Risk of HIV Transmission Is Substantially Reduced During Antiretroviral Therapy

Levels of risky sexual behavior among men and women initiating antiretroviral therapy (ART) generally remained below baseline values during a three-year study in Uganda.[1] Although the proportion of participants who had had sex in the past three months increased from 28% to 41% during the study, the proportion of sexually active individuals who had recently had risky sex fell sharply at first and, despite a modest rebound, remained below initial levels. Overall, the estimated transmission risk to partners who were HIV-negative or of unknown status declined by 91%.

Because ART reduces the viral load of people with HIV, it should reduce the risk of transmission. However, one concern has been that as an ART user's condition improves, he or she might engage in risky sexual behavior with greater frequency, diluting or perhaps eliminating the reduction in transmission risk. To examine this issue, researchers analyzed clinical and behavioral data from a randomized trial conducted in Tororo, Uganda, in 2003–2007. Clients of a home-based AIDS program who lived within the program's catchment area were eligible for the study if they had never used ART and they had AIDS symptoms, a CD4 count of 250 or fewer cells per microliter or both. All participants received free ART and clinical care during the three-year trial, and during the first year they attended counseling sessions in which they developed plans for reducing their risk of transmitting HIV to others. Counselors discussed such options as abstinence, condom use, reducing the frequency of sex and fulfilling sexual desires without engaging in intercourse; they also provided free condoms on request. Additional informational sessions were provided to serodiscordant couples.

The main purpose of the trial was to compare outcomes across three clinical monitoring approaches. The current analysis, however, focused on data from interviews conducted at baseline and every six months thereafter. Participants were asked about their sexual desire, opportunities to meet partners,

sexual activity, condom use, partner type and partner HIV status. In addition, the investigators measured participants' plasma HIV levels. Respondents were classified as having had risky sex if they had used condoms inconsistently or not at all during vaginal sex with a partner who was HIV-negative or of unknown status. The investigators used logistic regression to identify predictors of having had risky sex, and estimated participants' transmission risk using the behavioral and clinical data in tandem with probability data from prior seroconversion studies. They assumed a condom failure rate of 20%.

Baseline data were available for 928 men and women. After exclusion of 94 respondents who died during the trial and 79 who did not provide complete behavioral data at the three-year follow-up, the analytic sample consisted of 755 respondents, about three-fourths of whom were female. Mean age at baseline was 37 for women and 41 for men. At baseline, most men were married or cohabiting (68%); the majority of women were widows (60%), though 24% were married or cohabiting.

Levels of sexual activity increased steadily during the trial. The proportion of respondents who had had sex in the past three months increased from 28% at baseline to 41% at 36 months; among respondents who were married, cohabiting or in a steady relationship, the proportion who were sexually active increased from 65% to 86% among men, and from 59% to 79% among women. At both the beginning and the end of the trial, only 6% of respondents had had more than one partner in the past three months; half of these nonmonogamous respondents were polygamous men whose only additional partner had been a wife.

Measures of risky sex often showed a different pattern, typically declining sharply at first (coinciding with the trial's behavioral interventions) and then increasing. For instance, the proportion of sexually active respondents who had had unprotected sex in the past three months with a partner who was either HIV-

negative or of unknown status declined from 6% at baseline to 2% at six months; by 36 months, the proportion had returned to 6%. The only factor associated with risky sex in regression analyses was alcohol use, defined as either partner having used alcohol before having sex (odds ratio, 2.9).

Condom use varied according to partners' serostatus. At the end of the study, for example, 74% of respondents with HIV-negative partners reported always using a condom, compared with 46% of respondents with HIV-positive partners.

Clinical tests indicated that participants' virus levels declined sharply during the trial. For example, among respondents who had had sex with partners who were HIV negative or of unknown status, the proportion with undetectable viral loads increased from less than 1% at baseline to 98% at 36 months; the proportion with CD4 cell counts of 200 or higher increased from 20% to 95%. From such improvements, together with the changes in participants' risky sexual behavior, the researchers estimated that among sexually active individuals, the risk of transmission to HIV-negative partners and partners of unknown status fell from 47 to four transmissions per 1,000 person-years, a 91% decline. Of the 62 respondents whose partners underwent annual voluntary testing during the trial, only one transmitted the virus to a partner.

