Early Medical Abortion Regimens Using Different Dosages of Mifepristone Are Equally Successful

A regimen of medical abortion consisting of 200 mg of mifepristone and 400 mcg of misoprostol is as likely to successfully terminate an early pregnancy as a regimen using the same dosage of misoprostol and 600 mg of mifepristone. In a study of treatment effectiveness conducted at 17 centers worldwide, 89% of women treated with the lower dose of mifepristone and 88% of those treated with the higher dose of the drug had a complete abortion.[1] The proportion of women in each group who experienced side effects such as lower abdominal pain, nausea, vomiting and diarrhea was similar. The success of both of the regimens was related to gestational age: The risk of a continuing pregnancy was more than twice as high among women who received treatment 4–5 weeks after the expected date of menses as it was among those who were treated no more than 15 days after they missed their menstrual period.

Women were eligible to enroll in the study if they had positive pregnancy test results, were in good health, had a history of regular menstrual periods and were no more than 35 days past the expected date of their menses; gestational age was confirmed through a pelvic exam. Exclusion criteria included medical conditions that would contraindicate use of either of the drugs in the treatment regimen, and a history of thromboembolism, liver disease or pruritus of pregnancy (an inflammatory skin condition characterized by severe itching). In addition, women could not participate in the study if they were heavy smokers (defined as having smoked 10 or more cigarettes per day over the prior two years), were using an IUD, were breastfeeding or had a known or suspected ectopic pregnancy.

A total of 1,589 women were randomly assigned to one of two treatment regimens. One group of women was treated with a single oral dose of 600 mg of mifepristone, followed 48 hours later by a 400 mcg oral dose of the prostaglandin misoprostol. Women in the second group received 200 mg of mifepristone, also followed by 400 mcg of misoprostol. The women's vital signs and any side effects of the drug were assessed hourly for three hours after the administration of misoprostol. All women were asked to maintain a diary of side effects (e.g., nausea, vomiting, diarrhea and lower abdominal pain) and to note any days of bleeding during the study period. Study participants were evaluated 15 days and 43 days after beginning treatment.

The mean age of the women in the sample was 27, and approximately two-thirds had ever given birth. At enrollment, the study participants were an average of 19 days past the expected date of menstrual onset. The two treatment groups did not differ significantly on any of these baseline characteristics.

Eighty-nine percent of women who received the 200 mg dose of mifepristone and 88% of those who received the 600 mg dose had a complete abortion without surgical intervention. When the data were reanalyzed to omit 41 cases in which the treatment regimen was not completed properly or the outcome was unknown, the success of the two regimens increased to 92% and 91%, respectively. Some 3% of patients who took the lower dose of mifepristone and 5% of those who took the higher dose had incomplete abortions and required curettage. Three percent of women who received the 200 mg treatment and 2% of those who received the 600 mg treatment had a continuing pregnancy. In about 2% of cases in each group, no cardiac activity was present after treatment, but the gestational sac was not expelled.

Regardless of mifepristone dosage, the likelihood of treatment failure rose with increasing delay in menses ($p<.01$). Overall, the failure rate was 8% among women with a menstrual delay of no more than 14 days, 11% among those with a delay of 15–21 days and 13% among those with a delay of 22–28 days; that rate rose to 20% among women with a menstrual delay of 29 days or more.

Compared with women who had a menstrual delay of fewer than 15 days, women who had a menstrual delay of 22–28 days or 29 days or more had odds of abortion failure more than twice as high (2.2–2.3) after the effects of treatment center were accounted for.* In addition, the proportion of women with a continuing pregnancy after treatment increased significantly with the length of the delay ($p<.01$), from fewer than 2% among women with a delay of no more than 21 days and 3% among those with a delay of 22–28 days to 9% among those with a delay of 29–35 days.

The dose of mifepristone was not related to the occurrence of side effects. More than 80% of women receiving either dosage regimen reported experiencing lower abdominal pain at some point during treatment, and more than 65% reported experiencing nausea. Nearly 30% of the women in each group reported vomiting, and about 10% reported diarrhea. However, five women who took the higher dose of mifepristone needed a blood transfusion, compared with none of those who took the lower dose of the drug ($p=.03$).

The researchers conclude that although a 200 mg dose of mifepristone, in combination with a 400 mcg dose of misoprostol, constitutes an effective regimen for medical termination of pregnancy within the first three weeks after a missed menstrual period, "the efficacy of this oral regimen among women with a menstrual delay of more than 21 days was too low to justify [its use] in such pregnancies." —*K. Mahler*

*The center at which a woman received treatment was the only variable with a significant effect on the risk of failure ($p<.01$).

