition, very-low-birth-weight participants were significantly more likely not to be currently enrolled in an educational program (odds ratio, 1.5). Very-low-birth-weight men had significantly decreased odds of currently being enrolled in postsecondary study (0.4) or in a four-year college (0.2); among women, there were no significant differences in educational attainment by birth weight.

The researchers found that birth weight status was significantly associated with IQ: Compared with controls, very-low-birth-weight individuals had half the odds of having an IQ in the normal range (85 or greater); they had 1.7 times the odds of having a borderline normal IQ (70–84) and 4.0 times the odds of having a subnormal IQ (70 or lower). Very-low-birth-weight men were significantly more likely to have a borderline IQ (odds ratio, 2.3) and less likely to have a normal IQ (0.3) than were control males. These differences remained significant even when the analyses were restricted to participants without neurosensory conditions. There were no significant differences in intelligence found between very-low-birth-weight women and control females.

It surprised researchers to find that very-low-birth-weight individuals reported less risk-taking behavior by age 20 than controls. Very-low-birth-weight women were less likely to have used alcohol or marijuana within the previous year, and were less likely to ever have had sexual intercourse or been involved in a pregnancy or live birth (odds ratios, 0.3–0.6). Very-low-birth-weight men had half the odds of control males of ever having violated a law, not including traffic laws (0.5).

Although previous studies have shown only that very-low-birth-weight individuals encounter educational disadvantage during youth, the researchers suggest that "this disadvantage extends into young adulthood." They also conclude that it is likely that "men who had very low birth weight will lag behind their normal-birth-weight peers in their ultimate educational and occupational achievement." That very low birth weight was significantly associated with lower rates of risk-taking behavior was not one of the researchers' starting hypotheses. They suggest that this phenomenon "may result from increased parental monitoring of very-low-birth-weight children." —J. Rosenberg

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Teenagers Report a Mix Of Ethnicities and Ages Among Their Partners

American adolescents commonly have a sexual partner from a different age-group or ethnic group, an analysis of national data on adolescent health reveals.[1] Nearly one-half of teenage relationships are between partners who are two or more years apart in age, and nearly one-quarter are between partners from different ethnic groups. More than half of sexually active teenagers have two or more partners within 18 months; of these, more than half have two or more relationships that overlap in time. Some partner choices seem to influence condom use: Female adolescents with more than one partner and adolescents with different-age partners have a reduced likelihood of using condoms. Furthermore, the more sexual partners a teenager has, the less likely that a condom is used. Having overlapping relationships, however, increases the likelihood of condom use.

Researchers analyzed data from the National Longitudinal Study of Adolescent Health (Add Health) to examine the patterns of heterosexual relationships reported by teenage high school students, in terms of the ethnicity and age of partners and the occurrence of overlapping relationships. They also assessed the level of condom use among adolescents who reported a total of two or more partners. The Add Health data came from a survey of adolescents from schools that covered a range of locations, types, sizes and ethnic mixes. A questionnaire was administered to students in their homes in 1994–1995 and again two years later. Of the 90,118 respondents to the first questionnaire, 18,924 were identified as being representative of American adolescents. Of these students, 13,570 completed the second questionnaire.

By pooling replies from both questionnaires, the researchers found that 8,024 students had had a total of 17,266 heterosexual partners in the 18 months before each round of study. When asked to identify their ethnicity, 62% of students indicated white, compared with 19% black, 12% Hispanic and 7% "other." The male-to-female ratio was about one to one. More than half of respondents (54%) were aged 17 or older, whereas about 36% were 15–16; the remainder were 14 or younger.

Most relationships were between adolescents of the same ethnicity (78%) and of a sim-

ilar age (55%). The proportions of multiethnic partnerships were significantly lower among black and white students (15% and 13%, respectively) than among Hispanics (42%) and other groups (77%). Partners were older by two or more years in 32% of relationships and younger by two or more years in 13%. Females were more likely than males to have older partners (49% vs. 14%), whereas males were more likely than females to have younger partners (22% vs. 4%).