The study had several limitations, the authors say. It relied on self-reports of sexual activity, and respondents may have been reluctant to report unsafe behavior. In addition, the findings may not be generalizable to other settings, particularly countries where marriage rates are lower and levels of concurrent partnerships higher than in Uganda. Nevertheless, the study provides evidence that "integrated ART and prevention programs may help to reduce HIV transmission in Africa," according to the authors. Although the apparent benefits of the trial's behavioral interventions seemed to wane in the trial's later stages, rates of risky sex generally "did not increase above baseline levels," countering fears that

new users might engage in risky behaviors as their condition improved and their sexual activity increased. Moreover, the investigators note that levels of risky sex were lowest in the earliest stages of treatment, when viral loads (and thus the potential for transmission) were highest, underscoring that behavioral interventions for ART users may be particularly important right after initiation of therapy.
—*P. Doskoch*

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Poverty, Multiple Partners Linked to HIV Infection Among Indian Women

In India, women who are poor or have had multiple sexual partners, and those whose husbands are nonmonogamous or sexually coercive, have an increased likelihood of testing positive for HIV, according to a national household-based survey.[1] Among both women overall and those who were married, the odds of having HIV were elevated if their household income was below the national poverty line (odds ratios, 1.6–1.8) or if they had had more than one lifetime sexual partner (5.2–6.0). Other risk factors included being aged 26–35, and having a husband who had other wives or partners, had been tested for HIV or had ever forced them to perform unwanted sexual acts.

The data came from the third Indian National Family Health Survey, which was conducted in 2005–2006 in every state except Nagaland. Men aged 15–54 and women aged 15–49 were eligible for the survey. Because HIV transmission to women often occurs within marriage in India (only 6% of HIV-positive women in the survey had never married or cohabited), the investigators assessed risk factors for infection not only among all sexually experienced women, but also among a subsample of women whose husband had participated in the survey. Respondents were interviewed about their socioeconomic, demographic and behavioral characteristics and had blood taken for HIV testing. The final sample consisted of 37,781 sexually active women, including 22,684 married women whose husband also completed the survey. The researchers used logistic regression to identify associations between women's and husbands' characteristics and women's HIV status.

The vast majority of women were married (93%). Roughly one-fourth were aged 15–25, two-fifths were aged 26–35 and one-third were aged 36–49. About half lived in an urban area (47%), and one in four belonged to a household that qualified for government assistance (24%). A substantial minority (25%) had never heard of AIDS. Very small proportions reported having had a genital sore in the past 12 months (2%) or more than one lifetime sex partner (2%). Among married women, 2% reported that their husband was not monogamous and 7% had a partner who had taken an HIV test in the past. Seven in 10 husbands had at least a secondary education.

A logistic regression model that included more than two dozen variables—all of those associated with HIV incidence in univariate models, as well as factors identified in previous studies—revealed that the odds of infection were higher among married than unmarried women (odds ratio, 2.5), and were especially elevated among those who were separated, divorced or widowed (9.5–22.7).

Among both all women and those who were married, women aged 26–35 were more likely to test positive than older women (odds ratios, 2.5–3.7). The likelihood of infection was also elevated among women living below the poverty line (1.6–1.8), those who had had a genital sore in the past 12 months (3.0–3.2) and those who had had more than one lifetime sexual partner (5.2–6.0).

In analyses restricted to married women whose husband had completed the survey, the odds of HIV infection were elevated among those whose husband had other wives or partners (3.4), had been tested for HIV (2.8) or had ever forced the respondent to perform any unwanted sexual acts (2.6). Women whose husband had a secondary or higher education were less likely than those whose husband had no schooling to be HIV-positive (0.4).

The investigators caution that although the study was based on a large national sample, the generalizability of the findings is limited because of the exclusion of households in Nagaland, which has a very high HIV rate, and because the study excluded women with missing data (who differed from those in the analysis in several respects). Other limitations, they add, are the cross-sectional design of the survey and the possible impact of social desirability bias. Nonetheless, the authors suggest that the associations between hus-bands' behavior and women's infections warrant particular attention; they advocate increased HIV education efforts that promote "condom use both within and outside marriage" and "emphasize respect for women and wives."—*S. Ramashwar*

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Medication Abortions May Be Equally Safe Whether Done at Home or Clinic

Home-based medication abortions may be as effective as those administered in a clinic, and they may be more acceptable to women, according to an analysis of pooled data from nine studies in which women took a combination of mifepristone and misoprostol to induce abortion.[1] The analysis showed that an average of 90% of home-based procedures and 93% of clinic-based procedures resulted in a complete abortion—a nonsignificant difference. Compared with women who took misoprostol at a clinic, women who took it at home experienced pain for 0.3 days longer, but were more likely to be open to using the method again (odds ratio, 7.1).

