

Children with Prenatal Cocaine Exposure Have Elevated Risk of Cognitive Impairments at Least Until Age Two

Children exposed to cocaine in utero are more likely to experience cognitive deficits for as long as two years after birth than are children not exposed to the drug.¹ Among 415 infants born at an urban hospital between 1994 and 1996, those exposed to cocaine prenatally had significantly lower mental development scores both at age one and at age two. Moreover, prenatal exposure to cocaine was the only type of substance exposure that was significantly related to the children's cognitive status. At two years of age, cocaine-exposed children were significantly more likely than unexposed children to be classified as mentally retarded or as having a mild cognitive delay.

While past research has documented associations between prenatal cocaine exposure and a number of physical and behavioral problems during infancy, the few longitudinal studies that have been conducted have produced contradictory or inconclusive findings. In hopes of gaining a clearer understanding of the effects of cocaine exposure during pregnancy on young children's development, researchers recruited high-risk women who were delivering at a Cleveland hospital between 1994 and 1996 into a two-year prospective study. Initial assessments of both mothers and newborns were made immediately following delivery, and follow-up visits were conducted 6.5, 12 and 24 months afterward.

Women were classified as high-risk if they had obtained no prenatal care, they appeared intoxicated, they had received county social services in previous pregnancies, they admitted to hospital staff that they used drugs or staff judged them likely to be drug users. Urine samples were collected from all such women and were tested for the presence of drug metabolites. In addition, infants' first bowel movements were collected and tested for signs of prenatal drug exposure.

At enrollment, women were asked to recall the extent of their tobacco, marijuana, alcohol and cocaine use both in the month before they became pregnant and in each trimester. Researchers gathered information about mothers' educational level and socioeconomic sta-

tus; they administered standard tests of vocabulary, intelligence and psychological distress to the mothers and (for infants who were not in their mothers' custody) other primary caregivers.

Infants were tested at each follow-up visit, using the Bayley Scales of Infant Development. The results were two measures, one of memory, language and problem-solving ability (the mental development index) and one of motor control and coordination (the psychomotor development index). In addition, at each visit, researchers updated information on caregivers' substance use and level of psychological distress.

Analyses were based on 415 women—218 who had tested positive for cocaine and 197 who had not. Roughly nine in 10 women made each visit, and all surviving children were brought for at least one follow-up visit.

Cocaine users and nonusers were generally nonwhite (81% and 79%, respectively), and most were of low socioeconomic status (98% each). Women who had used cocaine during pregnancy were significantly older than those who had not (30 vs. 26 years, on average), were significantly less likely to be married (7% vs. 17%), were more likely not to have graduated from high school (48% vs. 31%), averaged more lifetime births (3.6 vs. 2.7) and were more likely to have received no prenatal care (20% vs. 10%).

In addition, cocaine users were much more likely than nonusers to have used alcohol (86% vs. 65%), marijuana (50% vs. 13%) and tobacco (88% vs. 42%) during pregnancy. Finally, cocaine users scored worse than nonusers on vocabulary and intellectual development tests (although the latter difference was only marginally significant), and exhibited higher levels of psychological distress.

Measures of infant well-being also differed substantially between the two groups. Compared with infants born to nonusers, those born to cocaine users had a shorter gestation; were more likely to have been born before 37 weeks; weighed less, were shorter and had a smaller head circumference at birth; and were more likely to be low-birth-weight or small for gestational

age. In addition, cocaine-exposed infants were much more likely than those not exposed to the drug to have been placed in the care of someone other than their mother (34–50% vs. 2–4% over the course of follow-up).

A multivariate analysis showed that prenatal cocaine exposure was the only substance-use variable that was significantly related to the children's cognitive status. Additionally, after the results were adjusted for the caregiver's intellectual development and the mother's parity and education, cocaine-exposed children had lower mental development scores than did unexposed children, both at 12 months (95.2 vs. 99.0) and at 24 months (82.7 vs. 88.7). Moreover, the researchers observed that while "scores for both groups decreased over time, children prenatally exposed to cocaine had scores that declined faster."

Controlling for the effects of birth outcomes (as indicated by Apgar scores, neonatal risk measures and mother's psychological distress at the time of delivery) had no effect on the overall relationship between cocaine exposure and child mental development. However, the researchers noted that when they added infant head circumference to the model, the strength of the relationship between cocaine exposure and mental development at 24 months decreased slightly, implying that "some of the negative effects of cocaine exposure on cognitive outcome were mediated through smaller head circumference at birth."

Cocaine-exposed children were significantly more likely to be classified as mentally retarded (i.e., scoring less than 70 on the index of mental development) at age 24 months than were those not exposed (14% vs. 7%). Similarly, mild cognitive delay (a score of less than 80) was more common for exposed children than for unexposed children (38% vs. 21%).