More than half of respondents reported a total of two or more partners during the 18 months before each survey round (56% of both males and females). Significantly higher proportions of black adolescents and those of other ethnicities (61% and 59%, respectively) had had two or more partners when compared with Hispanic (56%) and white (54%) adolescents. Males were significantly more likely to have had more than one partner than were females among black (63% vs. 58%) and Hispanic (59% vs. 51%) respondents, whereas the trend was reversed for white respondents (56% of females and 52% of males had had two or more partners).

When the investigators focused on respondents reporting two or more partners, they found that 69% also reported partners outside their own age-group; females were more likely than males to do so (77% vs. 61%). More than one-third (35%) of respondents—38% of males and 33% of females—reported partners from two different ethnic groups. Hispanics and other adolescents were more likely to have partners in two ethnic groups (60% and 91%, respectively) than were whites (26%) and blacks (28%). Furthermore, 54% of respondents who reported two or more partners also reported relationships that overlapped in time. A significantly higher proportion of females than of males reported overlapping relationships (58% vs. 50%).

An assessment of condom use among respondents who reported two or more partners revealed that 33% had used a condom with at least one partner. This proportion was slightly lower if partners were of a different age (29%) or ethnicity (30%), or if respondents reported overlapping relationships (29%). According to logistic regression analyses, being in simultaneous relationships significantly increased the likelihood that a condom was used (odds ratio, 1.2). In contrast, having partners from a different age-group and being female significantly decreased the odds that a condom was used (0.8 for each). And for each additional partner that an adolescent had, the odds of condom use were reduced by 55%. Ethnicity of either respondents or partners was not associated with condom use.

The researchers summarize by stating that adolescents commonly have partners with different characteristics: Female adolescents commonly have partners of a different age, and Hispanics and adolescents of other ethnicities commonly have multiethnic relationships. The study also reveals that teenagers commonly report a total of two or more partners and overlapping relationships. The investigators state that the findings are important to sexually transmitted disease and family planning clinics, as well as other health care providers who work with sexually active adolescents. According to the authors, adolescents with more than one partner and those with partners of a different age-group or ethnicity have an increased risk of contracting sexually transmitted infections, especially given the lower likelihood of condom use among the first two groups. They conclude, "The counseling of sexually active adolescents should include discussion of differences in power or communication that may occur where a partner's personal characteristics may differ."—*T. Lane*

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Female Condom Use Rises If Women Receive Good Instruction and Training

Women who receive instruction in female condom use, along with opportunities to practice method-related skills on a pelvic model, have an increased likelihood of using the method, of using it correctly and of viewing it in a favorable light.[1] The strongest predictors of female condom use that emerged in a randomized controlled trial of a multisite intervention aimed at reducing women's risk of HIV and other sexually transmitted diseases (STDs) were having had instruction and skills training, and intending to use the method.

The trial was conducted between May 1995 and August 1997 in Baltimore, New York City and Seattle; women were recruited at community-based programs, family planning clinics and STD clinics, as well as through advertisements, flyers and community presentations. To be eligible, women had to be HIV-negative and at least 17 years old, and they had to have had intercourse with a male partner during the past three months. In addition, during the past year, eligible women had to have received an STD diagnosis, had three or more sexual partners, or had sex with a man who engaged in risky behavior. A total of 604 women were enrolled and were randomly assigned to a six-week intervention or a control group.

Those assigned to the intervention attended six weekly group sessions in which they were given skills training in communication, goal setting and male condom use; received information and watched a video about the female condom; observed a demonstration of female condom insertion using a pelvic model; and were provided an opportunity to practice on the model. Clinicians encouraged participants to practice inserting the female condom before using it with a partner. Women in the control group attended a one-hour nutrition counseling session and received printed instructions on how to use male and female condoms. Free female condoms were available to all women interested in trying the method.