Reference

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Most Infant HIV Infection From Breast Milk Occurs Within Six Weeks of Birth

Infants born to HIV-infected women in a clinical trial in Kenya were almost twice as likely to contract the virus by age two if they were given breast milk as if they were fed formula, and the difference in risk was entirely attributable to breastfeeding. More than half of those who were infected through breast milk contracted the virus within the first six weeks of their lives. Infants who were nursed and those who were fed only formula had similar mortality rates, but the rate of infection-free survival was significantly higher among formula-fed infants than among those who were given breast milk.[1]

Study participants were recruited from among women attending four prenatal clinics in Nairobi between November 1992 and July 1998 who tested positive for HIV and had access to clean water. Participants received counseling about mother-to-infant HIV transmission, the risks and benefits of formula feeding and breastfeeding, and the nature of the study; they also agreed to adhere to a randomly assigned feeding method.

Randomization took place at about 32 weeks' gestation; at that time, participants in the formula-feeding group received free dried formula and instruction on how to prepare it. Counseling on infant feeding practices remained available throughout the study period. Women and their infants were followed up monthly for the first year and quarterly for the second year. At each follow-up visit, the woman provided an interim history, and both she and her baby had a physical examination. Breast milk and the infant's blood were tested at regular intervals.

The analyses are based on 401 women and their infants (excluding second-born twins), of whom 197 were assigned to the breastfeeding group and 204 to the formula-feeding group. In both groups, the women's median age was 23, and three-quarters were married; socioeconomic status was low. At enrollment, the two groups had similar HIV-related laboratory test results; their pregnancy, labor, delivery and neonatal characteristics also were the same. HIV status was available for 83% of infants at the end of the study, and mortality data for 93%.

Women in the formula-feeding group were classified as having complied with the feeding method if they gave their infants only formula; those in the breastfeeding group were considered to have complied if they nursed at all. The level of compliance was significantly lower in the formula-feeding group (70%) than in the breastfeeding group (96%). The median duration of breastfeeding was 17 months.

In all, 92 infants acquired HIV by the age of two—61 who were breastfed and 31 who were formula-fed. The cumulative probability of infection was 37% among breastfed babies and 21% among those given formula. Because the two groups of women were comparable at entry to the study, the investigators explain, this difference in infection rates should be attributable to the feeding method. Furthermore, the 16-point difference in rates suggests that 44% of infections in the breastfeeding group were transmitted through breast milk. However, the researchers also point out that since a considerable proportion of women in the formula-feeding group did not comply with the method (that is, they gave their baby breast milk at some time), the results underestimate the role of breast milk in transmitting HIV.

By comparing the two groups' cumulative probabilities of infection at various points throughout the study period, the investigators discovered that most breastfeeding-related HIV transmission occurred shortly after birth. While the probability of infection was not significantly different between the two groups at birth, it was 10 percentage points higher among breastfed than among formula-fed babies at six weeks of age; this difference represents 63% of the cumulative 16-point difference at two years. Three-quarters of the cumulative difference was accounted for by six months of age and 87% by one year.

Roughly one in five infants in each group died during the study period; mortality rates did not differ at any point over the two years. By contrast, the proportion of babies who were alive and free of infection at age two was significantly higher in the formula-fed group (70%) than in the breastfed group (58%).

While the findings suggest that the exclusive use of formula could substantially reduce the rate of mother-to-infant HIV transmission, the researchers note that "risks associated with formula are community specific.…In developing country communities in which clean water and formula-feeding knowledge are limited, the balance of risks and benefits could be shifted." Furthermore, they observe that most HIV-infected women in Sub-Saharan Africa cannot afford infant formula. "The current priority," they conclude, "is to…make interventions to prevent infant HIV-1 infection widely available." —*D. Hollander*

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STD Rates Soar in China; Three in Four New Cases Are Among the Unmarried

Rates of sexually transmitted diseases (STDs) in China have soared over the past decade. Surveillance data indicate that the incidence of syphilis increased nearly 20 times from 1990 to 1998 (from 0.2 to 4.3 cases per 100,000 inhabitants) and the incidence of gonorrhea nearly tripled (from nine to 24 cases per 100,000).[1] Women accounted for an increasing proportion of persons newly diagnosed with an STD over the decade (from 33% of patients in 1989 to 43% of those diagnosed in 1998). Moreover, in the mid-1990s, the proportion of STDs that were acquired outside of marriage increased significantly in China (from 55% of new cases in 1995 to 72% of those diagnosed in 1998).