No significant associations were found between psychomotor development and prenatal cocaine exposure. In contrast, infants' age, sex and exposure to tobacco prenatally all had a significant impact on psychomotor development.

The researchers observe that unlike some

previous research on prenatal cocaine exposure and its effect on cognitive development, their study was prospective, included a large sample, had high retention rates and controlled for a number of potentially confounding variables. The findings of an increased risk for cognitive impairment at age two among children exposed to cocaine prenatally, they conclude, suggests “the need for public health initiatives for substance abuse prevention and treatment of pregnant women.”—*M. Klitsch*

REFERENCE

I. Singer LT et al., Cognitive and motor outcomes of cocaine-exposed infants, *Journal of the American Medical Association*, 2002, 287(15):1952–1960.

Among Young Adults, Use Of the Internet to Find Sexual Partners Is Rising

The Internet is playing an increasing role in the sex lives of some young people, according to findings from an on-line survey conducted in 2000.¹ Respondents aged 18–24 who had ever met a partner through the Internet reported having found an average of nearly 10 partners that way, including seven in the last year alone. Older men and women, by contrast, said that they had met 14 partners on-line, six of them in the previous year. Young participants were more willing than older ones to seek potential partners in chat rooms, as well as to exchange addresses with individuals they met on-line.

Respondents to the anonymous survey were recruited through chat rooms, electronic bulletin boards and list serves. Although the survey was intended to include only individuals aged 18 and older, the investigators acknowledge that it is impossible to verify participants' ages. The analyses are based on a total of 4,507 men and women, of whom 1,234 said they were 18–24 years old. Half of the overall sample, including 495 (40%) of these young adults, reported ever having had sex with a partner they had met on-line.

Young adults who had found a partner on the Internet were more likely than their peers who had not to be male (67% vs. 57%), and they reported an earlier age at first sex (16.6 vs. 17.1 years). Half of the former group and one-third of the latter had been tested for HIV or another sexually transmitted disease (STD); 10% and 6%, respectively, had had an STD. Respondents aged 18–24 who had found part-

ners on-line had met an average of 15 partners by other means, including four in the past year; by contrast, those who had not met any partners through the Internet had had six partners, two of them in the past year.

When asked specifically about partners they had met through venues other than the Internet, 31% of young adults who had found partners on-line reported having had a same-sex partner, 46% said they had engaged in anal sex in the past year and 14% reported having met a partner in a bar; significantly smaller proportions of other 18–24-year-olds reported these behaviors (6%, 24% and 9%, respectively). However, those who had found partners on-line were more likely than others to have used a condom the last time they had anal or vaginal sex (47% vs. 38%) and were more open to visiting a chat room devoted to risk reduction (32% vs. 26%). Reports of having had sex while drunk or high, discussed HIV or other STDs with partners, or used condoms during oral sex were similar in the two groups.

Comparisons between young adults and older respondents who had ever found a partner on-line revealed significant differences in all background factors studied: Participants in the younger group were less likely to be male (67% vs. 77%) and white (76% vs. 86%), and they reported an earlier age at first sex than older respondents (16.6 vs. 17.1 years). They also were less likely to have been tested for or to have had an STD.

Sexual behaviors differed by respondents' age, and results varied somewhat depending on how they had met their partners. Young adults had found significantly fewer partners off-line than had older respondents (15 vs. 43), and they reported somewhat less risky behavior: They less often reported having had same-sex activity, engaged in anal sex and met a partner in a bar; they more frequently said that they had used a condom the last time they had anal or vaginal sex.

The reported number of partners found on-line was essentially the same for young adults and older respondents. Notably, though, 18–24-year-olds had met the majority of these partners (seven of 10) in the past year, whereas older respondents had met fewer than half (six of 14) that recently. As in the previous set of comparisons, the proportions reporting same-sex relations and anal intercourse were lower among those aged 18–24 than among older respondents, but the two groups no longer differed in their reports of condom use at last anal or vaginal sex. Young adults were

less likely than older respondents to have discussed HIV or other STDs with partners (64–65% vs. 68–76%).

A final set of comparisons between 18–24-year-olds and older respondents who had ever met a partner on-line examined behaviors related to safety issues other than sexual risk. According to these results, young adults were more likely than older respondents to use chat rooms (69% vs. 63%) and less likely to use Internet dating services (1% vs. 3%). Before actually meeting a new contact, young adults were more likely than older men and women to exchange addresses with the person (45% vs. 37%).

Significantly higher proportions of 18–24-year-olds than of older survey participants reported that their first meeting with a partner they had met on-line took place in the partner's home, a park or another outdoor place, or a restroom; younger people were less likely than others to say that condoms were available at the place where they last had a sexual encounter. In both age-groups, about two-thirds of respondents said that partners they had met through the Internet had lied about their age, and two in five said that such partners had lied about their marital status.

