Medical Abortion Regimen with Reduced Mifepristone Dose, Home Misoprostol Use Is Feasible and Effective

A regimen of medical abortion involving one-third the usual dose of mifepristone and fewer clinic visits (accomplished by allowing women to take misoprostol at home) appears to be as successful and acceptable as the standard mifepristone-misoprostol regimen. According to a prospective study conducted among Vietnamese and Tunisian women seeking abortion,[1] a protocol using 200 mg (instead of the standard 600 mg) of mifepristone had a 91–93% success rate. Moreover, the majority of women (87–88%) chose to take their dose of misoprostol at home two days later rather than return to the clinic for it. Women who took misoprostol in a familiar home environment had even higher efficacy rates—and were generally more satisfied with their experience—than were women who received their misoprostol in the clinic.

Data were collected from December 1997 through December 1998 documenting the experiences of 315 women who agreed to follow a modified version of the standard regimen of medical abortion, which usually involves a 600 mg dose of mifepristone, followed by 400 µg of oral misoprostol administered at the clinic two days later. The sample for the study included 120 pregnant women seeking surgical terminations in a clinic in Ho Chi Minh City, Vietnam, and 195 women in Tunis, Tunisia. Women were eligible to participate if they had been amenorrheic for no more than eight weeks and lived within one hour of the clinic. While all study participants received mifepristone from a clinic provider, they were given the choice of returning to the clinic two days later for their oral tablet of misoprostol or taking it on their own at home after the same time interval. In both countries, the majority of women (87–88%) elected to take misoprostol at home. Participants were also supplied with four 500 mg paracetamol tablets for pain.

On average, Tunisian study participants were significantly older than their Vietnamese counterparts (32 years vs. 25 years) and had had significantly fewer years of schooling (nine years vs. 10 years). Moreover, Tunisian women requesting a termination were far less likely than their Vietnamese counterparts to be pregnant for the first time (5% vs. 50%).

Participants' rate of compliance with the medical abortion protocol did not differ significantly by country (91–94%), nor did the success rate of the regimen (91–93%); at both study sites, procedure failure accounted for a greater proportion of unsuccessful terminations than did user or provider failure (6% vs. 1–4%). The failure rate was much higher among women who received misoprostol at a clinic than among those who took it at home (12–20% vs. 4–7%).

The modified regimen produced relatively few prolonged or serious side effects in either country. In both study sites, heavy bleeding occurred on only one-quarter of all bleeding days, and few days were marked by nausea and vomiting (means of 1.1 and 0.4–0.7 days, respectively). Tunisian and Vietnamese women reported, on average, that they had experienced pain or cramping on 2.3–2.6 days.

The reasons most frequently mentioned by Vietnamese women for deciding to take misoprostol at home (they could cite up to two) were that it was more compatible with their duties at work or school (22%) and that it made them feel more comfortable in general (21%). Among Tunisian women, the two most common reasons were that home administration involved fewer clinic visits (36%) and that it was more compatible with family or home responsibilities (25%). According to the opinions of the Vietnamese women who chose to receive misoprostol at the clinic, the two main reasons they did so were that a physician and clinic staff were on the premises (43%) and that they lived alone (29%); among the Tunisian women who opted for clinic administration of misoprostol, 40% said they thought doing so was easier psychologically and caused less anxiety than taking it at home, and 32% cited the availability of medical staff as influencing their decision.

In both countries, roughly three-quarters of women who took misoprostol at home did so in the company of another person. For Vietnamese women, this person was most often their husband or boyfriend (55%) or another relative (32%); for Tunisian women, this person was equally likely to be their husband or boyfriend (37%) or another relative (37%). The pattern of unscheduled calls or visits for counseling when problems arose differed by site: Vietnamese women were more likely to visit than to call the clinic (29% vs. 8%), while Tunisian women were more likely to call than to make an unscheduled clinic visit (19% vs. 10%).

Women who chose to receive misoprostol at the clinic were significantly more likely than those who elected to take it at home to say that they would choose the other option for any future terminations (33–69% vs. 5–7%). When asked to rate their overall experience with medical abortion, about 90% of all women were very or somewhat satisfied with the mifepristone-misoprostol regimen, with home users of misoprostol being less likely than clinic users to label their experience as unsatisfactory (1–2% vs. 3–7%).

