Pregnancy and Alcohol: Many Obstetrician-Gynecologists Are Unsure About Risks or How to Assess Women's Use

Virtually all obstetrician-gynecologists participating in a national survey ask pregnant women whether they use alcohol; most obtain this information during an initial visit with a patient, a practice recommended by the American College of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics. Nevertheless, only 30% of obstetrician-gynecologists feel very prepared to assess pregnant women's alcohol use, and 83% say that they need information on thresholds at which prenatal drinking poses specific threats to the pregnancy or the fetus. Moreover, although the federal government has for 20 years advised pregnant women to refrain from drinking, about half of doctors surveyed believe that occasional use of alcohol during pregnancy will not increase the risk of several adverse outcomes.[1]

ACOG conducted the survey in 1998 among a sample consisting of active members of the organization plus the members of an ACOG research network of physicians who volunteer to participate in periodic, topical surveys. The survey asked doctors about their alcohol screening practices, their opinions about the level of use that puts women at risk of particular adverse outcomes, and their counseling and referral practices for pregnant women who drink moderately (i.e., have an average of 3–13 drinks weekly) or heavily (i.e., have 14 or more drinks per week or at least five drinks at any one time).

In all, 604 obstetrician-gynecologists completed the survey. Three-fifths of respondents were men, and nine in 10 were younger than 60. About one-quarter had graduated from medical school before 1973, half had graduated between 1973 and 1989, and one-quarter had graduated later.* Fifty-one percent worked in a group private practice; 21% in a solo private practice; 20% in a managed care organization, university or medical school, or government institution; and 8% in other settings. The questionnaire was mailed to ACOG fellows throughout the country; however, because of the sampling procedure used, the final sample may not be representative of the organization's membership.

Ninety-seven percent of respondents said that they obtain information on alcohol use from all of their obstetric patients; 92% do this at the first prenatal visit. Obstetrician-gynecologists use one or more of a variety of approaches to alcohol screening: Forty-eight percent ask women whether they drink, 41% have a nonphysician staff member ask and 19% include the question on a form that patients fill out. Twenty-three percent use one of the standardized screening tools that are available to help physicians detect alcohol use among pregnant women.

If a pregnant patient says that she drinks, 90% of respondents ask about her level of alcohol consumption. The vast majority also talk with her about the adverse effects of prenatal alcohol use—86% if she is a moderate drinker and 97% if she drinks heavily. Similarly, high proportions advise patients who drink to discontinue alcohol use while pregnant (83% for moderate drinkers and 92% for heavy drinkers) or to reduce their alcohol consumption (79% and 88%, respectively). Far fewer, however, refer women for treatment: Only 21% refer moderate drinkers, and 61% refer heavy drinkers.

Providing education about the effects of drinking during pregnancy is not a routine practice for many physicians. While 50% offer information or advice to all pregnant women, 36% raise the issue only if they know or suspect that a patient uses alcohol. Thirteen percent of respondents offer education or advice about prenatal drinking only to women with risk factors associated with alcohol consumption during pregnancy (a history of drug use or heavy drinking, or current smoking).

Although thresholds have not been established, the survey asked physicians how many drinks per week they think pregnant women can consume without increasing their risk of having a spontaneous abortion or of bearing an infant with central nervous system impairment, birth defects or fetal alcohol syndrome. For each of these outcomes, 26–31% of respondents believe that any alcohol consumption is too much, and 16–28% are unsure. The remainder (46–56%) think that some alcohol consumption poses no risk; the average weekly number of drinks considered safe ranged from 4.6 for spontaneous abortion and central nervous system impairment to 6.6 for fetal alcohol syndrome.

The bulk of obstetrician-gynecologists surveyed (66%) feel somewhat prepared to assess women's alcohol use, but only 30% feel very prepared and 4% feel unprepared. The need for additional training in this area is one of the most frequently cited barriers to the provision of this service (mentioned by 65% of physicians); others are time limitations, concerns about patients' sensitivity to the subject and a lack of referral sources (50–70%). When asked what resources they need to improve their ability to assess patients' alcohol consumption, 83% of respondents said information on thresholds for poor pregnancy outcomes.