At study entry and three months after the intervention, the women completed interviews that addressed a range of attitudes toward the female condom. Researchers also asked the women to demonstrate proper female condom use on a pelvic model and rated their skills in using the method. The analyses are based on 442 women who participated in the three-month follow-up.

Overall, the women were predominantly black (58%) or Hispanic (18%) and never-married (73%); their average age was 28.5 years. Roughly eight in 10 were unemployed; only one-quarter had more than a high school education. Four in 10 had at least one dependent child.

At baseline, experience with and attitudes toward the female condom were essentially the same among women assigned to the intervention and those assigned to the control group: Nine percent of each group had ever used a female condom either with a partner or for practice, and 7% had used one with a partner; use in the previous three months was negligible. Asked to rate the female condom on a variety of characteristics, with possible responses ranging from one (poor) to four (very good), women in both groups gave it an average score of 1.3–1.5 at baseline. On average, they performed only 2.7–3.0 out of six method-related skills correctly. About one-

quarter of women in each group disagreed that their partner would find the female condom acceptable, fewer than half agreed and the rest did not know.

Three months after the intervention, however, the groups differed sharply on all of these measures. Significantly higher proportions of those in the intervention group than of controls had ever used a female condom (60% vs. 22%) and had used one with a partner (36% vs. 12%). Among those who had used female condoms in the past three months, women who had received instruction had used an average of 1.5, whereas those in the control group had used 0.5. The intervention group gave the female condom a more positive average rating than the control group (3.2 vs. 2.1) and correctly performed a greater number of method-related skills (4.6 vs. 3.3).

In initial comparisons, a number of attitudes, skills and behaviors related to female and male condom use distinguished women who had ever used the method (regardless of whether they were in the intervention or control group) from those who had never done so. To determine which factors independently affected use, the investigators conducted logistic regression analyses, controlling for baseline and follow-up differences between ever-users and never-users.

Results of these calculations indicated that participation in the intervention was the strongest predictor of use (odds ratio, 5.5), followed by a stated intention at follow-up to use the female condom (4.5). Other factors associated with increased odds of use were having asked a partner to use a condom in the past 30 days (2.3), feeling confident at follow-up in one's ability to ask a partner to use a condom (1.9) and having had favorable attitudes toward the female condom at baseline (1.2). Women who reported having only casual partners at follow-up were significantly less likely than those who reported having a main partner (exclusively or in addition to casual partners) to use the female condom (0.2).

Noting the importance of factors related to negotiating male condom use in predicting female condom use, the researchers comment that while the female condom "is not strictly 'female-controlled,'...it may give women more control than the male condom." However, they add, it might not be an option for women who lack negotiation skills. Of paramount importance, they conclude, is counseling that offers both information and a chance for women to practice using the method.—*D. Hollander*

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Breast Cancer Risk Tied To Long-Term Hormone Use After Menopause

The use of hormone replacement therapy following menopause appears to increase women's risk of developing breast cancer—in particular, a form of cancer known as a lobular tumor. Overall, results of a case-control study conducted among about 1,400 members of a managed care plan in Washington State suggest that recent, long-term use of hormone replacement therapy raised women's odds of developing breast cancer significantly over those of women who had never used postmenopausal hormones (odds ratios, 1.6–1.8). Moreover, the odds of lobular carcinoma were significantly elevated among women currently receiving oral estrogen (2.0) or a combination of estrogen and progestin (3.9), while neither treatment approach significantly raised the odds of other forms of breast cancer. Similarly, women who had used oral hormone replacement therapy for most or all of the preceding five years had substantially increased odds of lobular breast cancer (odds ratio, 3.1), but their odds of developing other forms of breast cancer were only moderately elevated (1.5).[1]

To investigate the extent to which the use of replacement hormones contributes to the development of breast cancer, researchers identified women aged 50–74 who were enrolled in the Group Health Cooperative of Puget Sound and had had a first occurrence of primary breast cancer diagnosed between July 1, 1990, and December 31, 1995. Each breast cancer patient was linked with a woman randomly selected from the cooperative membership who was similar in duration of membership and age, and who served as a control. After excluding women with other cancers, those whose menopausal status was unknown and premenopausal women, the investigators were left with 705 women with breast cancer and 692 controls for analysis.