In the researchers' view, by revealing the changing profile of those who have found partners on-line, the survey results suggest that the Internet is becoming “more demographically representative,” a trend that “bears watching ...[by] epidemiologists studying STDs.” Furthermore, the finding that recent contacts make up the majority of all those initiated on-line “suggests that the Internet may be growing in its importance to young adults' sex lives.” Finally, young people's relative willingness to use chat rooms and exchange identifying information with potential partners suggests that on-line venues may give them “a (potentially false) sense of security” that could increase their vulnerability to unsafe situations.

While acknowledging the limitations of their survey—particularly, the potential for deliberate misreporting—the investigators note that the consistency of their results with those of previous research supports the validity of their findings. They conclude that there exists “an urgent need for online STD/HIV prevention interventions targeting young adults.”

—*D. Hollander*

REFERENCE

I. McFarlane M, Bull SS and Rietmeijer CA, Young adults on the Internet: risk behaviors for sexually transmitted diseases and HIV, *Journal of Adolescent Health*, 2002, 31(1):11–16.

In Developed and Developing Countries, Breast Cancer Risk Is Reduced by 4% for Each Year of Breastfeeding

For every 12 months that a woman breastfeeds, her risk of breast cancer declines by 4%, according to an analysis of 47 epidemiologic studies in 30 countries; this reduction is essentially the same in developing and developed countries, and for women with different background characteristics and reproductive histories.¹ In addition, breast cancer risk is reduced by 7% for every birth a woman has. The incidence of breast cancer is much lower in developing than in developed countries, and findings from this analysis suggest that the larger families and patterns of prolonged breastfeeding typical in the developing world explain much of the difference.

To study the relationship between reproductive factors and breast cancer risk, the analysts combined data from cohort and case-control studies involving a total of more than 50,000 women with breast cancer and nearly 97,000 cancer-free controls. Women with breast cancer were, on average, 50 years old when they received their diagnosis. These women had had fewer births than controls (2.2 vs. 2.6), and a larger proportion of them had never given birth (16% vs. 14%).

To calculate the relative risks of breast cancer associated with breastfeeding, the analysts limited the sample to women who had given birth, and they stratified the data by study, specific study site, and women's parity, age at diagnosis, age at first birth and menopausal status. Among women who had given birth, those with cancer were less likely than controls to have breastfed (71% vs. 79%) and reported a shorter average lifetime duration of breastfeeding (9.8 vs. 15.6 months).

For both cases and controls, as lifetime duration of breastfeeding increased, mean parity and mean number of children breastfed increased, and age at first birth decreased. To assess the risk of breast cancer associated with reproductive factors in the absence of breastfeeding, the analysts examined data on women who had never breastfed; among this group, they found that the relative risk of breast cancer declined by 3% for each one-year decrease in a woman's age at first birth and by 7% for each birth she had. When they compared the effects of parity for women who had breastfed and those who had not, the risk of breast cancer declined as the number of births increased for both groups, but at each parity, women who

had never breastfed had a slightly higher relative risk than those who had ever breastfed.

Comparisons of women who had never breastfed with those who had breastfed for varying durations revealed that the relative risk of breast cancer was 0.9 for women who had breastfed for 7–18 months and fell to 0.7 for those who had breastfed for 55 months or more. The reduction in relative risk was 4% for every 12 months of breastfeeding over a woman's lifetime, and this result was the same irrespective of a woman's parity, age at first birth or at diagnosis, ethnicity, level of education, family history of breast cancer, age at menarche, height, weight, body mass index, history of hormonal contraceptive use, menopausal status, or alcohol or tobacco use. The same reduction also was seen for both women in the developing world and their counterparts in developed countries.

Citing findings from other research, the analysts observe that around 1990, women living in developed countries had a considerably higher cumulative incidence of breast cancer until age 70 than those in developing countries. Given that women in the developed world also had fewer births and breastfed for shorter durations, the analysts explored the contribution of these factors to the incidence of breast cancer. By applying the relative risks from their study to age-specific incidence rates typical for developed countries around 1990, they estimated that if each woman in the developed world had 6.5 births instead of 2.5 and breastfed each child for 24 months rather than three months, the incidence of breast cancer by age 70 would be reduced by more than half (from 6.3 to 2.7 cases per 100 women). They further estimated that breastfeeding would be responsible for almost two-thirds of this reduction.

As the analysts acknowledge, it is "unrealistic" to expect that the incidence of breast cancer will be substantially lowered by women's adopting patterns of childbearing and breastfeeding that were typical in much of the world until about a century ago. However, they suggest that understanding how breastfeeding protects against breast cancer may make it possible to prevent the disease "by mimicking the effect of breastfeeding therapeutically or in some other way." They conclude that "in the meantime, important reductions in breast-

cancer incidence could be achieved if women considered breastfeeding each child for longer than they do now."—D. Hollander

REFERENCE

1. Collaborative Group on Hormonal Factors in Breast Cancer, Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50,302 women with breast cancer and 96,973 women without the disease, *Lancet*, 2002, 360(9328):187–195.