Twenty-seven percent of physicians think that medical school did not adequately prepare them to assess pregnant women's alcohol use; 35% consider their training on the subject adequate, and the rest believe that it was very good or outstanding. The more positively physicians view their training, the more likely they are to use a standardized screening tool and to feel prepared to assess patients' alcohol use. The level of satisfaction with training is highest among physicians who graduated after 1989 and falls significantly among those who graduated earlier.

In analyses that adjusted for respondents' age, the researchers found few sig-

*These periods reflect the evolution of understanding of and education about alcohol use during pregnancy: Prior to 1973, fetal alcohol syndrome had not yet been documented. In the middle period, the first surgeon general's report on prenatal drinking was issued, and medical school curricula began to include information on the subject. The period since 1990 has been characterized by extensive warning labels on alcohol products and official government health advisories.

nificant differences between male and female physicians' practices regarding pregnant patients who drink. Male doctors are about 10% less likely than females to advise moderate drinkers to stop drinking (prevalence rate ratio, 0.9), and they are 19% less likely to mention referral sources as a resource that would improve their ability to assess patients' alcohol use. However, men are 15% more likely than women to say that women who are pregnant or trying to conceive should abstain from alcohol use.

The timing of physicians' medical education, however, is associated with several aspects of their alcohol assessment practices. When physicians' gender is taken into account, those who graduated before 1973 are nearly 80% less likely than those who graduated after 1989 to use a standardized screening tool and about 40% less likely to consider themselves very prepared to assess alcohol use (prevalence rate ratios, 0.2 and 0.6, respectively). These doctors are less likely than those who graduated most recently to discuss the adverse effects of alcohol use with moderate drinkers, to advise these women to discontinue or reduce their alcohol use, and to advise heavy drinkers to cut down (ratios, 0.7–0.9). Furthermore, they are more likely than those who graduated after 1989 to be unsure as to thresholds for adverse outcomes, to say they need training in alcohol assessment and counseling, and to say that a lack of insurance reimbursement is a barrier to providing these services (1.4–1.7). They are 10 times as likely to feel that their medical school training in this area was inadequate (10.1).

Fewer, and somewhat less striking, differences exist between those who graduated in 1973–1989 and those who completed school later. Physicians who graduated in the middle period are less likely than those who graduated later to use a screening tool, feel prepared to assess alcohol use, discuss the adverse effects of alcohol with heavy drinkers and advise such women to reduce their alcohol consumption (0.5–0.9). They are about 50% more likely than their colleagues who graduated later to consider a lack of insurance reimbursement an obstacle to alcohol screening or counseling, and they are nearly three times as likely to consider their training inadequate.

The researchers observe that despite two decades of federal advisories on the hazards of drinking during pregnancy, "many physicians are not convinced that total abstinence from alcohol is necessary for pregnant women." To remedy this situation, they suggest that professional organizations and public health agencies participate in "meaningful dialogue" about the issue and that federal, professional and nonprofit agencies collaborate to raise awareness of the potential effects of prenatal alcohol use. Furthermore, they note the importance of physicians' being kept up to date on the effects of drinking during pregnancy, on ways to assess patients' alcohol use and on interventions to use when they see pregnant patients who drink. —*D. Hollander*

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Experts Say Japan's Medical Delivery System Is Partly To Blame for High Level of Maternal Mortality There

In 1991–1992, 230 Japanese women died while pregnant or within 42 days after their pregnancy ended; the resulting maternal mortality rate of 9.5 deaths per 100,000 live births is somewhat higher than rates in other developed countries at roughly the same time. Moreover, according to the results of an inquiry initiated by the Japanese government, nearly two in five maternal deaths that occurred in medical facilities could have been prevented. Findings from the inquiry highlight how inadequacies in Japan's system of delivering obstetric care contribute to the risk of pregnancy-related death.[1]

A 15-member study group was convened to conduct the inquiry, using data from death certificates to identify maternal deaths. The group investigated the details of each case by sending a questionnaire to the medical facility that provided care to the woman or, in instances where the woman had not received care, to the coroner's office. In addition to examining the characteristics of women who died and the causes of death, the group assessed characteristics of medical facilities involved, such as staffing patterns and the availability of laboratory services. Finally, the researchers invited a panel of 42 medical specialists to review the records of women who died in medical facilities and assess how preventable each death was (using the categories impossible to prevent, difficult to prevent, not difficult to prevent or indeterminable).