China's political and cultural history has directly influenced its singular experience with STDs. When the Communists took power in 1949, an estimated 10 million Chinese had an STD; by the mid-1960s, however, the government's draconian public health measures had basically eradicated STDs.[2] But China's opening to the West in the 1980s and the recent reforms enhancing freedom of movement and personal wealth have created a social climate more conducive to the spread of STDs.

The widespread perception of a resurgent STD epidemic led the government to initiate the National System of STD Surveillance in 1988. The data are collected quarterly from each of the country's provinces, autonomous regions and municipalities. The surveillance system requires that physicians report all cases of clinically diagnosed STDs, as well as the source of infection (i.e., from a spouse or from a nonmarital partner).

Researchers for the current study examined retrospective STD incidence data for the years 1989 through 1998. They examined trends in infection rates by sex and by age for four major STDs—gonorrhea, syphilis, genital warts and nongonococ-

cal urethritis or cervicitis.

Overall, the rate of infection with any of the eight STDs* for which reporting is mandatory increased nearly fourfold from 1990 to 1998 (from 14 cases per 100,000 persons to 51 cases per 100,000). Although the incidence of gonorrhea almost tripled over the period (from nine cases to 24 per 100,000) and that of genital warts nearly quadrupled (from three to 11 per 100,000), the rise in the rate of infection with syphilis was even more dramatic—a 20-fold increase, from 0.2 infections per 100,000 to 4.3 per 100,000.

Throughout the decade, the rate of infection with any STD increased by an average of 17% per year. This growth was geometric rather than linear for syphilis (average annual increases of 20%), for nongonococcal infections (12%) and for genital warts (4%), but new gonorrhea infections plateaued after 1994 (average annual increases of 3%).

Although overall trends among men and women were similar, the annual average increase among women was higher than that among men (23% vs. 18%). Women also accounted for a significantly higher proportion of STD infections in 1998 than in 1989: In 1989, women represented just 33% of new STD cases, but in 1998, they accounted for nearly 43% of all diagnoses. Both male and female STD patients were significantly older in 1998 than in 1995 (mean age of 31.9 vs. 30.7), and the vast majority (93%) were between ages 20 and 49.

The proportion of infections acquired outside of marriage increased significantly between 1995 and 1998. Although 55% of Chinese men and women who were diagnosed with an STD in 1995 were either unmarried or had been infected by someone other than their spouse, that proportion rose to 72% by 1998. Nonlinear regression analysis indicated that patients diagnosed in 1998 were twice as likely as those diagnosed in 1995 to have become infected outside of marriage (odds ratio of 2.2).

The investigators acknowledge that despite universal reporting requirements, underreporting remains a problem, and many STD-infected patients who seek care from nongovernment sources are missing from the official data; thus, the data indicating sustained growth in STDs are still conservative estimates. The investigators offer several explanations for the more persistently high growth rate of syphilis than of gonorrhea. For example, changes in sexual behavior may differentially affect infection with each organism; rates of gonorrheal infection might be artificially lower than those of syphilis because gonorrhea patients might be more likely to self-treat or to see practitioners who tend to underreport; and rates of detection of syphilis might be higher simply because more tests for it are performed (e.g., tests for syphilis are required before marriage in China).

The seeming increase in the proportion of STDs diagnosed in women might stem from changes in sexual activity among homosexual men or from men's greater likelihood of treating themselves or of seeking care in nongovernment facilities. The researchers speculate that the rise over time in the proportion of infections acquired outside of marriage reflects an "evolution of sexual beliefs and behaviors" in China, and that the relatively high mean age of Chinese STD patients compared with patients in other countries reflects an older age at sexual initiation. The investigators conclude that the well-documented effect of certain STDs on the probability of HIV infection means that "HIV and AIDS may become a public health problem in China along with the increases in STD prevalence."—*L. Remez*

*This global category includes gonorrhea, syphilis, genital warts, nongonococcal urethritis or cervicitis, genital herpes, lymphogranuloma venereum, chancroid and AIDS.

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Egyptian Women Who Use an IUD Have a Higher Risk Of Anemia Than Those Who Rely on Other Methods

Half of women attending family planning clinics at major university hospitals in Egypt suffered from anemia, according to a recent study, with prevalence varying from 24% to 100%.[1] Of those who were practicing contraception at the time of their visit, women using the IUD were most likely to be anemic (65%), and those relying on long-acting hormonal methods were least likely (34%); the prevalence of anemia among nonusers was 43%. Anemia was significantly more frequent among women living in urban areas, those who were not obese and those who had a parasitic infection.