To study the women's use of hormones, the researchers relied on computerized pharmacy records that had been kept since 1977. All pills containing estrogen and progestin, as well as topical vaginal cream containing estrogen, were classified as hormone replacement therapies. In addition, the researchers studied responses from a breast cancer screening questionnaire that had been mailed to health plan enrollees aged 40 and older; they used this information to help estimate women's lifetime exposure to hormone replacement therapy.

Women were considered current users of hormone replacement therapy if they had received two or more prescriptions for it in the six months preceding the reference date (one year before diagnosis for women with cancer and a comparable date for controls). Enrollees were judged to have been past users if their pharmacy records showed two or more prescriptions for hormone replacement therapy but none in the preceding six months, or if they had indicated in the breast cancer screening questionnaire that they had used postmenopausal hormones. Women's use of continuous combined hormonal therapy or of sequential treatment was ascertained from pharmacy records of the number and type of pills prescribed.

Few background characteristics appeared to be related to the occurrence of breast cancer: The odds that cancer had developed were not significantly affected by women's age at menopause or at menarche, their parity or age at first birth, or their use of oral contraceptives. However, women with a family history of breast cancer and those who had had one or more mammograms prior to diagnosis had significantly elevated odds of breast cancer (age-adjusted odds ratios, 1.5–2.0). When the women's age, the year of diagnosis and the number of mammograms before diagnosis were taken into account, current use of combined hormone replacement therapy was associated with significantly elevated odds of breast cancer (odds ratio, 1.5); current use of oral estrogen only and past use of hormone therapy were not.

By contrast, a number of measures of recent use of supplementary hormones—i.e., use within the five years preceding the reference date—revealed significant associations with breast cancer risk. Women who had used any oral hormone replacement therapy for more than 56 months had significantly higher odds of breast cancer than nonusers (odds ratio, 1.7), and those who had used oral estrogen alone for the entire five-year period had similarly increased odds (1.8). Breast cancer odds were significantly elevated among women with about 36 months or more of combination or sequential hormonal treatment (1.6 each).

Finally, the researchers used histological and other information to classify the types of breast

cancers identified–lobular tumors (which involve milk-producing cells in the breast) and other breast tumors (which primarily involve the ducts through which breast milk is usually delivered). They found that the odds of lobular carcinoma were significantly elevated among women currently receiving oral estrogen (odds ratio, 2.0) or combination treatment (3.9). In contrast, the odds of other forms of breast cancer were not significantly raised by either treatment approach. Likewise, women who had used oral hormone replacement therapy for 57 or more months in the past five years had substantially increased odds of lobular breast cancer (odds ratio, 3.1), but only moderately elevated odds of other forms of breast cancer (odds ratio, 1.5).

Using standard rates of breast cancers of various types, the investigators calculated that among nonusers of hormone replacement therapy, approximately 230 cases of ductal breast cancer and 23 instances of lobular breast cancer would occur per 100,000 women per year. In contrast, they estimated that among women who had used hormone replacement therapy for five years, 349 occurrences of ductal breast cancer and 70 of lobular breast cancer could be expected per 100,000 women per year.

The investigators comment that the pharmacy data on which the study was based offer information only on medications distributed, not on what was consumed. Moreover, no information was available on several potentially confounding variables, among them previous breast biopsies, history of breastfeeding and educational level. The researchers point out, however, that some previous studies have suggested similar associations between hormone replacement therapy and breast cancer, and they conclude that "the magnitude of risk, the fact that an association is biologically plausible, and a similar finding in other studies all argue in support of the causal nature of [the] association."—M. Klitsch

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Age at First Sex and Human Papillomavirus Infection Linked Through Behavioral Factors and Partner's Traits

Young women who initiate sexual intercourse at an early age are more likely than those with later sexual debuts to become infected with human papillomavirus (HPV) in part because of certain behavioral factors and partner characteristics, according to a longitudinal cohort study of American female college students.[1] The factors and characteristics that influence the association between age at first sex and HPV infection include number of sexual partners in the previous six months, history of sexual transmitted infection (STI), alcohol and drug use related to sexual behaviors and partner's number of sexual partners.