In all, 230 maternal deaths occurred in Japan—9.5 for every 100,000 live births—during the period 1991–1992. While most of the women (197) had received care and died in medical facilities, 22 died outside a facility; information on 11 women was unavailable. Among women who died in hospitals or clinics, 80% had received regular prenatal care; 58% had given birth previously. Thirty-seven percent of these women had a cesarean delivery, the same proportion delivered vaginally and 26% died before giving birth. The most common cause of death among women who had received medical care was prenatal or postpartum hemorrhage (38%); a variety of other direct and indirect causes each accounted for fewer than 15% of deaths. Similarly, postpartum hemorrhage was the most frequent cause of death among women who had not received medical attention.

Of the 197 deaths that occurred in medical facilities, the panel of medical experts deemed 72 (37%) preventable: Panel members unanimously characterized 19 deaths as not difficult to prevent, and at least 70% of these specialists characterized an additional 53 deaths in this way. Thirty-two deaths (16% of those occurring in medical facilities) were judged possibly preventable, and the remainder unpreventable. As was the case overall, most preventable deaths were attributable to hemorrhage.

Japanese hospitals and clinics that provide obstetric care have, on average, only one obstetrician on duty at a time, and a majority have no anesthesiologist. As a result, one doctor often serves as both obstetrician and anesthesiologist, and this was true for about two-thirds of women whose deaths were preventable (46 with hemorrhage and three with complications from anesthesia). In addition, the medical experts determined that 63% of preventable deaths were associated with deficiencies in hospital care, 10–13% with deficiencies in ambulatory or inpatient care and 50% with failure to meet basic practice standards.

The rate of unpreventable deaths was highest (12.9 per 100,000 live births) in facilities with at least four obstetricians, but the highest rate of preventable deaths was found in hospitals and clinics with only one obstetrician (4.1 per 100,000). Pre-

ventable maternal deaths due to hemorrhage also occurred with greatest frequency at facilities with only one obstetrician (3.8 per 100,000), while no such deaths occurred at facilities with four or more obstetricians.

Additional analyses provided further insights into the relationship between maternal deaths and hospital or clinic characteristics. For example, the proportion of preventable deaths declined as the number of either obstetricians or anesthesiologists at a facility grew. Furthermore, the rate of preventable deaths was considerably higher at facilities that transfer patients elsewhere before they die (56 per 100,000) than at facilities to which patients are referred (four per 100,000). Finally, facilities where maternal deaths occurred were unlikely to have basic laboratory services available around the clock.

As a result of their inquiry, the researchers propose several changes in Japan's medical delivery system. They recommend the establishment of regional obstetric facilities with increased physician coverage 24 hours a day. They further suggest that all facilities providing delivery care be staffed with at least one obstetrician and one provider of related nonobstetric care, and that these facilities be equipped to perform "essential laboratory services." Another proposal, stemming from a lack of uniformity in reporting of maternal deaths, is that all death certificates include standard classifications of obstetric and pregnancy-related deaths. Finally, the study group urges the government and the Japanese Society of Obstetrics and Gynecology to collaborate on the development of "clear community practice standards that delineate specific staffing and laboratory services necessary in each type of medical facility." While acknowledging the inevitability of some maternal deaths, the group members conclude that a systemic approach to change should reduce the occurrence of these events.—*D. Hollander*

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Reproductive Health Services Typically Are Not Part of Male Teenagers' Routine Medical Care

Adolescent males in the United States do not routinely receive reproductive health services such as counseling by a medical professional and testing for HIV or for other sexually transmitted diseases (STDs), even though they are likely to receive other health care services.[1] In a nationally representative sample of 15–19-year-olds, 71% had had a physical examination in the past year, but only 39% had received any reproductive health services. Even among those who were sexually active, 71% had recently undergone a physical, yet only half had received reproductive health services. Black teenagers had increased odds of receiving every type of reproductive health service examined—an encouraging finding, the investigators note, that contradicts results of other research and suggests that these young men are able to overcome barriers to health care.