The researchers note that both modifications to the standard regimen appear to have produced favorable results: The two-thirds reduction in the dosage of mifepristone did not alter the regimen's efficacy, and women who elected to take misoprostol at home were able to manage their abortion on their own and thus avoid extra clinic visits. According to the researchers, the fact that efficacy and acceptability in both countries were higher among women who elected to take misoprostol at home might mean that a familiar home environment helped these women to relax, thus improving the experience for them emotionally and clinically.

To reduce the likelihood of unscheduled calls and clinic visits, the investigators recommend developing detailed client materials to inform women about what they can expect when they take misoprostol at home. The researchers conclude that the

similar efficacy achieved with the lowered dose of mifepristone, coupled with the higher comfort level and improved clinical outcomes achieved through taking misoprostol at home, "suggest that [the modified regimen] should be considered further in more-developed and less-developed countries."—*L. Remez*

Reference

1. Elul B et al., Can women in less-developed countries use a simplified medical abortion regimen? *Lancet*, 2001, 357(9266):1402–1405.

Despite Symptoms, Many Kenyans Delay Treatment For STDs, Have Unsafe Sex

Men and women in Nairobi, Kenya, wait approximately one week after the appearance of sexually transmitted disease (STD) symptoms to seek treatment at a health clinic, according to a survey of 471 men and women attending a public STD clinic.[1] Furthermore, once they receive a referral for STD treatment, women wait longer than men to attend an STD clinic for follow-up treatment (29 days vs. 23 days). Nearly two-thirds of women and one-third of men report having had sex while symptomatic, and fewer than one in five women and one in four men report having used condoms while symptomatic.

From February to May 1998, researchers interviewed men and women who attended a public STD clinic that serves as a referral facility for 50 public and private primary health clinics in Nairobi. New patients leaving the clinic were approached by an interviewer; 471 people agreed to participate in the study. The interview included questions about demographic characteristics, health-seeking behavior and sexual behavior. The researchers later linked patients' interview responses to their medical records.

Overall, 234 men and 237 women participated in the study. The women were significantly younger, on average, than the men (25 vs. 28 years), and the women were significantly more likely than the men to be married (61% vs. 51%). In addition, the women were significantly more likely than the men to report that they did not have an income (46% vs. 11%), though there was no significant difference between the sexes in their level of education.

Among the men, 77% received a diagnosis of urethritis, 8% of genital ulcer disease and 3% of other infections; 8% received a diagnosis of having no STD. Among women, 40% had cervicitis, 35% vaginosis, 13% pelvic inflammatory disease, 8% genital ulcer disease and 2% other infections; 6% of women did not have an STD. Men were significantly more likely than women to have a history of STDs (45% vs. 30%) and to have attended the STD clinic in the past (34% vs. 24%).

Men were more likely than women to report coming directly to the STD clinic for their current STD treatment (67% vs. 55%), while women first attended another clinic. Women and men reported first seeking treatment a median of seven days following the appearance of STD symptoms. When men and women were referred to the STD clinic, they delayed even longer: Men delayed attending the STD clinic for a median of 23 days and women delayed for a median of 29 days. For genital ulcer disease, the delay was shorter—a median of 14 days for men and 16 days for women. In the case of vaginitis, women waited a median of 46 days before attending the STD clinic.

Significantly more women than men reported that they had engaged in sex while they had STD symptoms (62% vs. 34%). Women were significantly more likely than men to report that they had had only one sexual partner while they had symptoms (94% vs. 68%) and that their sexual partner was their spouse (66% vs. 53%). Men were significantly more likely than women to report having exchanged money for sex while they had symptoms (13% vs. 1%).

There was no significant difference between the proportions of men and women who said they had used condoms while they had STD symptoms (22% and 18%). However, significantly fewer men than women said they had used a condom with their spouse while symptomatic (29% vs. 58%). Overall, men were more likely than women to report having used condoms ever in their lives (63% vs. 48%).

Among clinic patients who were married, 5% of men and 48% of women said they thought their spouse had extramarital affairs. Moreover, 68% of men reported having extramarital affairs themselves, compared with only 6% of women. Among unmarried patients who reported having a regular partner (76 men and 57 women), significantly more men (34%) than women (8%) said they had other partners. Only 14% of the men and women responded to a question regarding the source of their current STD; of the men, most blamed their regular partner.