Estrogen-Only Therapy After Menopause Is Linked to Ovarian Cancer

Postmenopausal women who use estrogen-only replacement therapy are at increased risk for ovarian cancer, especially after 10 or more years of use.¹ Postmenopausal women in a prospective cohort study who had ever used estrogen-only therapy had a 60% greater risk of ovarian cancer than participants who had never used hormone replacement therapy. A woman's risk increased by 7% with each year of use; it was nearly doubled after a decade of use and was tripled after two decades. Women who had undergone hysterectomy were also at significantly higher risk with long-term estrogen-only use. In contrast, women who had used only regimens containing both estrogen and progestin did not have a significantly elevated risk, although data were limited for this group.

The study was conducted in four phases: During the first (1979–1986), participants completed baseline and annual follow-up telephone interviews; during each subsequent phase (1987–1989, 1993–1995 and 1995–1998), they responded to a mailed questionnaire. Each survey asked women about their use of female hormones (injections, creams, patches or pills, depending on the study phase), menopausal status, gynecologic surgeries and risk factors.

Women enrolled in the study were former participants in a mammography screening project that took place in 29 study centers in the United States. Those who had had both ovaries removed, or had a history of breast or ovarian cancer, were excluded. A woman's follow-up began at the time of the initial telephone interview or menopause, whichever occurred later, and ended when she received a diagnosis of ovarian cancer, died, had both ovaries (or a second ovary) removed or completed the

study's fourth phase.

New cases of ovarian cancer were ascertained from medical records, self-reports, state registry data and the National Death Index (with confirmation by review of death certificates). Rate ratios for ovarian cancer were generated by regression analysis for categorical variables and were adjusted for age, type of menopause (i.e., natural, surgical or unknown) and duration of oral contraceptive use. Score tests were used to assess the significance of trends in the risk of ovarian cancer according to duration of hormone use.

On average, the 44,241 women included in analysis were 56.6 years old at baseline. Ovarian cancer occurred in 329 women during a mean 13.4-year follow-up. The risk of ovarian cancer increased as women's number of live births and duration of oral contraceptive use decreased; it also was elevated among women who had not undergone hysterectomy. Risk was not associated with either age at menopause or body mass index.

Use of estrogen-only replacement therapy was more common among older than among younger women, among those who had had a hysterectomy than among those who had experienced natural menopause and among those who had gone through menopause before age 45 than among those who had done so later. Levels of use of estrogen-progestin compounds were relatively high among women who had experienced natural menopause, were older at menopause, had used oral contraceptives for more than two years and had a low body mass index.

Women who had ever used estrogen-only replacement therapy had a 60% increase in the risk of ovarian cancer, compared with women who had never used hormone replacement therapy (rate ratio, 1.6). The risk associated with estrogen-only use increased by 7% with each additional year of use, and the risk was sharply elevated after a decade of use. Women who had used estrogen-only replacement therapy for 10–19 years had a near doubling of risk (1.8), while those using it for 20 or more years had triple the risk of never-users (3.2).

Ovarian cancer risk was associated with use of hormone replacement therapy both for women who had had a hysterectomy and for those who had not. Among those who had had a hysterectomy before entering the study, the risk increased by a significant 8% with each year of estrogen-only use, and 20 or more years of use was associated with a tripling of risk (rate ratio, 3.4). Among women who had not

had a hysterectomy at baseline, risk doubled after 4–9 years of use (2.1). In this group, longer-term estrogen-only use was uncommon.

Women who had used only combined hormone replacement therapy did not have a significantly higher risk of ovarian cancer than women who had never used replacement hormones; however, only 18 such women developed ovarian cancer, so the analysis was limited. The duration of use of this type of therapy (which averaged only 5.6 years among long-term users) was not significantly associated with the risk of ovarian cancer. Women who switched from estrogen-only to combined hormone therapy had a marginal increase in risk of ovarian cancer, which the researchers hypothesize reflected their prior use of estrogen-only therapy.

The study's results were not altered when analyses were further adjusted for family history of ovarian cancer (available for 71% of women) and family history of breast cancer.

Commenting on the findings, the investigators observe that many women who had used estrogen-only formulations were likely exposed to higher daily doses of hormone than are used today; the study could not determine the independent effects of dose and duration. Therefore, they conclude that it remains uncertain if long-term use of lower doses of estrogen is associated with an elevated risk of ovarian cancer. Likewise, because few cancers occurred in women using only combined hormone preparations and because long-term data for this use are lacking, "it is premature to conclude that [estrogen-progestin replacement therapy] has no association with ovarian cancer," the investigators caution. Confirmation of the study's findings, will require additional studies, they conclude, "with particular attention to duration, dose, and regimen."