The 1,652 adolescents in the sample were identified in the 1995 National Survey of Adolescent Males, which was conducted among a population-based sample of 15–19-year-olds. The youths completed an interview and questionnaire concerning demographic characteristics and sexual behaviors. They were asked whether in the past year they had had a physical examination, an HIV test, another STD test or a discussion with a physician or nurse about any of four reproductive health topics (condoms and the prevention of pregnancy, AIDS and other STDs).

The investigators tested the influence of several types of factors on the receipt of reproductive health services. They selected variables that might reflect knowledge about and attitudes toward health and the health care system (e.g., race and ethnicity, parents' education, receipt of public assistance and knowledge of various reproductive topics), accessibility of health care (e.g., area of residence, health insurance status and typical source of care) and the need for services (whether respondents had had a serious illness or injury, whether they had exhibited symptoms of an STD and the number of female sexual partners they had had in the last 12 months).

In the sample as a whole, 73% of youths were non-Hispanic whites, 14% were non-Hispanic blacks and 13% were Hispanics. Roughly 70–80% were not dependent on public assistance, were covered by private insurance and had no contact with anyone who had AIDS; nearly nine in 10 had a regular source of health care. Only 20% of the sample had been ill or injured during the past year, and 10% had had STD symptoms; 50% had had a female sexual partner.

Although 71% of the young men had had a physical examination in the past year, only 39% had received reproductive health services. In all, 17% had had an HIV test, 11% had been tested for another STD and 29% had discussed at least one reproductive issue with a physician or nurse. Notably, only 14% had discussed all four reproductive issues with a professional. Even among sexually active teenagers, 71% had had a physical, but half had had no testing or relevant discussions with a professional.

Using logistic regression analyses, the investigators examined the relationship of each variable to the receipt of reproductive health services while controlling for all of the other variables studied. They found that adolescents' odds of having had a reproductive health discussion were roughly doubled if they had had symptoms of an STD or had engaged in sexual activity with more than one woman (odds ratios, 1.9–2.3). Odds also were elevated among adolescents who were black, had learned about sexual topics in school or from parents, received Medicaid or had had a recent illness or injury (odds ratios, 1.2–1.6). Young men from the Midwest had reduced odds of having talked with a medical professional about reproductive health (0.5).

Adolescents became increasingly likely to have had an HIV test as they grew older (1.2), and their odds of having received this service roughly doubled if they knew a person with AIDS, received Medicaid or had had 1–2 sexual partners in the previous year (1.7–2.2). The odds also were elevated for adolescents who had recently had three or more sexual partners (4.7). Additionally, relative to white youths who had not had a physical, white teenagers who had had an examination were more likely to have been tested for HIV, and black teenagers had elevated odds of HIV testing, regardless of whether they had had a physical.

The odds of STD testing differed by ethnicity, and the researchers therefore conducted separate analyses for non-Hispanic and Hispanic young men. Among non-Hispanic adolescents, blacks were significantly more likely than whites to have been tested for STDs in the past year (odds

ratio, 1.6). Non-Hispanic teenagers also had elevated odds of STD testing if they were receiving public assistance, knew a person with AIDS, were covered by Medicaid, had no regular source of health care or had recently had 1–2 sexual partners (1.8–2.9). Those who recently had had three or more sexual partners or had undergone a physical examination were even more likely to have had an STD test (4.4–5.6).

Hispanic adolescents had increased odds of STD testing if their parents had a college education (2.9), if they had had a recent physical examination (7.2) or if they reported three or more sexual partners (9.0). Hispanic young men living in a rural community and those without health insurance were significantly less likely than others to have been tested for STDs (0.1 and 0.2, respectively).

The investigators emphasize that despite some encouraging results from their analyses, few adolescent males receive reproductive health care. Noting that services such as birth control counseling still are not considered an integral part of routine medical visits for young men (as they generally are for young women), they urge physicians to remedy this problem in accordance with current guidelines. They conclude by recommending that "given the high rates of STDs and unintended pregnancy among U.S. teens and their receptiveness to sexual health counseling in a clinical context, it should be common practice to incorporate reproductive health education into the routine health services of all adolescents."—*L. Ninger*

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Low- and High-Dose Pills Are Equally Protective Against Ovarian Cancer

Women who have ever used the types of oral contraceptives that are common today, which contain low doses of estrogen and progestin, are 50% less likely than never-users of the pill to develop ovarian cancer; this level of protection is identical to that afforded by older oral contraceptives with higher hormone doses.[1] These findings, from a population-based, case-control study, suggest that one of the main noncontraceptive benefits of the pill—its ability to prevent ovarian cancer—has been unaffected by changes made in pill formulations to make the method safer. Similarly, evidence from another case-control study suggests that ever-use of oral contraceptives reduces the odds of noncancerous ovarian tumors by 20%, and the decrease in risk is independent of estrogen dose.[2] In both studies, the magnitude of protection increased with longer durations of pill use.