The investigators suggest that men's and women's lack of awareness about the need to receive prompt treatment, the lack of STD services in the Nairobi area and the lack of financial resources, particularly among women, are all possible reasons that people in the study delayed seeking treatment. The researchers speculate that significantly more women than men engaged in sex while symptomatic because women in Kenyan society often are unable to refuse sex or to negotiate safe sex. They also note that even people with a "low-risk profile," such as the women in their study who were married or in a relationship with a regular partner and reported only one sexual partner, "may be at risk through their spouses or regular partners." Therefore, the researchers say, "interventions should extend beyond the high-risk groups, and men especially should be targeted." Furthermore, they recommend expanding STD treatment "to more, if not all, primary healthcare clinics in Nairobi."—*B. Brown*

Reference

1. Fonck K et al., Healthcare-seeking behavior and sexual behavior of patients with sexually transmitted diseases in Nairobi, Kenya, *Sexually Transmitted Diseases*, 2001, 28(7):367–371.

Peer Training of Nurses Improves Immunization Coverage and Practices

On-the-job peer training of immunization nurses is a low-cost, effective way to increase the proportion of children vaccinated and to improve immunization practices, according to data from health centers in the Maluku province of Indonesia.[1] The overall number of vaccinations against diphtheria-pertussis-tetanus (DPT), polio and measles rose by approximately 37% in participating health centers, at a cost of US$0.05 for each additional dose. In addition, participating centers reported a 38% increase in the number of procedures performed correctly.

To determine the effect of peer training on immunization coverage and practice quality, researchers evaluated a program in which experienced immunization nurses provided on-the-job training to less-experienced nurses. The program was conducted in 13 health centers in the Maluku province of Indonesia in 1993 and 1994; 95 centers that did not participate acted as a control group. The evaluation used retrospective data from the provincial health department's administrative information system, two province-wide field surveys (one in 1994 and one in 1995) and an independent field survey of immunization

practices in 90 health centers.

In the intervention, experienced immunization nurses spent 1–2 weeks providing training at health centers in which nurses were inexperienced or were performing poorly. The trainers provided instruction on injection techniques, maintenance of vaccine quality (e.g., proper refrigeration and storage), data collection and reporting, and ways of enhancing immunization coverage (e.g., scheduling and follow-up strategies, and methods of motivating mothers and generating support from community leaders).

At the participating centers, the number of vaccine doses provided in the 11 months after the training was significantly higher than the number in the 11 months before the training. The overall number of DPT, polio and measles vaccinations rose by about 37%—the first course of DPT by 34%, the complete course of polio vaccine by 38% and measles by 40%. In the nonparticipating centers, the overall number of vaccinations declined by 1%, with DPT remaining the same, and measles and complete courses of polio decreasing by 2% each. The difference between participating and nonparticipating centers was highly significant overall and for each vaccine ($p<.001$).

In the 11 months after training took place, the proportion of children in the target population who were immunized at participating centers rose from 42% to 68%. The average percentage-point increase was 26: 27 points for DPT, 27 for polio and 26 for measles. The overall increase was almost 54% in the 11 centers that had a functioning transportation system during that year. In comparison, coverage at nonparticipating centers rose from 58% to 60%. The average increase was one percentage point overall—three points for DPT, one point for polio and one point for measles. The difference between the participating and nonparticipating centers was highly significant overall and for each of the three antigens ($p<.001$).

The training also had a positive effect on practice management. According to data from the field survey of immunization management practices, the average number of key immunization practices performed correctly rose from 7.4 (of 12 management practices surveyed) before training to 10.2 after training—an increase of 38%. Improvements were reported in protocol adherence, sterilization technique, data reporting, appropriate immunization practice and use of active problem-solving approaches to finding and vaccinating children in the villages.

The average cost of peer training—including travel and per-diem costs but not wages—was US$53 per immunization nurse; this expense ranged from US$16 to US$134, depending on training duration and travel costs. The number of reported doses increased by 12,745 in the 13 participating centers the year after the training, at a cost of about US$0.05 for each additional dose (around US$0.50 to complete all immunizations for one child).