Past research suggests that early sexual initiation is significantly associated with HPV infection. To determine the factors that are responsible for this association, researchers recruited a cohort of female first- and second-year students from a state university. To be eligible for the study, the women had to be sexually active, not pregnant or planning to become pregnant in the next three years and without a history of cervical biopsy or treatment for cervical intraepithelial lesions. Participants completed a survey and were tested for HPV at baseline; women returned for testing and completed another questionnaire every six months for up to three years. The survey asked women about their socioeconomic and demographic characteristics, sexual history, alcohol and drug use related to sexual behaviors (for example, contraceptive use when drinking or using drugs), and partner's socioeconomic, demographic and behavioral characteristics.

Researchers matched each participant who tested positive for HPV during the study with a participant of the same age who was not infected. Overall, 252 pairs of women were included in the analyses. Univariate analysis was used to determine the factors associated with early initiation of sexual intercourse and with HPV infection. Generalized estimating equation regression modeling was utilized to investigate which behaviors and characteristics mediate the association between age at first sex and HPV infection.

Of the sample, 59% were white, 12% black, 13% Hispanic, 9% Asian and 7% members of other racial or ethnic groups. On average, the participants were 20 years old and had first had intercourse at age 17. The mean lifetime number of sexual partners was four, and the mean number of partners in the previous six months was one. Twenty-nine percent of participants reported rarely or never using condoms, 16% sometimes using condoms and 52% using condoms most of the time; 10% reported having had an STI other than HPV. The mean score of alcohol and drug use related to sexual behavior was 3.4 (on a nine-point scale), and the mean number of partners' sexual partners was three.

In univariate analyses, several factors were significantly associated with young age at first sex: having had more than one sexual partner in the past six months, using condoms sometimes, having a history of pregnancy, being a current smoker, and scoring one or more on the scale assessing alcohol and drug use related to sexual behavior. In addition, the more partners a woman's partner had had in his lifetime, the younger she was at first intercourse. Having a history of an STI was marginally significant.

Some of the risk variables and partner characteristics that were significantly associated with young age at first sex were also significantly associated with HPV infection (having had more than one sexual partner in the past six months, being a current smoker, scoring one or more on the scale assessing alcohol and drug use related to sexual behavior, and having a partners who had multiple partners). Factors that were significantly associated with HPV risk but not young age at first intercourse were having a higher frequency of vaginal intercourse, having a history of an STI and having an older or a black partner.

Results of a general estimating equation regression analysis determined that age at first sex was significantly associated with HPV infection (beta coefficient, −0.20; odds ratio, 0.82). However, the beta coefficient decreased by 20% (to −0.16; odds ratio, 0.85) when factors found to be significant in the univariate analyses were added to the model, indicating that these variables help account for the association between age at first sex and HPV infection. The investigators concluded that four factors mediate the association because they were significant (or nearly so) in univariate analysis and had independent effects on HPV risk: number of sexual partners in the past six months (odds ratio, 1.7), history of an STI (2.2), alcohol and drug use related to sexual behavior (19.1) and partner's number of sexual partners (1.1).