Ovarian Cancer

The ovarian cancer study was based on data for women aged 20–69 who were treated for epithelial ovarian cancer between 1994 and 1998 at 39 hospitals in Delaware, New Jersey and Pennsylvania. Eligible women had received their diagnosis within the previous six months, and all diagnoses were confirmed pathologically. The control group consisted of randomly selected women who were matched to ovarian cancer patients by five-year age-group and telephone exchange (for those younger than 65) or by county of residence (for 65–69-year-olds). Researchers interviewed all participants to gather information on their demographic characteristics, sexual and reproductive history, family cancer history and contraceptive use, including the brand of any oral contraceptive used. The analyses include interview data from 767 women with ovarian cancer and 1,367 controls.

To assess the effects of different hormone doses in combined oral contraceptives, the researchers classified pills as follows: Preparations containing less than 50 mcg of ethinyl estradiol or less than 100 mcg of mestranol were considered to have a low dose of estrogen; all others were considered high-dose estrogen pills. The progestin dose was considered low if the progestin was estimated to be less potent than 0.5 mg of norgestrel and was classified as high otherwise.

Some 80–90% of both cancer patients and controls were aged 40 or older, were white and had at least a high school education. Roughly three-quarters of cancer patients and nine in 10 controls had ever been pregnant. In all, 56% of women with ovarian cancer had ever used oral contraceptives, as had 69% of controls; the majority of pill users had taken pills containing low doses of both estrogen and progestin.

In analyses adjusting for age, race, pregnancy history and family history of ovarian cancer, women who had ever used oral contraceptives had a 40% lower risk of ovarian cancer than women who had never used the pill (odds ratio, 0.6). The protective effect increased with the duration of use: Women had a 30% decrease in risk (odds ratio, 0.7) if they had used the pill for up to four years and a 70% decrease (0.3) if they had used it for 10 or more years. Of note, the risk of ovarian cancer was reduced by 30% even after less than one year of oral contraceptive use, and it remained lowered for 30 years after termination of use.

The degree of protection against ovarian cancer was similar whether women began using the pill before 1972, when hormone doses were generally high (odds ratio, 0.7); between 1972 and 1980, when lower-dose formulations were being introduced (0.5); or after 1980, when low-dose pills dominated the market (0.6). Moreover, it varied little with different doses of estrogen and progestin. Women who used formulations with either high doses or low doses of both hormones experienced a 50% decrease in cancer risk (odds ratio, 0.5). Regimens with a high estrogen and low progestin dose provided a 30% decrease in risk (0.7), and low-estrogen, high-progestin pills lowered the risk by 40% (0.6).

When the data were further adjusted for duration of pill use, women still had similar reductions in ovarian cancer risk regardless of whether they used pills with high or low estrogen and progestin doses. Neither age at initiation of use nor duration since last use altered the protective effect of oral contraceptives.

The investigators note that their study is one of the first with a large group of patients and sufficiently long follow-up to evaluate the impact of low-dose oral contraceptives in comparison with that of high-dose formulations. Despite the difficulty in ascertaining pill brands many years after use, they conclude that low-dose preparations are as effective as high-dose oral contraceptives in preventing ovarian cancer.

Benign Ovarian Tumors

A total of 746 women aged 18–74 with surgically confirmed benign ovarian tumors were studied at six hospitals in the New York City area between 1992 and 1993. A group of 404 women, randomly selected from among those receiving gynecologic care at the same hospitals and frequency-matched to the subjects' age distribution, served as controls. Interviews were conducted to ascertain the women's background characteristics, reproductive history, personal and family medical histories and details about combined oral contraceptive use.