To examine the effect of the use of contraceptive methods on the prevalence of anemia among Egyptian women and to identify underlying risk factors for the condition, a cross-sectional study was conducted among clients of family planning clinics in the obstetrics and gynecology departments of seven university hospitals from August 1995 to March 1996.

A total of 1,039 Egyptian women aged 18–40 years were recruited from the participating centers. Women were excluded if they were pregnant or had been pregnant within the previous six weeks. All participants completed a standard questionnaire designed to obtain demographic and socioeconomic data. They also provided information about their medical and reproductive history, as well as samples of blood, urine and stool to be tested for anemia and for parasitic infection. Women who wished to start a new contraceptive method made up 44% of the group, while 32% were making a routine follow-up visit, 19% had a method-related problem and 5% were making a visit for other reasons.

The prevalence of anemia in the entire sample was 50%, a proportion that varied from 24% at Assiut to 100% at Al Azhar. Overall, anemia was more frequently diagnosed in women living in urban areas than in those living in rural areas (56% vs. 42%). In addition, women with some formal education were more likely to be anemic than were those with none (53–57% vs. 47%), and women with a moderate income were less likely to be anemic than those with a relatively high or low income (47% vs. 57–58%).

Some reproductive characteristics also had significant effects. The prevalence of anemia was higher among nulliparous women and among women with 1–2 children than among those with more children (61–67% vs. 35–52%). The condition was also more common among women with menstrual periods lasting four or more days than among those with shorter periods (50–54% vs. 42%). Women with moderate-to-heavy menstrual flow were more likely to be anemic than were those with lighter flow (50–52% vs. 37%).

There was a statistically significant association between contraceptive use and

anemia. The prevalence of anemia reached 65% among IUD users, compared with 34% among women who were relying on long-acting hormonal methods (injectables or the implant), 40% among those using the pill and 43% among those not currently practicing contraception. Women relying on an IUD not only had the highest prevalence of anemia, but were also most likely to have severe anemia (26%). Pill users were the group least likely to be severely anemic (3%).

The prevalence of anemia was significantly higher among women who ate red meat, green vegetables and molasses no more than once a week than it was among other women. In addition, women with a parasitic infection were significantly more likely than noninfected women to be anemic (79% vs. 49%).

Multivariate logistic regression analyses revealed that women living in urban areas were 1.8 times as likely as those in rural areas to be anemic, while those who were not obese were 1.5 times as likely to be anemic as were other women. The prevalence of anemia was 2.2 times as high among women relying on the IUD as it was among women using other contraceptives or no method. Finally, women infected with parasites were 2.9 times as likely to be anemic as were uninfected women.

The investigators note that the elevated prevalence of anemia among urban women probably reflects the low socioeconomic status of the populations generally served by the study centers. The protective effect of obesity, they add, may indicate a higher intake of iron-rich foods. Given the increase in IUD use in Egypt and the high prevalence of anemia, they recommend the prescription of iron supplement tablets as part of the IUD services provided by family planning clinics, early treatment of parasitic infections and the mounting of mass media campaigns encouraging the intake of iron-rich foods. *—D. J. Estrin*

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Indian Men with Higher Socioeconomic Status Are More Likely to Be Knowledgeable About Reproductive Health

Married men in the northern Indian state of Uttar Pradesh who believe that it is possible to prevent pregnancy are more likely than men who hold fatalistic pregnancy attitudes to be knowledgeable about sexually transmitted diseases (STDs) and about a woman's fertile period, but less likely to have information about serious problems a woman may experience during pregnancy or childbirth. Men throughout the state have low levels of knowledge about sexual and reproductive health, although those who are more educated, hold professional positions and have a greater number of household assets are more likely than others to be well informed.[1] These are among the findings of the Uttar Pradesh Male Reproductive Health Survey (MRHS).

The MRHS was administered between November 1995 and April 1996. Teams of male fieldworkers interviewed a probability sample of married men living in five districts that represent the state's five geographic regions. Four of the districts—Aligarh, Banda, Gonda and Nainital—are largely rural, while the fifth, Kanpur Nagar, is primarily urban. Currently married men aged 15–59 were eligible to participate in the survey, and 6,549 husbands were successfully interviewed.

Among other topics, the survey investigated three areas of reproductive health knowledge: fertility, maternal health and STDs. As a measure of fertility knowledge, men were asked to indicate when during a woman's menstrual cycle she was most likely to become pregnant. Knowledge of maternal health was measured by asking men to list symptoms indicative of complications during pregnancy or childbirth. Knowledge about STDs was assessed by asking men to agree or disagree with a series of statements pertaining to transmission and treatment of sexually transmitted infections.