Misoprostol, the second drug administered in the two-part medication abortion regimen, is commonly taken at home by women obtaining medication abortions in the United States and France, and is widely used in many developing countries as well. Past research has established that home-based medication abortions may have several advantages over clinic-based protocols, including allowing for greater privacy and lessening the burden on both women and service providers by reducing the number of clinic visits. However, evidence on the comparative safety, effectiveness and acceptability of home-based and clinic-based administration had not previously been reviewed.

The data used in the current analysis came from prospective cohort studies that had been published in 1990 or later, compared outcomes of home-based and clinic-based medication abortions, assessed outcomes prospectively and reported the proportion of abortions that had been completed successfully. The nine studies that met these criteria provided data on a total of 4,522 women

(3,478 home users and 1,044 clinic users) aged 15–49 in Albania, France, India, Nepal, Tunisia, Turkey and Vietnam. A dose of 400 mcg of misoprostol was administered in all cases, while mifepristone dosages varied between 200 mg (in seven studies) and 600 mg (in two). All women were given the choice of taking misoprostol at home or at the clinic and were advised to use painkillers. Women were followed up two weeks after mifepristone administration in seven studies, and after 10–20 days in one study.

The average age of study participants ranged from 25 to 32 years. The maximum length of gestation was 49 days in two studies and 56 days in seven studies.

Among women who took misoprostol at home, the proportion who had a complete abortion ranged from 86% (in India) to 97% (in Albania); the average success rate was 90%. Among those who took misoprostol at a clinic, between 80% (in Turkey) and 99% (in France) had a complete abortion, and the average success rate was 93%. Although three studies had found that success rates were higher among women receiving clinic-based abortions than among those with home-based abortions, and two studies had come to the opposite conclusion, the difference in rates based on pooled data was not significant.

Pain and cramping were assessed in three studies; in each, at least 90% of women reported this side effect. Pooled results showed that pain lasted longer among women who took misoprostol at home than among those who took it at a clinic (weighted mean difference, 0.3 days). Vomiting, also assessed in three studies, was reported by 12–34% of women and also lasted 0.3 days longer among home users. Reports of other complications did not differ according to medication abortion protocol.

Across eight studies, an average of 88% of women who took misoprostol at home and 86% who took it at a clinic were satisfied with the medication abortion method. An average of 94% of home users and 62% of clinic users in the nine studies reported that they would choose medication abortion again. The difference between home- and clinic-based users was significant only for the second measure (odds ratio, 7.1).

The researchers explain several limitations of their analysis, most of which stem from flaws inherent in the studies on which the review is built. For instance, only one study adjusted for potential confounders, and none

was able to minimize selection bias through randomization. They also acknowledge that the success of a home-based protocol may depend on the resources available: "The effectiveness of home-based [medication] abortion in nonresearch settings without the precautionary measures and support systems that were most likely in place in these and other studies... may be less satisfactory." Yet, the researchers point out, where appropriate support is available, "simplified protocols could give greater access to [medication] abortion to women living in restrictive and/or resource-limited settings where mortality related to unsafe abortion remains high."—H. Ball

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In Nigeria, Migrant Youth Are More Likely Than Others to Have Had Sex

Nigerian youth who have migrated to a rural area, whether from an urban region or another rural site, are more likely than nonmigrants to have had premarital sex, a recent study suggests.[1] In a national sample of unmarried 15–24-year-olds, 46% of migrants to rural areas reported having had sex, compared with 30–32% of rural and urban nonmigrants. In multivariate analyses, migrants to rural areas, whether from urban locations or rural ones, had 20% higher odds of having had premarital sex than did rural nonmigrants (odds ratios, 1.2 for each). Religion, ethnicity and education were also associated with having had sex before marriage.

Studies from a variety of developing and developed countries have found elevated rates of risky sexual behavior among migrants. A variety of explanations have been suggested for these findings, including individual characteristics (migrants may be prone to risky behavior), separation from partners and exposure to less restrictive social norms. Some evidence has implicated migrants in fostering the spread of HIV in parts of Africa.

To explore the relationship between migration and sexual behavior, researchers analyzed data from the nationally representative 2008 Nigeria Demographic and Health Sur-

vey. The investigators focused on responses from 10,865 unmarried males and females aged 15–24, as these youth are more likely than their married peers to experience undesirable outcomes from sex. Survey respondents provided a wide range of demographic and behavioral information. Responses to questions on current and previous places of residence were used to classify respondents into six groups: two nonmigrant categories (rural and urban) and four migrant categories (rural–rural, rural–urban, urban–rural and urban–urban). If a participant had lived in three or more places, only the two most recent were used for the migration classification. Respondents also indicated whether they had ever had sex and, if so, their age at initiation. Other key variables included gender, educational attainment, religious affiliation (Catholic, other Christian, Muslim or other), employment (formally employed, self-employed or unemployed), wealth (categorized into quintiles on the basis of household possessions), ethnicity (the country's 169 ethnic groups were classified into six major categories) and media exposure.