This and other observational studies do not establish a causal link between use of estrogen replacement therapy and ovarian cancer risk, notes the author of an accompanying editorial.² Nonetheless, he concludes that "the association between estrogen use and ovarian cancer should be worrisome enough for clinicians to consider carefully whether to suggest estrogen-only [hormone replacement therapy]."—S. London

REFERENCES

1. Lacey JV et al., Menopausal hormone replacement therapy and risk of ovarian cancer, *Journal of the American Medical Association*, 2002, 288(3):334–341.
2. Noller KL, Estrogen replacement therapy and risk of ovarian cancer, editorial, *Journal of the American Medical Association*, 2002, 288(3):368–369.

Health of Mothers, Babies May Be Compromised In Planned Home Births

Compared with women who plan to have their baby delivered in a hospital, women who intend to have their baby delivered by a professional provider at home have a greater likelihood of complications during and after labor and delivery, and their newborn has an increased risk of compromised health. In particular, newborns of women who planned a home delivery are twice as likely to have a very low Apgar score or to die as are newborns of women who planned a hospital delivery, according to a retrospective analysis of births in Washington State from 1989 to 1996.¹ Moreover, among previously nulliparous women, planned home birth is associated with elevated risks for prolonged labor and postpartum bleeding. As the analysts comment, these findings are important to consider, given the increased popularity of out-of-hospital births in recent years.

In this population-based cohort study, the researchers used information from birth certificates and infant death certificates from 1989 to 1996 in Washington State to assess whether intended place of delivery—home or hospital—affects selected maternal or neonatal health outcomes. They examined 6,133 singleton deliveries by a health care provider among women who planned to deliver at home, including 279 attempted home deliveries that resulted in the woman's transfer to a hospital. The study was limited to births that occurred at 34 or more weeks' gestation after an uncomplicated pregnancy (i.e., prior to onset of labor, the woman was not known to have chronic or pregnancy-induced hypertension, eclampsia, diabetes mellitus, hepatitis B virus infection or any of 13 other conditions).

For the study's primary analysis, outcomes in the planned home births were compared with those in 10,593 randomly selected births involving planned hospital deliveries, which were matched for year of birth to the planned home deliveries. Secondary analyses examined only births at 37 or more weeks' gestation to an infant weighing at least 2,500 g; in all, 6,052 intended home births, including 269 transfers, and 10,347 planned hospital births.

Women who intended to give birth at home were older than women with planned hospital births (96% and 89%, respectively, were aged 20 or older). Higher proportions in the

planned home birth group were white (92% vs. 81%), parous (76% vs. 57%) and married (83% vs. 75%). In addition, a higher proportion had more than a high school education (61% vs. 49%), had insurance or paid for their own care (72% vs. 61%), had an infant whose birth weight was at least 2,500 g (99% vs. 98%) and had never smoked (89% vs. 82%). Meanwhile, a larger proportion of women in the planned hospital birth group than in the planned home birth group resided in an urban setting (79% vs. 73%) and received prenatal care in the first trimester (82% vs. 72%).

Adverse events overall were rare among the infants in this study. However, three outcomes seemed more common in newborns of women who planned to deliver at home than in newborns of women who intended to deliver in a hospital. The researchers calculated relative risks to assess the significance of the apparent differences. First, in analyses adjusting for maternal age, they found that compared with infants of women who planned a hospital delivery, newborns of women who planned a home delivery had a significantly elevated risk (relative risk, 2.3) of having a low score (0–3 on a scale of 0–10) on the Apgar test taken five minutes after birth. The results were similar regardless of whether the woman had given birth previously.

Second, the risk of neonatal death for newborns whose mother planned to deliver at home was nearly double that for infants whose mother intended to deliver in a hospital (after controlling for parity, the relative risk was 2.0), and the differential increased slightly when the researchers controlled for the women's insurance status and level of education. The risk of neonatal death in newborns whose mother planned a home delivery remained elevated (relative risk, 2.1 after controlling for maternal age) in the analysis restricted to infants born at 37 weeks' gestation or later and with a minimum birth weight of 2,500 g. The risk was especially elevated for newborns of previously nulliparous women who intended to deliver at home (2.7 in the primary analysis and 3.0 in the more restricted analysis). No differences were found in the groups' risk of post-neonatal death.

For the third measure of infant health, respiratory distress (i.e., requirement of ventilation for more than 30 minutes), the newborns of previously nulliparous women who intended to give birth at home appeared to be at increased risk. However, the result was significant (relative risk, 3.2) only in the secondary analysis.

Among previously nulliparous women (but not for those who had given birth before), planned home deliveries were associated with an elevated risk of two maternal outcomes: prolonged labor (relative risk, 1.7) and postpartum bleeding (2.8). The results were similar in the secondary analysis.