According to the researchers, they cannot determine how much of the gain in coverage resulted from increases in the number of age-appropriate doses administered and how much from improved reporting: Based on available data, the two variables cannot be disentangled. They point out, too, that because these improvements were reported in poorly performing centers, it is unclear whether such improvements could be achieved in all centers, particularly those that are doing well. The researchers observe that the program's success depended heavily on the local area monitoring system, the hierarchy of responsibility of the health centers and immunization nurses, and the villages themselves. Noting that these supporting structures may not be available in other contexts, they caution that "the transfer of this training programme to other contexts may require extra care" or may not be successful.—*E. McLaughlin*

Reference

1. Robinson JS et al., Low-cost on-the-job peer training of nurses improved immunization coverage in Indonesia, *Bulletin of the World Health Organization*, 2001, 79(2):150–158.

Risk Factors for Low-Grade Cervical Abnormalities Differ from Those for Human Papillomavirus Infection

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

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

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

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

this method of contraception (0.5).

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

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

Reference

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

Maternal Zinc Supplements In Pregnancy Lower Risks Linked to Low Birth Weight

Children born to women living in areas where zinc deficiency is common frequently suffer from poor health and developmental delays, but those whose mothers take zinc supplements while pregnant have sharply reduced risks of some illnesses during infancy, according to findings from a randomized trial in urban Bangladesh.[1] Through age six months, infants whose mothers took zinc supplements during the last two tri-mesters of pregnancy had significantly lower risks of acute diarrhea, dysentery and impetigo than those whose mothers took placebo tablets. When the sample was divided by size at birth, these effects were seen only in low-birth-weight babies, who typically have high rates of illness and death.

Women living in Dhaka were enrolled in the study at 12–16 weeks' gestation and were randomly assigned to take either daily zinc supplements (30 mg) or a placebo throughout the remainder of their pregnancy; they saw a health care worker each week to receive a fresh supply of tablets. Fieldworkers conducted weekly follow-up visits in the women's homes for up to six months after the birth. During these visits, they asked the women detailed questions about the infants' health, to assess the occurrence of respiratory infections, diarrhea, fever, skin diseases and other illnesses; doctors examined infants who required medical attention. All babies were weighed and measured at monthly visits; blood was taken to measure infants' serum zinc levels at one month and six months of age.

A total of 420 infants were included in the analyses—199 whose mothers had taken zinc supplements and 221 whose mothers had taken placebo tablets. The two groups of mothers were of similarly young age and low socioeconomic status. All infants were breastfed throughout the study, but few were exclusively breastfed for the entire period. Between birth and six months, the infants' growth rates and serum zinc concentrations were similar, regardless of whether their mothers took zinc supplements or placebo.

The researchers used regression techniques to compare the frequency of disease in the two groups of infants, controlling for the mothers' socioeconomic status, parity and serum zinc level at the beginning of the study. Infants whose mothers had taken zinc had significantly lower risks of acute diarrhea (risk ratio, 0.8), dysentery (0.4) and impetigo (0.5) than did those in the placebo group; they also were ill with dysentery or impetigo for significantly fewer days. Zinc supplementation had no association with the frequency of persistent diarrhea, cough or acute lower respiratory infection.

When the analysts looked separately at the data for infants who had been underweight (i.e., less than 2,500 g) at birth and those who had been of normal weight, they found that the effects of zinc supplementation were limited to infants of low birth weight. Among these infants, the risks of acute diarrhea, dysentery and impetigo were reduced by 32–74% if the mother had taken zinc supplements during pregnancy. The association between zinc supplementation and number of days ill with dysentery or impetigo also was significant only for low-birth-weight babies.

The researchers conducted separate analyses using data on low-birth-weight infants born at term and those who were preterm. For full-term low-birth-weight infants, the risks of acute diarrhea, all diarrheal episodes and impetigo were significantly reduced (risk ratios, 0.3–0.6) among those whose mothers had used zinc supplements. No association was found between zinc supplementation and disease among preterm low-birth-weight infants.

Summing up their findings, the researchers note that while babies born to women who take zinc supplements may be small at birth, they "might have a less compromised immune system" than those whose mothers do not take zinc. Therefore, the investigators suggest that low birth weight is "mainly an indicator of risk rather than [a] direct cause of morbidity and mortality," and recommend that future studies assess not only the frequency but the consequences of low birth weight. They conclude that given the apparent contribution of maternal zinc supplementation to reductions in poor health outcomes among low-birth-weight infants, "consideration should be given to the addition of zinc to regular antenatal supplements" in regions where low birth weight is common.—*D. Hollander*

Reference

1. Osendarp SJM et al., Zinc supplementation during pregnancy and effects on growth and morbidity in low birthweight infants: a randomised placebo controlled trial, *Lancet*, 2001, 357(9262):1080–1085.

