Many Rural Ugandans with Genital Ulcers Fail to Seek Health Treatment or to Inform Their Sexual Partners

About three in 10 men and women taking part in a prospective longitudinal study in rural Uganda reported having had genital ulcers, according to data from more than 500 participants.[1] Those infected with HIV were substantially more likely than other individuals to have had genital ulcers; in the subgroup with HIV infection, men were significantly more likely than women to report the condition. Among participants with genital ulcers, nearly four out of 10 said that they had engaged in sexual activity while symptomatic, but few said that they had told their partner about their condition.

Genital ulceration has been shown to promote HIV transmission. Because of the high levels of genital ulcer disease seen in some parts of Sub-Saharan Africa (mainly genital herpes, chancroid and syphilis), such infections are thought to play an important role in sustaining the HIV epidemic there. Although the syndromic treatment of sexually transmitted infections (STIs) may help limit the transmission of many infections in settings where laboratory testing is unavailable, guidelines for syndromic management (when they call only for treatment with antibiotics) may not be effective in reducing the spread of genital ulcer disease in a community if a viral infection like herpes causes a particularly important share of the cases.

To examine the levels of genital ulceration, the role of herpes, and the relationships between genital ulcers, HIV infection and sexual activity, researchers conducted a follow-up cohort study in a subsample of participants from a long-term, population-based study of HIV prevalence in rural Uganda. Individuals identified in the original study as HIV-positive and a similar number of HIV-negative controls were invited to join the cohort. Once they were enrolled, participants were asked about their medical and sexual history and received a physical examination at the study clinic.

Each participant was visited at home every three months to set up a follow-up appointment at the clinic; more than 90% of participants who were still in the study area adhered to the quarterly schedule. Every time study participants visited, the clinician asked if they had noticed a genital ulcer or genital herpes in the previous three months. Those who said that they had were asked for more information about their symptoms, any treatment they had sought and how many sexual partners they had had.

The analyses were based on data from the period 1991–1999. Over that time, the 257 HIV-positive individuals and 268 participants not infected with HIV at admission to the study had made a total of 7,856 routine visits, and at nearly all of these visits (7,834) the clinician had obtained information on experience with genital ulceration over the previous three months.

Thirty percent of the 525 study participants reported genital ulceration at some time during the entire follow-up period—41% of those infected with HIV and 20% of those not infected. Likewise, the rate of genital ulceration differed substantially according to HIV status: Participants infected with HIV reported 26 episodes of genital ulcers per 100 person-years, compared with seven per 100 among those not infected. Men also had a greater tendency to report symptoms than did women, but this was significant only among participants infected with HIV (34 vs. 19 per 100 person-years).

A multivariate analysis showed that the risk of having genital ulcers at a particular clinic visit was significantly elevated among participants who were HIV-positive (odds ratio, 3.5), who had AIDS (2.2), who were male (1.5) or who had reported a genital ulcer at the previous three-month visit (2.0). Neither age nor having had more than one sexual partner was associated with a higher risk of experiencing genital ulceration.

It was not until 1992 that study participants who reported genital ulcers in the previous three months were asked routinely about whether they had had sex while having STI symptoms; thus, the researchers had such data for 312 of the 340 visits at which participants reported genital ulceration. In all, 38% of these participants (43% of men and 30% of women) said that they had had sexual intercourse while symptomatic during the preceding three months. Of the 111 individuals with genital ulcers who said they had had sex while symptomatic in the preceding three months and reported on whether they had informed their sexual partner about their status, only 16% reported having done so (15% of men and 19% of women). The investigators noted that this proportion did not change over the eight-year study period.

Only 12% of participants who reported genital ulceration sought treatment, even though visits were free and a clinician was available. Logistic regression indicated that neither age, gender, HIV status, clinical stage, number of partners nor previous report of genital ulceration predicted whether a person sought treatment.