According to the researchers, this study suggests that planned home births might be associated with an increased risk of adverse neonatal and maternal outcomes, particularly among women who have not given birth previously. However, the researchers also acknowledge several limitations of their study— notably, the possibility that the true intention of the mothers for delivery location, as well as other factors, was misclassified. Thus, they caution that further studies are needed: "More light needs to be shed on this controversial topic before practitioners and expectant parents can be fairly counseled about the safety of planned home births."—C. Coren

REFERENCE

1. Pang JWY et al., Outcomes of planned home births in Washington State: 1989–1996, *Obstetrics & Gynecology*, 2002, 100(2):253–259.

Low Birth Weight, Preterm Risks Grow When Women Have Psychiatric Problems

Pregnant women with a documented psychiatric disorder or substance abuse problem have a significantly elevated risk of having poor birth outcomes, according to results of a population-based study conducted in California.¹ Among infants born there in 1995, those whose mothers had a diagnosed psychiatric or substance-related disorder had roughly 2–4 times the odds of other babies of having a low or very low birth weight, and of being delivered preterm. As the analysts observe, the findings are important because psychiatric disorders are not uncommon among pregnant women, and earlier studies of their relationship to poor birth outcomes have examined symptoms or stress rather than documented diagnoses.

Using a data set that links statewide birth and infant death records with maternal and infant hospital discharge records, the analysts gathered information on more than 521,000 women who delivered in 1995 and on their liveborn, singleton infants. Data included women's demographic characteristics, use of prenatal care, birth outcomes, and diagnoses

of psychiatric disorders (for example, mood, psychotic, eating, sleep, sexual or gender identity, and adjustment disorders) and substance-related disorders.

In all, fewer than 3% of women had a documented diagnosis—0.4% had a psychiatric diagnosis, 1.0% a diagnosis of substance abuse and 1.4% both. Those with any documented disorder were more likely than those with none to be black or white, to be covered by Medi-Cal (California's Medicaid program), to be single, to have had more than three prior deliveries and to have received inadequate prenatal care (as measured by a standard index). The vast majority of women with a diagnosis (92%) had their condition identified at the time they were hospitalized for delivery; 14% received their diagnosis while pregnant, and 6% had a disorder diagnosed both prenatally and at delivery.

Some 15–21% of women with a diagnosis delivered before 37 weeks' gestation (preterm), compared with 9% of those with no diagnosis. Similarly, whereas 5% of women with no diagnosis bore an infant who was low-birth-weight (less than 2,500 g), the proportion was 10–18% among those with a diagnosis; for very low birth weight (less than 1,500 g), the proportion was 1% for those with no documented disorder and 3% for women with a psychiatric or substance-related disorder or both.

The analysts used logistic regression to examine the risk of poor outcomes while controlling for the effects of marital status, ethnicity and adequacy of prenatal care. These calculations revealed that compared with women who had no diagnosis, those with a psychiatric disorder had twice the odds of bearing a low-birth-weight infant (odds ratio, 2.0), those with a substance-related disorder had almost four times the odds (3.7) and those with both types of diagnoses had three times the odds (3.0). Each category of diagnosis was associated with about a tripling of the risk of very low birth weight: Odds ratios were 2.8–3.0. Women with a psychiatric disorder had a 60% greater risk of preterm delivery than those with no documented disorder (odds ratio, 1.6), while women with substance-related or dual diagnoses had roughly doubled risks (2.4 and 2.3, respectively).

Additional analyses—one including a larger number of potentially confounding variables and one that was restricted to women who had not given birth before, to control for the possible confounding effect of a history of preterm delivery—produced essentially similar results.

When the analyses were limited to women whose diagnoses had been made before delivery, the findings remained unchanged.

The analysts comment that the findings “underscore the importance of improved detection of psychiatric and substance use disorders” among pregnant women. Once such disorders are identified, they point out, “increased monitoring...could enhance timely interventions and improve birth outcomes.”
—D. Hollander

REFERENCE

1. Kelly RH et al., Psychiatric and substance use disorders as risk factors for low birth weight and preterm delivery, *Obstetrics & Gynecology*, 2002, 100(2):297–304.

Use of Multiple Anti-HIV Drugs Does Not Raise Risk Of Adverse Birth Outcomes

Among HIV-infected pregnant women, those who receive combination antiretroviral drug therapy have rates of premature delivery and stillbirth similar to those receiving monotherapy or no therapy, and they are no more likely to deliver a baby with low birth weight or low Apgar scores, according to a combined analysis of multiple studies performed in the United States.¹ Furthermore, women who take protease inhibitors as part of their combined drug regimen are no more likely to have a premature or very premature delivery or a low-birth-weight infant than are women who use combination therapy without these drugs, monotherapy or no therapy. Among women receiving combination therapy, however, users of protease inhibitors may be more likely than nonusers to have a very low birth weight infant (odds ratio, 3.6).