Women who had ever used oral contraceptives had a 20% lower risk of de-

veloping benign ovarian tumors than never-users of the pill (odds ratio, 0.8). Although a protective effect was not evident for women who reported current use of up to five years, the analysts found a strong trend of decreasing risk as duration of use increased; women who had been current users for more than five years were 60% less likely than never-users to develop benign ovarian tumors.

The pill's protective effect persisted even for women who had stopped using the method more than five years in the past. Again, the effect increased as duration of use rose and was most prominent for women who had used oral contraceptives for more than five years (odds ratio, 0.6).

Finally, the researchers assessed the impact of estrogen dose on the risk of noncancerous ovarian tumors. (They were unable to include progestin in the dosage analysis because the numbers of women who had taken pills with any particular progestin were small.) No differences in the tumor risk were found between women who had used high-dose pill formulations and those who had used oral contraceptives containing low doses of estrogen. —*L. Ninger*

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Changes in Bone Density Associated with the Use Of Hormonal Methods Are Small and Temporary

Hormonal contraceptives have only small, reversible effects on bone density, according to a multicenter study conducted in Africa, Asia and Latin America.[1] Compared with women who do not use hormonal methods, women who use combined oral contraceptives experience a significant increase in bone density, while those who use the injectable depot medroxyprogesterone acetate (DMPA) or the levonorgestrel implant experience a significant decrease. These changes disappear after the first 2–3 years of current use and appear to be clinically insignificant.

A total of 2,545 women aged 30–34 were enrolled between 1994 and 1997 at family planning clinics in Bangladesh, Brazil, China, Egypt, Mexico, Thailand and Zimbabwe. During interviews, each woman provided information on her social and demographic characteristics, obstetric and contraceptive history, dietary habits, and height and weight. Seventy-one women were excluded because they were currently pregnant or lactating (or had been within the prior six months), had undergone hysterectomy or oophorectomy, or reported diseases or drug intake that could influence calcium metabolism.

The remaining 2,474 women were categorized as users of hormonal contraceptives if they had used hormonal contraceptives for at least two years over their lifetime and as never-users if their lifetime exposure amounted to no more than six months. Study participants who had used more than one hormonal contraceptive were assigned to the method most recently used for at least two years. Thus, 33% were classified as pill users, 14% as DMPA users and 25% as implant users, while 28% were considered never-users.

To determine bone density, the radius was measured near the wrist and the ulna was measured at midshaft. The average bone density at both sites differed significantly by country, with women in Zimbabwe having the highest values at both the radius and the ulna and women in Bangladesh having the lowest values. As a group, Asian centers (those in Bangladesh, China and Thailand) had the lowest bone density readings of any region.

When the data were adjusted for study center, an analysis of covariance showed that bone density at both the radius and the ulna was associated with body mass index, age, total months of lactation, total months since last lactation and the occupation of the woman's partner. Parity and coffee consumption were related to bone density at the radius only. Bone density at both sites was associated with hormonal method use: Values were highest for women who did not use hormonal contraceptives, followed by those who relied on the pill, those who used the implant and those who relied on the injectable.

Most of these associations persisted after adjustment for the other variables in the analysis. Bone density values for women who relied on the pill (both all users and exclusive users) were not significantly different from those for never-users. Women who used DMPA had lower bone density; only the difference at the radius was significant for all users, while the differences at both the radius and the ulna were significant for exclusive users. Women whose only hormonal method had been the levonorgestrel implant had significantly lower bone density at the ulna. The decrease in bone density for women who used DMPA or levonorgestrel was approximately 0.01 g/cm^2, a relatively small decline, given that a decrease of one standard deviation below the measurements in never-users equals approximately 0.05 g/cm^2.

Further analysis of bone density for exclusive users and never-users revealed a pattern of significant change for all three methods during short-term current use. Women who had been using the pill for only 2–3 years had higher values at both bone sites than did never-users, while women who had been relying on either DMPA or the levonorgestrel implant for a similar period had significantly lower values than never-users at both bone sites. No other differences in bone density were found for any of the contraceptive methods for longer durations of current or past use, which suggests that such changes are reversible over time.