The authors of the study suggest that the "disappointing" level of treatment reported by the participants could be related to the possibility that "those with recurrent genital herpes may have attended with the problem previously, only to be disappointed with the results of the treatment." They comment that "ways of encouraging more individuals with genital ulcer disease to attend for treatment must be devised, and treatment guidelines should be revised to take into account the high prevalence of genital ulceration caused by herpes."

Overall, the researchers conclude that "the implications of these findings for HIV control are of great concern." They note that the study population "had been exposed constantly to repeated health education messages about the prevention of HIV," and that they had easy access to free services at the clinic. "If this population is representative of other rural areas in Africa," they conclude, "investing in STI treatment programs and [developing] suitable treatment algorithms, although desirable for reducing STIs, will have a disappointing impact on the transmission of HIV."—*M. Klitsch*

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During Prolonged Postnatal Abstinence, Risky Behavior Rises for Many African Men

In Côte d'Ivoire, where couples typically refrain from having intercourse for a year or more after a woman has given birth, men have elevated odds of engaging in risky sexual behavior during this period, according to analyses based on data from the 1994 Demographic and Health Survey (DHS).[1] The odds that a monogamous married man will have extramarital sex, and that he will do so without using a condom, are about doubled if his wife is practicing postnatal abstinence. Prolonged postnatal abstinence is customary in much of West Africa, largely because of the belief that sperm poisons breast milk. The practice could be expected to provide protection against infection with sexually transmitted diseases; but as the analysts point out, this protective effect is "diluted" if men substitute unsafe sexual practices for conjugal relations after their wives give birth.

The analysis was motivated by results of an earlier study showing elevated odds of extramarital sex among husbands observing postnatal marital abstinence in Benin. The analysts sought to determine whether a similar pattern would be found elsewhere in the region; they studied Côte d'Ivoire because after a birth, married couples there abstain from intercourse for an average of 15 months (median, 12 months), and extramarital sex is common. Contraceptive prevalence is low in Côte d'Ivoire (15%, according to the DHS), and the most commonly used methods are the pill and periodic abstinence. An estimated 11% of adults were infected with HIV at the end of 1999.

A nationally representative sample of 8,099 women aged 15–49 and 2,552 men aged 15–59 participated in the DHS. To eliminate concerns that polygynous men might not differentiate between marital and extramarital partners, the analysts limited their sample to monogamous men whose wives were also interviewed for the survey. They excluded a small number of couples because the wife's report of postnatal abstinence was inconsistent with the husband's report of the timing of most recent marital intercourse, leaving a final sample size of 709.

According to the men's reports, two-thirds were younger than 40, and a similar proportion lived in rural areas. Nearly half had no education, and slightly more than half were farmers or agricultural workers. The sample was roughly evenly divided by level of household wealth. It also was about evenly divided among Christians, Muslims and adherents to traditional religions or no religion; two-thirds of the men reported the same religion as their wife. Most of the men lived in the country's Center or South region; one-fifth lived in the North. Eighteen percent were married to a woman who reported that she had observed postnatal abstinence at some point during the two months leading up to the survey. The analysts used logistic regression to assess the effect of each of these factors on men's extramarital sexual behavior.

When all other factors were controlled for, the odds of extramarital sexual activity were nearly twice as high among men whose wife reported postnatal abstinence as among others (odds ratio, 1.7). Men who lived in urban areas, residents of the Center region and those who reported a different religion than their wife also had significantly elevated odds of engaging in extramarital sex (odds ratios, 1.8–2.7).

Postnatal abstinence also was associated with a doubling of the odds that in the previous two months, a man had had extramarital sex and had not used a condom on the last occasion (odds ratio, 2.0). Notably, only one other factor was associated with this behavior: Residents of the South and Center regions had elevated odds of having engaged in unprotected extramarital sex (2.2–2.7).

In an analysis based only on men who reported having had extramarital sex, the odds of condom use at the last extramarital sexual encounter were significantly lower among Muslims than among Christians (odds ratio, 0.3). As the analysts note, the number of men in this subgroup—134—may have been too small to identify other significant associations.