The determination of whether survey participants held fatalistic attitudes was based on their agreement with the statement "Most often it is not possible to prevent a pregnancy. If a woman is meant to be pregnant, she will be pregnant." Social and demographic variables measured included district, whether the man's area of residence was urban or rural, the economic level of the household (with number of household assets used as a proxy), self-reported occupation, age, education and whether the man's wife had ever given birth.

Univariate Results

The proportion of men who had accurate information in any of the three areas was low. Overall, only 21% of men accurately identified a woman's fertile period. Twenty-eight percent were able to name two or more complications that might arise during pregnancy, and 44% correctly responded to at least two of the statements about STDs.

However, 51% of men agreed that it is possible for an individual to take action to prevent a pregnancy. The level of agreement varied substantially across districts: Some 91% of men in Aligarh and 71% of those in Gonda believed that pregnancy could be prevented, while in Banda and Nainital, fewer than 30% did. In the urban district of Kanpur Nagar, men were as likely to agree as they were to disagree. Men who had a greater number of household assets, those who had more education and those who described their occupation as business or professional were more likely than other men to agree that fertility could be controlled.

The district in which a man lived was significantly related to his level of knowledge in each of the three areas, although these relationships were not consistent. For example, 58% of men in Gonda had accurate knowledge about STDs, but only 17% knew the timing of a woman's fertile period and just 10% knew at least two signs of pregnancy complications. In Banda, however, 43% of respondents were knowledgeable about maternal health, while 16% were informed about fertility and 19% had information about STDs.

Men who lived in urban areas, those who were better off economically, those who were better educated, those who were older and those with higher occupational status were significantly more knowledgeable than other men in all three areas. Those whose wife had given birth were significantly more likely than other men to know the timing of a woman's fertile period and symptoms of pregnancy complications, but not to have information about STDs. Compared with men who held fatalistic beliefs about fertility, men who believed it was possible to exert control over the occurrence of a pregnancy were more likely to be knowledgeable about a woman's fertile period and about STDs, but were less likely to have information about possible complications of pregnancy.

Multivariate Results

In multivariate logistic regression analyses controlling for all social and demographic variables and for pregnancy prevention beliefs, men in Aligarh, Kanpur Nagar and Nainital were more likely than those in Banda to be able to identify a woman's fertile period (odds ratios of 1.2–2.3). Fertility knowledge was more common among men with two or more household assets than among those with one or none (1.3–1.9). Compared with agricultural workers, men in blue-collar, business and professional positions were more likely to know when a woman is most fertile (1.4–1.9). This knowledge was more common among men aged 25 or older than among younger men (1.5–1.8).

Compared with men in Banda, men living in other districts were less likely to know two or more signs of pregnancy complications (odds ratios of 0.2–0.7), and men residing in urban areas were more likely than rural men to have that information (1.2). Men who had a greater number of household assets were better informed about maternal morbidity than were those who had fewer household amenities (1.2–1.3). Knowledge about maternal complications was more common among blue-collar workers and professional workers than it was among agricultural laborers (1.3–1.5). Men whose wife had given birth were almost twice as likely to be able to identify the symptoms of such complications as were other men (1.7). Knowledge of two or more signs of complications was less common among men who believed fertility could be controlled than it was among men who did not (0.7).

Compared with men in Banda district, those in the other four districts were significantly more likely to give accurate responses to at least two statements about STDs (odds ratios of 2.2–6.3). Men with 2–6 household assets were more likely than those with fewer amenities to have such knowledge (1.2–1.3). Professional men were more likely to be knowledgeable in this area than men in other occupations (1.6). Men who believed it is possible to prevent pregnancy were significantly more likely to be informed about STDs than were men without this belief (1.4).

Educational attainment was a significant predictor of knowledge in each of the three topic areas examined: A difference of 10 years in educational attainment between men was associated with a near doubling of the odds ratios for knowledge on all three indices.

Conclusions

According to the investigators, the distinct effects observed for each of the three models suggest that individuals may acquire each type of knowledge in a different way: Although men could learn about complications of pregnancy and childbirth from observation, information about fertility and STDs would most likely be obtained from a health practitioner or through a community-based education program. They note that Indian men's lack of reproductive health knowledge can have dangerous implications for women, who often must defer to male family members in matters of health. Ensuring that men understand the basic facts about fertility and reproductive health, as well as the importance of appropriate care, the investigators conclude, is vital to women's health and well-being.—*K. Mahler*

Reference

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