According to the researchers, the study's limitations include its cross-sectional design, the limited age range of the participants and the lack of bone density measurements at the femoral neck and spine. They note that the substantial variations across countries remain unexplained because several potentially important variables were not explored, such as calcium intake, dietary habits in childhood and exercise. The women displayed minimal variation in smoking and alcohol consumption, so the potential influence of these variables on bone density could not be determined.

The investigators point out that the small decreases in bone density found in this study among women using the implant and the injectable are not considered abnormal and fall short of the definition of low bone mass—and well short of that for osteoporosis. They conclude that the changes in bone density observed soon after the beginning of hormonal contraceptive use appear to be temporary and clinically insignificant.—*L. Ninger*

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Neighborhood Economic Conditions Influence AIDS Incidence in Massachusetts

Between 1988 and 1994, residents of the poorest and most densely populated Massachusetts neighborhoods had a markedly higher incidence of AIDS than those in the least-poor and least-dense communities; the differences amounted to more than 300 excess cases of AIDS per 100,000 residents in the disadvantaged neighborhoods. The incidence of AIDS varied widely by economic deprivation, race or ethnicity, and gender—from zero cases per 100,000 among white women in the least impoverished neighborhoods to 1,053 per 100,000 among black men in the most densely populated areas. These findings, from the first state-level analysis of the effects of economic inequality on the incidence of AIDS, underscore the importance to HIV prevention efforts of understanding the epidemic's dynamics vis-à-vis neighborhood economic resources.[1]

The analysts used the statewide AIDS surveillance registry to identify all cases of the disease reported for the period 1988–1994. Since these records lack information on individuals' socioeconomic status, the researchers examined 1990 census data to determine the economic characteristics of each AIDS patient's block group (a neighborhood unit with an average population of 1,000). Three economic measures were assessed: the proportion of residents living below the federal poverty line, population density (number of residents per square mile) and the proportion of households with an annual income of at least $150,000 (i.e., high-income households). On the basis of these data and 1990 census population estimates, the analysts calculated AIDS incidence rates, by neighborhood measures of economic well-being, for the state overall and separately for black, Hispanic and white men and women.

A total of 8,059 Massachusetts residents who received AIDS diagnoses in 1988–1994 were classified by block group. The majority were men (81%) and were younger than 40 (68%). Sixty percent were white, and the rest were predominantly black (22%) or Hispanic (17%). More than half lived in neighborhoods where at least 10% of the residents were below the poverty line, population density exceeded 10,000 people per square mile and fewer than 2% of households had high incomes.

Statewide, the cumulative incidence of AIDS for the period was 128 cases per 100,000 persons. At the neighborhood level, the incidence climbed as economic deprivation increased and as population density rose. Neighborhoods where 40% or more of the population lived below the poverty line had an AIDS incidence (362 cases per 100,000) that was nearly seven times the incidence in communities where fewer than 2% of residents were below poverty (53 per 100,000). The incidence also differed by more than 300 cases per 100,000 between neighborhoods that housed 25,000 or more people per square mile (373 per 100,000) and those that contained fewer than 1,000 residents per square mile (40 per 100,000). Communities where at least 10% of households were high-income had less than half the AIDS incidence (69 per 100,000) of those in which fewer than 2% of households reached this income level (175 per 100,000).

Patterns of incidence for women and men in each racial or ethnic group generally mirrored the overall pattern. On every measure of neighborhood economic deprivation, white women had the lowest AIDS incidence. Rates increased from zero cases per 100,000 in the least-poor communities to 13 per 100,000 in the poorest and from six to 43 per 100,000 across the range of population densities; they fell from 34 to seven per 100,000 as the proportion of households with a high income increased. By contrast, among black women, the incidence of AIDS climbed from 133 to 442 cases per 100,000 as poverty increased, and rose from 183 to 403 per 100,000 as neighborhood populations became denser. It declined from 385 to 195 per 100,000 with increasing proportions of high-income households. Hispanic women's AIDS incidence grew from 131 to 352 cases per 100,000 with increasing poverty levels and dropped from 307 to 51 cases per 100,000 with rising proportions of high-income households. Displaying a distinctive pattern, the incidence among Hispanic women climbed rapidly from 150 cases per 100,000 in the least-dense neighborhoods to about 300 per 100,000 in areas of intermediate density, and fell back to 188 per 100,000 in the most densely populated communities.