The analysts observe that the findings for Côte d'Ivoire confirm those for Benin, and they suggest that "these two sets of results likely can be generalized to West Africa and perhaps to other countries on the continent." Assuming that HIV will continue to spread in the region, the researchers stress the importance of efforts to increase marital sex while decreasing extramarital sex. Such efforts could take place both at the program level, where health and family planning staff could encourage "earlier rather than later resumption of conjugal sex...together with contraceptive use to ensure adequate birth spacing," and at the policy level, where campaigns could be undertaken to change the widespread belief that sperm poisons breast milk. *—D. Hollander*

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Women's Susceptibility To Some STDs Is Affected By Hormonal Method Use

Using oral contraceptives or the hormonal injectable significantly affects a woman's risk of acquiring certain sexually transmitted diseases (STDs), according to data from a cohort of Kenyan female sex workers.[1] Compared with women who do not practice contraception, those who rely on oral contraceptives are more likely to acquire chlamydia or vaginal candidiasis, but are less likely to acquire bacterial vaginosis. Women who use the injectable also are more likely than women not practicing contraception to acquire chlamydia, but are less likely to acquire trichomoniasis or bacterial vaginosis or to be diagnosed with pelvic inflammatory disease. Consistent use of condoms significantly reduces the risk of gonorrhea, chlamydia, genital ulcer disease, bacterial vaginosis, cervical mucopus, cervicitis and pelvic inflammatory disease.

To investigate whether using oral contraceptive pills or the injectable affects the risk of STD infection, researchers conducted a prospective study among sex workers in Mombasa between February 1993 and August 1999. After responding to a questionnaire about recent sexual activity and contraceptive use, participants were given a physical examination that included STD screening. The women returned for monthly visits, at which time they completed follow-up questionnaires and were screened for STDs. Multivariate analyses of the data were adjusted for age, years of education, years as a sex worker, parity, number of sexual partners, number of sexual contacts and condom use.

On average, the women were 26 years old, had sex twice per week, had one partner per week and had been a sex worker for one year. Sixty-five percent reported using no hormonal contraceptive method, 18% used the injectable, 16% used oral contraceptive pills and 2% reported using other hormonal methods; 63% used condoms for all sex acts. At the initial screening, 39% of the women had bacterial vaginosis, 21% cervicitis, 20% vaginal discharge and 14% candidiasis. Over the study period, 158 of the 948 women included in the

analyses became infected with HIV.

At enrollment, 213 women reported relying on oral contraceptives, while 251 said that they used the hormonal injectable. Compared with women who did not practice contraception or had been sterilized, a significantly smaller proportion of the women who used the injectable had sex more than twice a week (34% vs. 22%) or had more than one partner per week (43% vs. 30%).

Use of oral contraceptives was associated with a significantly increased risk of chlamydia (hazard ratio, 1.8), vaginal candidiasis (1.5), cervical mucopus (1.7) and cervicitis (1.8), and a decreased risk of bacterial vaginosis (0.8). Women who used the hormonal injectable had significantly elevated risks of chlamydia (1.6), cervical mucopus and cervicitis (1.5 each), and significantly decreased risks of trichomoniasis (0.6), bacterial vaginosis (0.7), vaginal discharge (0.8) and pelvic inflammatory disease (0.4). Consistent use of condoms was associated with significantly decreased risks of gonorrhea (0.6), chlamydia (0.6), genital ulcer disease (0.5), bacterial vaginosis (0.9), cervical mucopus (0.6), cervicitis (0.8) and pelvic inflammatory disease (0.6).