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

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

To assess whether using condoms reduces the transmission of HSV-2, researchers analyzed behavioral and demo-

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

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

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

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

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

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

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

Reference

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

Many Women in Rural Gambia Have Reproductive Health Problems, but Few of Them Seek Treatment

The majority of women in some areas of rural Gambia experience reproductive health problems, but few seek medical care for their symptoms, according to a cross-sectional study conducted among women in the Farafenni region.[1] Seventy percent of the study participants had at least one reproductive disorder: Bacterial infections and childbirth-related pelvic damage were especially common. However, fewer than half of the women with symptoms had sought care, often because of anxiety and lack of knowledge.

Investigators used a randomized cluster sampling design to select 20 villages for the study. Three of the villages were reluctant to participate and were replaced by three others in the area with similar demographic and geographic characteristics. All women between the ages of 15 and 54 years were eligible; 72% agreed to participate. The final sample included 1,348 women, who were interviewed between January and July 1999.

A female fieldworker visited participants at home and recorded their demographic characteristics. She also asked about their gynecologic and obstetric history, current reproductive symptoms and care-seeking behavior; these questions were later repeated by a female gynecologist in a clinical setting. The gynecologist also performed a physical examination, which included a vaginal speculum inspection for all women except those with intact hymens. Blood, vaginal swab, and cervical smear and swab samples were analyzed to detect the presence of reproductive tract infections, cervical abnormalities and anemia. Study staff offered appropriate care to all women found to have a treatable medical condition. Women wishing to know their HIV status were offered pretest and posttest counseling.

Thirty-six percent of the women were aged 15–24, while 50% were 25–44 and 15% were 45 or older. Fifty percent belonged to the Mandinka ethnic group, 33% were Wollof and 16% Fula. Eighty-six percent were married, including 54% who were in a polygynous marriage. Twenty-eight percent had 1–3 children, 38% 4–7 and 16% eight or more; 18% were childless. Very few women (3%) reported any formal education, and 95% listed either farming or household work as their main occupation.

Of the 739 sexually active women who were not pregnant, only 6% were using modern contraceptive methods such as the injectable (3%), oral contraceptives (2%) or sterilization (1%). Of the 695 sexually active women not using modern contraceptives, only 29% stated that the reason was a desire to conceive.

More than half of the women (58% of pregnant women and 51% of nonpregnant

women) were anemic, and 2% had severe anemia. The majority (58%) had undergone female circumcision, ranging from 4% among Wollof women to 32% among Fula women and 98% among Mandinka women. The clitoris and all or part of the labia minora had been removed in 82% of circumcised women.

The most commonly reported reproductive symptoms were menstrual problems, abnormal vaginal discharge, vaginal itching or irritation, and infertility. Although only a quarter of participants (26%) reported reproductive symptoms to the fieldworker, more than half (53%) reported such symptoms to the gynecologist. In most symptom categories, fewer than half of women had sought treatment (range, 39–45%); the exceptions were inability to conceive (61%) and genital ulcers or sores (54%). The reasons the women cited most frequently for not seeking health care were that they did not think it would help (54%), that they were afraid or embarrassed (16%), that the problem was not serious enough (15%) and that care was too expensive (11%).

According to physical exam findings, laboratory results and questionnaire data collected by the gynecologist, 70% of the women in the study had at least one reproductive disorder. Almost half (47%) of the participants had one or more reproductive tract infections. Endogenous infections such as bacterial vaginosis and candidiasis were common (37% and 12%, respectively), and 32% of the women were seropositive for herpes simplex virus type 2. Three percent tested positive for syphilis, which was much more common among the Fula (16%) than in the other ethnic groups (1%). HIV seroprevalence was 2% overall.

Ten percent of the women examined had pelvic tenderness. Seven percent had cervical abnormalities or lesions. The gynecologic exam detected vulval or cervical masses in 16% of all participants, and uterine enlargement in 4% of nonpregnant women. Abnormalities suggesting childbirth-related damage were present in nearly half (46%) of the women; these abnormalities included displacement of genital organs (42% of women), urinary incontinence (7%) and functional damage to the anal sphincter (3%).