In light of their findings, the researchers suggest that providers "encourage adolescents who have not yet had sexual intercourse to postpone

sexual initiation." They also comment that youth who had their first sexual experience at an early age would benefit from counseling that stresses "the importance of modifying sexual behaviors." The researchers note that the mediating factors they identified explain only part of the association between age at first intercourse and HPV risk; other factors, such as cervical maturity, are also likely to be responsible for the association.–*J.Rosenberg*

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Phone Notification Option Encourages Youth at Risk Of HIV to Get Test Results

Young people who are at high risk for acquiring HIV and who undergo testing for the infection are more likely to seek the test results if they have the option of doing so by telephone than if they have to visit a clinic, according to findings from an outreach project in Portland, Oregon.[1] Nearly three in five youth who could choose to learn their HIV status by telephone obtained their test results, compared with roughly two in five of those who did not have this option; young people who had the telephone option also received their results significantly sooner than those whose only choice was in-person notification. Because many high-risk youth face barriers to traditional medical care—including financial and logistical obstacles, unfamiliarity with the health care system and distrust of providers—programs that facilitate their access to necessary services are crucial.

Using mobile vans, the project offered testing at sites where homeless and high-risk young people gather: parks, community events, a dance club, alternative schools and social service agencies. Local youth were involved in all aspects of project development and implementation, including recruiting participants. The study was open to 13–24-year-olds who requested HIV counseling and testing, and

who were able to give informed consent.

Participants received confidential HIV counseling from trained medical and public health students before undergoing oral testing; the clinician told them that their results would be available two weeks after the test. Youth were randomly assigned to obtain their test results in one of two ways: Half were instructed to report to a community clinic, and half were told that they could either visit or call the clinic. If young people with positive or inconclusive test results did not request their results within six weeks, project staff asked a county health department program to contact them so that they could get the care they needed.

Between September 1998 and October 1999, the project tested 351 young people, of whom 71% were white, 9% were black and the rest were members of other racial or ethnic groups; participants were equally divided between males and females. About half were aged 13–18, and half aged 19–24. The group given the telephone option and the group assigned to in-person notification were similar in terms of race, ethnicity and age; females outnumbered males among those who had the choice of phoning for their results.

In interviews conducted at the time of counseling and testing, half of participants reported ever having engaged in at least one high-risk behavior: injecting drugs; sharing needles; exchanging sex for money, food, drugs or shelter; having a partner who is HIV-infected or is at high risk of infection; or, for males, having same-sex partners. Overall, males were more likely than females to report such behaviors, but when men who had sex with men were excluded, the difference was not statistically significant. Half of youth had never received HIV counseling and testing before; these young people were less likely than others to report risky behavior.

Eleven percent of participants considered themselves to be at high risk for acquiring HIV infection. However, substantial proportions of young people who reported risky behavior—14% of those who shared needles, 54% of those who injected drugs and 67–85% of those who engaged in high-risk sexual activity—said that they had little or no risk of infection, or

were unsure of their level of risk.

In all, 48% of participants requested their test results; the proportion was significantly higher among youth who had the telephone option (58%) than among those who were required to visit the community clinic (37%). The vast majority of young people in the telephone option group who obtained their results (88%) did so by telephone. On average, youth who had the telephone option received their results within about 19 days of the test, significantly sooner than those who had to go to the clinic for their results (24 days). Two participants, both in the group requiring in-person notification, tested positive for HIV. These young people failed to visit the clinic to obtain their results, and the project had the county program contact them.

The option of telephone notification increased the proportion of young people obtaining test results regardless of their age, race or ethnicity, HIV testing history or reports of engaging in any risk behaviors. This option did not affect the likelihood of requesting results among females, youth who had been tested at a site outside a downtown area, those who never used drugs or who used hard drugs during sex, those who considered themselves to be at high risk of acquiring HIV and those who injected drugs.

An important limitation of the study, the researchers note, is that it was based on a convenience sample of youth from one metropolitan area, and the results therefore may not be widely generalizable. Furthermore, motivations for testing and follow-up may differ between young people who are brought into an outreach program and those who have to seek services on their own. Nevertheless, the investigators note that the outreach effort was able to provide access to HIV services for young people at high risk, and they conclude that in this population, the option of telephone notification "appears to be an effective way to increase the proportion who receive...test results."–*D. Hollander*

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