A link between hormonal contraception and cervical infections is biologically plausible, according to the researchers, because estrogen and progesterone can enhance or suppress the growth and persistence of vaginal flora. They note that the "most important implications of our study findings concern the potential for hormonal contraceptive use to influence transmission of HIV-1 infection by increasing or decreasing susceptibility to STDs." Because their study population consisted of female sex workers who were at an elevated risk of exposure to STDs, the researchers suggest that "further studies in low-risk populations are needed to assess the generalizability of our results."
—J. Rosenberg

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Half of Bangladeshi Women Who Discontinue Pill Use Attribute Their Decision to Side Effects

Side effects are the most common reason cited by Bangladeshi women who stop using oral contraceptives, according to a survey of rural women with recent experience with the pill.[1] Fifty-three percent of women who had discontinued oral contraceptive use attributed their decision to side effects, while 21% cited the desire for a child. In a multivariate analysis that confirmed the importance of side effects, pill discontinuation was also significantly more common among women who were Muslims, those who had used some other method before the pill, those who had not been visited by a family planning fieldworker and those who were not supported by their husband in their decision to use the pill.

Oral contraceptives contribute a substantial share of overall contraceptive prevalence in Bangladesh, representing about half of all modern method use in 1997. Past research has suggested that patterns of pill use among Bangladeshi women are somewhat irregular, and side effects have been mentioned as a possible contributor to these patterns of use.

A survey of contraceptive knowledge, attitudes and practices was undertaken in Bangladesh in 1995 and 1996 to analyze women's use of the pill. The survey was restricted to women who were either current users of oral contraceptives or who were former users (i.e., had ceased use during the six months immediately before the survey). Participation was limited to women living in rural areas of Bangladesh covered by the government's family planning fieldworkers. Although the classification of women as former or current pill users was based on their own reports, the researchers were able to confirm the information by checking the fieldworkers' contraceptive use registers.

A total of 1,403 currently married women aged 15–49 were surveyed. The survey respondents were 30 years old, on average, and had a mean of 3.2 children. Eighty-five percent were Muslim, and most had no formal schooling. (The women's average educational level was 2.3 years.)

Forty-three percent of the women were former users of the pill. Discontinuation was significantly more common among Muslim women (44%) than among non-Muslim women (36%), but was significantly less common among women whose husband had a supportive attitude toward their pill use, who had used the pill for four years or more, who were using the pill as their first method, who had been visited by a fieldworker and who had never experienced side effects.

The survey respondents were asked to describe side effects that they had felt during their first three months of pill use. Fifty-seven percent of the sample mentioned dizziness, while 29% cited weakness, 23% nausea, 10% a burning sensation and smaller percentages such side effects as excessive or irregular bleeding or abdominal pain, among others. Oral contraceptive discontinuation was not related to the number of side effects the women reported having experienced.

When asked to give the main reason why they stopped taking the pill, 53% attributed their decision to side effects, 21% cited wanting another child, and small percentages (about 3% each) cited their husband's dislike of the pill, a pregnancy, a belief that the pill is hazardous or a lack of supplies.

To determine how side effects and pill discontinuation might be related, the investigators conducted a multivariate regression analysis. Overall, women who had experienced side effects were significantly more likely than those who had not to have discontinued oral contraceptive use (odds ratio, 1.4). In contrast, women were less likely to have discontinued use if they had used the pill for longer durations: 12–23 months of use (odds ratio, 0.5), 24–47 months of use (0.4), and 48 months or more (0.2).

When the effects of the experience of side effects and duration of pill use were controlled, several other attributes significantly affected whether women discontinued oral contraceptive use. The risk of having stopped using the pill was significantly elevated among Muslims (odds ratio, 1.5), among women who had used a method before the pill (1.8), among those who had not been visited by a fieldworker (3.4) and among those whose husbands were not supportive of their use of the pill (1.9).

Among women who had discontinued pill use but wanted no more children, 72% were using no method of contraception at the time of the survey, 10% were using the injectable, 8% traditional methods, 7% the condom and 4% other methods.

The researchers note that the study had several limitations. First, its reliance on the respondents' recollections of their pill use and their experiences while using the method leaves the analysis subject to recall bias. In ad-

dition, the cross-sectional research design prevents the authors from establishing causal relationships.