Of the 603 menstruating women who were not using a hormonal contraceptive, 34% reported at least one menstrual disorder, with 15% mentioning irregular cycles, 14% painful periods, 7% spotting and 4% prolonged or heavy bleeding. Ten percent of the 871 postmenarchal, premenopausal women younger than 45 years were classified as infertile.

Given that Gambian women often do not seek treatment for, or even report, their reproductive health problems, the authors warn that "the provision of services by itself will not overcome the culture of silence surrounding these disorders." They argue that "empowerment of women (and men) through education" is critical to the improvement of reproductive health. —*A. Hirozawa*

Reference

1. Walraven G et al., The burden of reproductive-organ disease in rural women in the Gambia, West Africa, *Lancet*, 2001, 357(9263):1161–1167.

Douching Is Indirectly Linked to HIV Infection In Female Sex Workers

Kenyan sex workers who douche are more likely than those who do not to have bacterial vaginosis, a condition that is associated with an increased risk of HIV infection.[1] In a sample of more than 500 Nairobi sex workers, 72% of whom reported douching regularly, 49% had bacterial vaginosis and 30% were HIV-positive. Douching raised the risk of bacterial vaginosis by 60%, and bacterial vaginosis was significantly more common among HIV-positive women than among those who were HIV-negative (odds ratio, 1.5). No direct relationship was found between douching and HIV infection, however, a result that the researchers attribute to greater condom use among sex workers who douche.

To determine whether an association exists between vaginal douching and sexually transmitted infections (STIs), researchers analyzed survey data from 540 sex workers in Nairobi, Kenya, who were screened as part of a trial testing the efficacy of azithromycin for STI prevention. The survey included questions regarding douching (defined as insertion of any liquid into the vagina), sexual behavior, sexual health and reproductive history, as well as other demographic and behavioral information. The women were also given a full physical examination, including a gynecologic exam and STI screening.

Thirty percent of the women screened tested positive for HIV, while 49% tested positive for bacterial vaginosis, 16% for trichomoniasis, 10% for candidiasis, 10% for gonorrhea, 6% for syphilis and 1% for genital ulcers. Using multivariate analysis, researchers found that women who were HIV-positive had been significantly younger at the time of their first sexual experience and were significantly more likely to drink alcohol than were women who were HIV-negative. Women who were HIV-positive were also more likely than those who were HIV-negative to have bacterial vaginosis, trichomoniasis, gonorrhea and genital ulcers (odds ratios of 1.5, 2.7, 1.9 and 6.0, respectively).

Nearly three-quarters (72%) of the women surveyed reported having practiced vaginal douching; of those who did, 93% douched more than once a day and 91% after every sexual encounter. On average, the women who practiced vaginal douching did so 13 times per week. Of women who douched, 81% used soap and water, 18% water with salt, 9% water alone, 5% a commercial antiseptic and 1% a washing powder.

Researchers found a significant relationship between douching and condom use, with women who sometimes or always used condoms being 1.5 and 2.5 times as likely to douche, respectively, as women who never used condoms. Women who practiced vaginal douching were more likely than those who did not to have ever engaged in anal sex (19% vs. 5%); they also had more sexual partners per day (4.1 vs. 3.6). A significantly higher incidence of bacterial vaginosis was found among the female sex workers who douched (odds ratio, 1.6). In addition, the incidence of bacterial vaginosis increased with the frequency of douching: from 14% of those douching less than once a day to 46% of those douching once a day and 53% of those douching more often. Researchers did not find a significant association between douching and HIV infection.

The researchers point out that previous research on vaginal hygiene has found a significant relationship between douching and an increased risk of certain STIs, as well as an association between bacterial vaginosis and the acquisition of HIV. The researchers attribute the lack of a direct relationship between douching and an increased incidence of HIV to bias occurring because women who douched were also more likely to use condoms. The researchers conclude that "vaginal douching may indirectly facilitate the heterosexual transmission of HIV."—*J. Rosenberg*

Reference

1. Fonck A et al., Sexually transmitted infections and vaginal douching in a population of female sex workers in Nairobi, Kenya, *Sexually Transmitted Infections*, 2001, 77(4):271–275.