HIV-infected pregnant women can take antiretroviral drugs to improve their health and decrease the likelihood of mother-to-child HIV transmission, but the impact of these drugs on pregnancy outcomes has not been determined. To examine the effects of antiretroviral treatment on the risks of adverse outcomes, researchers analyzed data from seven clinical studies of HIV-1-positive pregnant women who delivered from 1990 through 1998. The researchers studied the women’s characteristics and type of antiretroviral therapy used, as well as the following outcomes for singleton births: premature and very premature delivery (at less than 37 and 32 weeks’ gestation, respectively), low and very low birth weight

(less than 2,500 g and 1,500 g, respectively), possibly and definitely abnormal Apgar scores (less than seven and four, respectively) at one minute and five minutes, and stillbirth.

Of the 3,266 women identified, 1,590 had received zidovudine monotherapy, 533 had received a combination of antiretroviral drugs (396 whose treatment included protease inhibitors and 137 whose treatment did not) and 1,143 had not received any antiretroviral drugs. Compared with women who had received monotherapy, those who had received any combination therapy were generally older (median age, 28 vs. 27), had lower median CD4+ cell counts (286 vs. 358 per cubic millimeter) and were less likely to have used illicit drugs during pregnancy (16% vs. 25%). Women who had received antiretroviral treatment had lower median CD4+ cell counts than did untreated women (343 vs. 450 per cubic millimeter) and were also less likely to have used tobacco (34% vs. 55%), alcohol (23% vs. 41%) or illicit drugs (23% vs. 42%) during pregnancy.

There were no significant differences in the frequencies of stillbirth or other adverse pregnancy outcomes between women who had received monotherapy and those who had received multiple drug treatment. Commonly encountered complications were low birth weight (13–17%), premature delivery (15–16%) and possibly abnormal one-minute Apgar score (11–12%). Among women who had used combined drug therapy, the rates of adverse outcomes for those who had taken protease inhibitors and those who had not were similar, with the exception of the rate of low birth weight, which was higher among users of protease inhibitors (20% vs. 11%). The stillbirth and complication rates of treated and untreated women were also similar; only the rate of premature delivery differed significantly between groups (16% vs. 20%). However, after adjustment for CD4+ cell count and use of tobacco, alcohol and illicit drugs, all rates were similar for those who had received any drug treatment, any combination therapy or no treatment.

Logistic regression analyses that corrected for risk factors such as CD4+ cell count, age, race or ethnicity, and use of tobacco, alcohol or illicit drugs revealed that the risks of premature or very premature delivery and low or very low birth weight for women who had used any combined drug regimen were similar to those for women who had used monotherapy. The risks of premature and very premature delivery that were associated with the use of regimens containing protease inhibitors were

similar to those conferred by use of monotherapy or combination therapy without protease inhibitors. Compared with women who had used monotherapy, those who had received combination therapy without protease inhibitors had a lower risk of delivering a low-birth-weight infant (odds ratio, 0.6), whereas women whose regimen had included these drugs had an increased risk of having a very low birth weight infant (2.9). However, these results became nonsignificant after further adjustment for prior premature delivery. Among women who had been given combination therapy, users of protease inhibitors were more likely than nonusers to deliver a baby of low birth weight or very low birth weight (2.3 and 3.2, respectively); the odds of very low birth weight remained elevated when results were adjusted for prior premature delivery (3.6).

Finally, the investigators compared treated and untreated women and found that those who had used monotherapy or combination therapy with or without protease inhibitors were, in general, as likely as untreated women to have a premature or very premature delivery or a baby of low or very low birth weight. Although users of combination therapy that included protease inhibitors had an elevated likelihood of delivering a baby of very low birth weight (3.2), this result became nonsignificant after adjustment for prior premature delivery. Women whose combination treatment did not include protease inhibitors had a lower likelihood of low birth weight than did untreated women (0.4), even after correction for prior premature delivery (0.5).

According to the authors, the study shows that the risk of adverse birth outcomes associated with administration of antiretroviral combination therapy to manage HIV infection during pregnancy is no greater than the risks associated with monotherapy or no therapy. Among women who use combination therapy, however, users of protease inhibitors may be at an increased risk of very low birth weight—a finding that the analysts suggest requires confirmation because of its wide confidence interval, the small number of infants involved (a total of 16) and the lack of adjustment for the different study sources. The authors also note that they did not consider other factors such as maternal disease status, HIV viral load, and the precise timing and duration of therapy. They conclude, nevertheless, that “the risks of adverse outcomes of pregnancy that are attributable to antiretroviral therapy are low and are likely to be outweighed by the

recognized benefits of such therapy during pregnancy.”—*T. Lane*

REFERENCE

I. Tuomala RE et al., Antiretroviral therapy during pregnancy and the risk of an adverse outcome, *New England Journal of Medicine*, 2002, 346(24):1863-1870.