The researchers offer three conclusions drawn from their analyses. First, service providers should be sure to counsel pill clients about potential side effects, about how problems can be managed and about what methods can be used if the pill proves unacceptable. In addition, husbands and male partners should be counseled about correct pill use and how use can be continued, as well as about condom use as an alternative method. Finally, service providers need in-service training to enable them to adequately inform clients about pill-related side effects.—*M. Klitsch*

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Risks of Some Health Problems Are Elevated Among Implant Users

The levonorgestrel-releasing implant is highly effective and generally safe, but is associated with higher risks of some health problems than are other, nonsteroidal contraceptive methods, according to a cohort study of women in eight developing countries.[1] Compared with women who relied on sterilization or the IUD, women who used the implant were more likely to have gallbladder disease (rate ratio, 1.5) or high blood pressure (1.8). The risk of inflammatory disease of the genital tract, however, was significantly lower in implant users (0.3) than in women relying on either of the other two methods.

The study was conducted in 32 family planning clinics located in Bangladesh, Chile, China, Columbia, Egypt, Indonesia, Sri Lanka and Thailand. Women seeking contraceptive services who were aged 20–40 years and had no contraindications to the hormonal implant, the IUD or sterilization were eligible to enroll. Those who agreed to participate were instructed to visit the clinic six weeks after enrollment and then semiannually for the next five years. For each woman who chose the implant, the researchers selected a woman who was initiating the use of either an IUD or sterilization and was within the same five-year age-group.

At the initial clinic visit, each subject received breast and pelvic examinations, a Pap smear, and blood pressure and hemoglobin measurements. During subsequent visits, the women received further testing and diagnostic procedures when medically indicated, and all complaints, symptoms and diseases were recorded.

In total, 16,021 women were enrolled in the study: 7,977 who chose the implant, 6,625 the IUD and 1,419 sterilization. After five years, 95% of the women continued to participate in the study, and 84–100% were still using the contraceptive method they had initially selected. A larger proportion of women using the implant (85%) than women relying on the IUD (76%) or sterilization (75%) had ever previously practiced contraception; 38% of implant users had used oral contraceptives, while only 28% of IUD users and 27% of sterilized women had done so.

During the five years of the study, implant users, IUD users and women who had been sterilized all had annual pregnancy rates of less than one per 100 woman-years; ectopic pregnancy rates were lower than one per 1,000 woman-years. Thirty-four participants died during the study period; 22 deaths were due to accidents, suicide or homicide. Neither the overall mortality rate nor the mortality rate for specific diseases (both of which were adjusted for clinic) was significantly greater for implant users compared with those for the other two groups.

Compared with women relying on the IUD or sterilization, implant users had an elevated risk of gall bladder disease and high blood pressure (rate ratios of 1.5 and 1.8, respectively), the only major conditions for which a significant difference was found. However, implant users had an elevated risk for several other health problems—respiratory diseases (1.8–3.2), mental disorders (primarily anxiety and depression, 2.7), and unspecified disorders of the breast (1.7) and central nervous system (primarily migraine, 2.5). Implant users also experienced significantly higher rates of certain less serious symptoms, the most common of which were dizziness, malaise and fatigue, weight loss, weight gain and headache. The risk of acute pelvic infection was significantly lower for implant users than for women using the other two methods (0.3).

The researchers comment that although implant users showed "a pronounced tendency" toward higher rates of less serious health problems, there was little evidence of increased risks of life-threatening conditions. They note that increased surveillance and monitoring of implant users compared with those using the other two contraceptive methods may have contributed to the elevated reporting rates. Apart from a weak association with gallbladder disease and hypertension, the researchers conclude that the implant is "not associated with any material risk of major morbidity compared with IUDs and female sterilization." —*J. Rosenberg*

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Does Breastfeeding Affect The Health of HIV-Positive Women? Studies Disagree

Two recent studies yield contradictory findings on whether the decision to breastfeed affects the health of HIV-infected women. In one study, a secondary analysis of data from 397 seropositive new mothers in Nairobi, Kenya, women who were randomly assigned to breastfeed were three times as likely to die within 24 months of delivery as were those assigned to formula-feed.[1] Moreover, infants born to HIV-infected women who died had an elevated risk of dying before their second birthday, even after the researchers controlled for whether the infant was infected with HIV.