The incidence of AIDS among white men rose steadily as neighborhood poverty increased (from 84 to 411 cases per 100,000) and as populations grew more dense (from 66 to 746 cases per 100,000); it fell from 196 to 120 cases per 100,000 with increasing proportions of high-income households. Among black men, as population density increased, AIDS incidence climbed steadily, from 335 cases per 100,000 to 1,053 per 100,000, the highest rate for any subgroup. Across levels of poverty, the incidence rose from 561 to 936 per 100,000 among black men, while increasing proportions of high-income households were associated with a drop in incidence from 807 to 782 cases per 100,000. Rates among Hispanic men ranged from 534 to 930 per 100,000 as neighborhood poverty increased, from 415 to 760 per 100,000 as population density increased and from 785 to 467 per 100,000 as high-income households increased.

Although AIDS risk is typically reported and examined in relation to sex and race or ethnicity, the analysts conclude that "these social categories are insufficient to describe the population burden of AIDS; data must additionally be stratified by measures of adverse living conditions." They add that understanding the effect of neighborhood economic resources on the risk of disease is critical, because "reducing the incidence of AIDS will depend vitally on approaches that promote the growth of social and economic resources in neighborhoods where AIDS is endemic."—*D. Hollander*

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Risk of Delayed Conception Is Sharply Elevated Among Obese Women Who Smoke

Lean and, to a much greater extent, obese women who smoke require a longer time to conceive than do their normal-weight counterparts, according to the results of a population-based survey conducted in five European countries.[1] The odds that women who wanted to become pregnant would take at least 9.5 months to conceive were nearly doubled for smokers who, on the basis of their body mass index, were classified as lean and rose by a factor of almost 12 for those who were obese. No associations between body mass and delayed conception were found among nonsmokers. The analysis is one of the few to have examined the effects of excess weight on delayed conception, and it is the first to draw on a sample from the general population rather than from select groups.

The data come from a 1992 survey of pregnant women in Denmark, France, Germany, Italy and Sweden. Respondents provided information on their back-

ground characteristics; diseases and conditions that may affect fertility; height and weight; reproductive history; frequency of intercourse; contraceptive use; smoking, caffeine intake and alcohol consumption; and the length of time it took them to become pregnant. Using the women's reports of their height and weight, the researchers calculated their body mass index and classified them as either lean (if the index value was below 20 kg/m^2), normal-weight (20–24.9 kg/m^2), overweight (25–29.9 kg/m^2) or obese (30 kg/m^2 or greater). Only women whose pregnancies were planned were included in the analyses, yielding a sample of 2,587.

Some 16–18% of normal-weight and overweight women said that it had taken them at least 9.5 months to conceive, compared with 22% of lean and 31% of obese women. The average time it took to become pregnant was significantly longer among obese women (11 months) than among others (7–8 months). Initial analyses revealed several differences among women according to their weight classification at the time they began trying to conceive. Overweight and obese women had had less education than others, had been less likely have a job and had been pregnant more times; they also reported the lowest alcohol consumption. Obese women had been the youngest and had smoked the most cigarettes.

In multivariate analyses that took into account the effects of potentially confounding factors, the only significant interaction was between body mass index and smoking status; therefore, the researchers examined results separately for smokers and nonsmokers. They found that among smokers, obese women were 11.5 times as likely as those with a normal weight to have spent at least 9.5 months trying to conceive, and lean women were 1.7 times as likely as normal-weight women to experience delayed conception; no effect emerged for overweight smokers. Among nonsmokers, the odds of delayed conception were not associated with body mass.

Additional analyses generally confirmed these findings. When the investigators redefined delayed conception to refer to waiting times of 12.5 and 15.5 months, obese smokers still had substantially elevated odds of this outcome; the results for lean women, however, were not statistically significant. Furthermore, the same patterns were seen when the calculations included both planned and unplanned pregnancies, and when they were restricted to women who were pregnant for the first time.

The investigators comment that the interaction between smoking and body mass index may have important implications "for preventive counseling of women who intend to become pregnant." However, they observe that "for some women, weight reduction may be more difficult in the short term than smoking cessation." When this is the case, they suggest that interventions "initially focus" on smoking cessation, to improve the likelihood that a woman will conceive within a year. —*D. Hollander*

Reference

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