Among Women in Jail, Whites Are at the Greatest Risk of Acquiring HIV

Behaviors that put women in danger of acquiring HIV are common among jail detainees, but some groups of women in jail engage in riskier behaviors than others.¹ White women report having had more sexual partners in the past year than blacks or Hispanics, and they are more likely to ever have traded sex for drugs or money. On the other hand, greater proportions of Hispanic female jail detainees than of white or black women report never using protection during oral or vaginal sex. White women, women with prior arrests, those arrested for only misdemeanor crimes and those with severe mental disorders score higher than others on a scale measuring sexual behaviors associated with HIV transmission.

To examine which subgroups of female jail detainees are at greatest risk of acquiring HIV, researchers interviewed women entering the Cook County Department of Corrections in Chicago between 1991 and 1993. During private and confidential interviews, participants were asked questions regarding their criminal history, sexual behaviors and injection-drug use. Researchers calculated summary scores of sexual and drug-related risk factors to determine which subgroups were most likely to acquire HIV. These summary scores, ranging on a scale of 0-100, provide a continuous measure of the extremity of behaviors; therefore, higher scores are associated with riskier behaviors.

The initial sample included 1,272 female jail detainees. Participants' ages ranged from 17 to 67; the mean age was 29. Forty percent of the women were black, 34% were white, 25% were Hispanic and 1% were members of other racial and ethnic groups. Four-fifths of the women were unemployed; on average, participants had had 11 years of schooling.

Researchers collected complete data on sexual behavior and drug use for 940 women. The overwhelming majority (97%) of these detainees reported having had vaginal intercourse in the past year; 46% had had oral sex, and 5%

had had anal sex. Between 32% and 74% had never used protection during recent sexual activities; 22-45% had always used protection. Forty-three percent had had one sexual partner in the past year, 27% between two and three, 24% between four and 100, and 3% more than 100. One-third ever had traded sex for money or drugs, and one-quarter had done so at least weekly.

A greater proportion of white women (10%) than of blacks (1%) or Hispanics (4%) had had more than 100 sexual partners in the past year. In addition, white women were more likely than others to report ever having had oral or anal sex and having traded sex for money or drugs. Greater proportions of Hispanic women than of whites or blacks reported never using protection during vaginal or oral sex.

White women had significantly higher mean sexual summary risk scores (33) than blacks (25) or Hispanics (24) and, thus, were at the greatest risk of acquiring HIV; the overall mean sexual risk score was 26. Women arrested for misdemeanor crimes had higher sexual risk scores than those charged with felonies (29 vs. 24), and women with prior arrests (juvenile or adult) had higher sexual risk scores than those without (28 vs. 18). Female jail detainees with severe mental illness had a higher mean sexual risk score than did those with no severe disorder (33 vs. 20), and had the highest 90th percentile sexual risk score of any subgroup studied (64).

Nineteen percent of the sample had ever used injection drugs, and 9% had ever shared needles; substantially greater proportions of white women than of blacks and Hispanics had participated in these activities. Injection-drug use risk scores were elevated among white women; those 30 or older; those arrested on drug charges; those with any prior arrests; those with prior arrests for drug possession, drug sales, prostitution or theft; and those with a lifetime history of substance dependence.

The researchers note that many women who are at high risk of acquiring HIV, such as those trading sex for money or drugs and those with severe mental illness, will likely spend some time in jail during their lifetime. In addition, women jailed for less-serious crimes “engage in the most serious HIV and AIDS risk behaviors” and “will return to the community the soonest.” Consequently, the researchers conclude that “providing HIV and AIDS education to jail detainees could reduce the HIV and AIDS epidemic in the population as a whole.”
—*J. Rosenberg*

REFERENCE

I. McClelland GM et al., HIV and AIDS risk behaviors among female jail detainees: implications for public health policy, *American Journal of Public Health*, 2002, 92(5):818-825.

Statement of Ownership, Management and Circulation

Title of publication: *Perspectives on Sexual and Reproductive Health*. **Publication no.:** 0804-70. **Date of filing:** Sept. 13, 2002. **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	6,667	6,185
Paid and/or requested circulation		
Mail subscription (paid and/or requested)	4,920	5,000
Other classes mailed through the USPS	0	0
Total	4,920	5,000
Free distribution by mail, carrier or other means (samples, complimentary and other free copies)	1,497	1,035
Total distribution	6,417	6,035
Copies not distributed Office use, left over, unaccounted for, spoiled after printing	250	150
Return from news agents	0	0
Total	6,667	6,185
Percent paid and/or requested circulation	77%	83%

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

 , Editor