In the other study, also a secondary analysis, data collected from 566 seropositive mothers in Durban, South Africa, showed no significant difference at the univariate level in mortality by 15 months postpartum between women who chose to breastfeed and those who elected to give their infant formula.[2] Further, multivariate logistic regression found no significant difference in morbidity, even after baseline CD4 counts and hemoglobin levels were controlled for.

The Kenya Study

The first analysis used data originally collected for a randomized trial that assessed the impact of infant feeding practices on the risk of mother-to-child HIV transmission. Women who attended four prenatal clinics in Nairobi from November 1992 through October 1997 were offered HIV testing; participants who tested positive were randomly assigned to either breastfeed or formula-feed. The infant-mother pairs, who were followed for a maximum of two years, were examined monthly during the

first year postpartum and quarterly during the second year. For the mortality analysis, women who failed to keep their follow-up appointments were traced, and the cause of death for those who died was determined from hospital records or from relatives. The researchers used Cox proportional hazards models to calculate the relative risk of maternal death by feeding-group assignment.

At the time of enrollment, there were no significant differences between the two groups by median age (23 years), weight (63 kilograms), number of previous births (one) or HIV-1 RNA viral load (48 virions per mLx10^3 among women who breastfed, and 37 virions per mLx10^3 among those who formula-fed). However, women assigned to breastfeed were significantly more likely than those assigned to formula-feed to comply with their original feeding instructions (96% vs. 71%).

The final sample for the mortality analysis included 197 mothers randomly assigned to breastfeed (of whom 39 were subsequently lost to follow-up) and 200 women assigned to formula-feed (33 later lost to follow-up). Eighteen of the breastfeeding women died during the two years following delivery (11%), compared with six in the formula-feeding group (4%). Cox proportional hazards models indicate a three-fold relative risk of death for breastfeeding women relative to those using formula (relative risk of 3.2, p=.01). Additional Cox models show that the association between being randomly assigned to breastfeed and dying within two years of delivery remained significant even after the women's viral load and CD4 count at enrollment were controlled for (relative risk of 4.7, p=.001).

Women who were assigned to breastfeed lost more weight in the two-year postpartum period than did those assigned to formula-feed. Weight loss was significantly associated with mortality, as each kilogram that a woman lost per month raised her risk of dying by a factor of 3.4. Adjusting the mortality data for weight loss, however, did not change the overall association between breastfeeding and maternal death.

An HIV-positive mother's CD4 count and her viral load were significantly associated with the risk of death. For example, the risk of dying among women with CD4 counts below 200 cells per mL was 14.7 times as high as the risk among women with counts higher than 500 cells per mL. Further, women whose viral load at enrollment was higher than the median were significantly more likely to die than were women with a viral load below the median (risk ratio, 8.0). The association between being randomly assigned to breastfeed and maternal mortality remained significant even after the researchers controlled for these biological markers of HIV progression.

Finally, an infant's risk of dying, irrespective of the timing of the infant's death relative to the mother's, was significantly higher—by a factor of three—if the mother died; that increase in risk was greater still among babies whose death followed their mother's death (5.6). This association increased in magnitude once the researchers controlled for the infant's HIV-infection status (7.9).

The investigators note that the small absolute number of maternal deaths, the loss-to-follow-up rate of nearly 18% and the fact that these Nairobi women constituted a highly selected subgroup all limit the generalizability of the findings. They hypothesize, moreover, that because nearly one-third of the women in the formula-feeding group did not comply with their assigned feeding practice, the study might underestimate the true risk of maternal death associated with breastfeeding among HIV-positive women.

The investigators offer two biological mechanisms for the possible association between breastfeeding and mortality in HIV-infected mothers. First, the combination of HIV infection and breastfeeding in women who are already inadequately nourished may create an overwhelming metabolic burden. Second, lactation itself may increase the ability of HIV-1 to replicate—either because it raises the level of the hormone prolactin, which may further depress the immune system of an immunocompromised woman, or because factors such as nipple cracking, candida infection or breastmilk production enhance the replication of the virus. The authors conclude that "further research is needed into the mechanism of the association between lactation and maternal death" and into the efficacy of providing HIV-infected women who choose to breastfeed with nutritional supplements to lower their excess risk of mortality.

The author of a related editorial[3] points out several problems with interpreting the results of this study, including the fact that breastfeeding's effect on mortality among HIV-infected women was an ad hoc hypothesis; that women randomized to breastfeed had a higher median viral load at enrollment in the study; and that data on women's clinical progress and information on their actual feeding practice—as opposed to the one they were assigned to adopt—are missing. She concludes that the study "would benefit from being complemented by a creative analysis of actual feeding practice to further explore this complex issue."

The South Africa Study

The data used in the second analysis were originally collected in a vitamin A intervention trial among HIV-positive pregnant women. In this study, conducted at two prenatal clinics in Durban, South Africa, 566 women were recruited from July 1995 through April 1998 to randomly receive either a vitamin A supplement or a placebo. The women were asked to make an informed decision on whether to breastfeed or not; 410 women decided to breastfeed and 156 chose to give formula to their baby.

The women were followed up for a mean length of 10.4–10.6 months (range of one month to 18 months). The researchers compared the two groups of women in terms of mortality and seven specific health conditions (pulmonary tuberculosis; candidiasis at more than two sites; pneumonia; ear, nose and throat infections; gastroenteritis; gynecologic infections; and cesarean wound sepsis).

At the univariate level, there was no difference in mortality by 15 months postpartum between women who chose to breastfeed and those who opted to formula-feed (0.5% and 2%, respectively, p=.10). Moreover, there was no difference by feeding choice among all 566 women in the proportions who were diagnosed with any of the seven specific conditions (13% among those who were breastfeeding vs. 15% among those who were not, p>.10). Results of a multivariate logistic regression analysis indicate that the risks of morbidity for breastfeeding and nonbreastfeeding mothers was not significantly different (95% confidence interval, 0.43–1.39), even after baseline CD4 counts and hemoglobin counts were controlled for.

In addition, the researchers collected data at three months postpartum on 10 general clinical symptoms* among 180 women at one clinic (147 who had breastfed their infant and 33 who had not), as well as follow-up CD4 counts and hemoglobin levels for 115 of these women (93 who elected to breastfeed and 22 who chose to formula-feed). Among the 180 women for whom detailed follow-up data on clinical symptoms were available, there was no dif-

*Loss of appetite, diarrhea, fever, swollen glands, fatigue, headache, unintentional weight loss, nausea, lower abdominal pain and night sweats.

ference by infant feeding choice in the proportion who reported any symptom (35% vs. 39%, p>.10). Moreover, among the 115 women for whom postpartum CD4 counts and hemoglobin levels were available, there was no significant difference in those counts between women who chose to breastfeed and those who chose to formula-feed (means of 239 and 249, respectively, p>.10); the researchers similarly found no significant difference in three-month postpartum hemoglobin levels by feeding choice (12.0 vs. 11.3, p=.07). According to results of a multivariate linear regression analysis, which controlled for the type of treatment women were assigned to (vitamin A supplement or placebo) and their baseline CD4 counts, there was no significant difference by decision to breastfeed in women's CD4 counts at three months postpartum (p>.10).

The researchers note that their data provide no evidence of "deleterious effects of breastfeeding on the health of seropositive women." They conclude that "the counseling provided to HIV-infected women on feeding choice should continue to be based on current recommendations of UNAIDS."—*L. Remez*

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Oral Contraceptive Regimen That Doubles the Number Of Hormonally Active Pills per Cycle Reduces Bleeding

An oral contraceptive regimen that extends the pill cycle by doubling the number of days on which women take hormonally active pills resulted in less bleeding than a traditional regimen among participants in a randomized, controlled trial in the United States.[1] During the yearlong trial, women on the extended regimen (42 days of active pills followed by seven days of inactive pills) bled on significantly fewer days and had significantly fewer episodes of consecutive days of bleeding than women following a standard regimen (21 days of active pills followed by seven days of inactive pills). The investigators note that an extended cycle of pill use may have health benefits and may increase the method's appeal to some women, but they emphasize that the impact on bleeding patterns, and how it affects women's satisfaction and compliance with the method, must be well understood.

The study was conducted among women aged 18–45 who sought pill prescriptions at four clinics in the Seattle, Washington, area between April 1998 and April 2000. Participants completed a demographic questionnaire and a medical history that documented their eligibility for pill use and their contraceptive and reproductive history. Researchers randomly assigned women to one of the two regimens and gave them a supply of pills, along with a diary sheet on which participants were to record details about their pill use, bleeding, side effects and menstrual or cyclic symptoms. Every three months, participants returned to the clinic for a new supply of oral contraceptives and to hand in their diaries; at these visits, they were asked additional questions about their experiences with the method.

In all, 90 women enrolled in the study. On average, the women were about 26 years old and had been pregnant once. Two-thirds of the women were current oral contraceptive users, one-quarter had used pills in the past and a small fraction had never used oral contraceptives. Fifty-three women (24 of those on the 28-day regimen and 29 using the extended regimen) completed 12 cycles of the assigned regimen; the investigators based their study on this group of women, analyzing the data per quarter (84 days) of use.

Women following the 49-day regimen bled on significantly fewer days per quarter (5.8–7.6, on average) than those on the traditional regimen (10.0–11.4). They also had significantly fewer episodes of bleeding for two or more consecutive days (1.6–2.0 per quarter, compared with 2.8–2.9 among women on the 28-day cycle). Similar differences were found between groups in episodes of bleeding and spotting (i.e., a discharge that does not require sanitary protection) combined, although not in the number of days of spotting. Consistent with the reported differences in bleeding patterns, women on the extended regimen required sanitary protection on half as many days as those on the 28-day cycle (27 vs. 54 days for the entire year) and spent significantly less on hygiene products ($18 vs. $41). Bleeding patterns were not affected by whether women had used oral contraceptives before, or by the time of day at which they took the pills.

A far higher proportion of women on the extended regimen than of those on the traditional regimen reported infrequent bleeding (defined as fewer than two episodes of bleeding) in at least one quarter—59% vs. 9%. The groups did not differ, however, in their reports of amenorrhea, frequent bleeding or prolonged bleeding. By and large, women in both groups said that the amount of bleeding they experienced was what they expected or less.

Using a scale of 1–5 to rate the severity of side effects, women on the extended regimen recorded significantly lower scores for genital itch and headache in the final quarter than those on the standard regimen, but similar scores for other common side effects. Levels of compliance and satisfaction with the method did not differ by regimen.

Pointing to research documenting a growing acceptance of menstrual reduction and suppression, the investigators observe that some women may choose a contraceptive precisely because it reduces bleeding. Moreover, they note, an extended oral contraceptive cycle could prevent some conditions that hormonal withdrawal "perpetuates"—for example, anemia, dysmenorrhea and menstrual migraine. Thus, they conclude that the extended pill cycle could prove beneficial, but they acknowledge that "further research is needed to determine the most effective schedule and formulation."—*D. Hollander*

REFERENCE

1. Miller L and Notter KM, Menstrual reduction with extended use of combination oral contraceptive pills: randomized controlled trial, *Obstetrics & Gynecology,* 2001, 98(5, pt. 1):771–778.