In addition to compiling descriptive statistics, the researchers performed discrete-time hazard regression analyses to identify predictors of premarital sex. Each year of a respondent's life from age 10 to 24 (up to and including the year of sexual debut) was treated as a separate event; thus, a respondent who had had sex for the first time at age 17 provided eight person-years of data—seven without sexual initiation and one with it. Overall, the researchers analyzed 91,354 person-years of data.

At the time of the survey, respondents had a mean age of 19. Most had a secondary or higher education (78%) and were not working (59%). Sixty-one percent lived in rural areas. Two-thirds had never migrated and had always lived in a rural area (45%) or an urban one (20%); 15% had moved between urban areas, 8% between rural areas, and the remainder from urban to rural regions (9%) or vice versa (3%). Slightly more than one-third (35%) of respondents had ever had sex; the proportion was higher among three of the migrant groups (urban–urban, urban–rural and rural–rural) than among the two nonmigrant groups (41–46% vs. 30–32%).

In unadjusted hazard models, the odds of sexual initiation were higher among all four migrant groups than among rural nonmigrants (odds ratios, 1.2–1.5). After adjustment for so-

cial and demographic variables, two of these associations disappeared, but the odds of initiation remained elevated among urban–rural and rural–rural migrants (1.2 for each). Catholics, other Christians and members of traditional sects were more likely than Muslims to have had premarital sex (1.3–1.4). In addition, having had premarital sex was positively associated with age, education and employment. Ethnicity was among the most important predictors of premarital sex: Members of the Niger Delta ethnic groups were more than 10 times as likely as individuals of Hausa-Fulani and Kanuri ethnicity to have had premarital sex (10.9), and several other ethnic groups also had highly elevated odds (5.3–8.3).

The finding that migration, or at least certain types of migration, is associated with premarital sex in Nigeria is consistent not only with the literature for other countries, but also with research indicating that migration from urban to rural areas has been an impor-

tant transmission route for HIV in Nigeria, according to the authors. They note that the elevated odds of premarital sexual debut among rural–rural migrants suggests that this "hitherto neglected" group may warrant greater attention; providing these and other youth with opportunities to earn a living in their area of origin—thus addressing one of the key motivations for migration—"may be important for HIV/AIDS control." However, the researchers emphasize that migration is one of only several important factors associated with sexual behavior in Nigeria, which underscores "the need for behavior change policies and programs to be sensitive to the complex contextual nuances across youth groups" that influence the timing of sexual debut.—*P. Doskoch*

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Sex-Selective Abortions During Past Three Decades May Explain Absence of Millions of Girls in India

Sex ratio data suggest that selective abortion of females increased substantially in India between 1980 and 2010, particularly among women whose only child was a daughter, according to a new analysis.[1] The sex ratio for second births among women with a firstborn daughter fell from 906 females per 1,000 males in 1990 to 836 females per 1,000 males in 2005; in contrast, no declines occurred in the sex ratio for firstborns or for second births after a firstborn son. Declines in the sex ratio were greater among mothers with 10 or more years of education than among those without any education, and greater among those from wealthier households than among those from poorer ones. From these and other data, the researchers estimate that the number of sex-selective abortions per decade rose from about one million in the 1980s to 2.6 million in the 1990s and 4.5 million in the 2000s, for a total of more than eight million.

Although the natural sex ratio—roughly 950–975 females per 1,000 males at birth in most high-income countries—generally varies little by birth order or by the sex of the previously born child, some evidence suggests that this is not the case in India. Moreover, the 2011 Indian census counted 7.1 million fewer girls than boys aged 0–6 years. Such findings,

combined with persistent son preference and the increased availability of fetal ultrasound, led researchers to hypothesize that widespread selective abortion of females has affected sex ratios.

To assess trends in sex ratio by birth order between 1990 and 2005, and to determine if the ratio varies by women's wealth or education, researchers used data on more than 250,000 births from three rounds of the National Family Health Survey, a nationally representative survey of Indian households. Women of childbearing age were asked to provide a complete birth history (including each child's date of birth, birth order, gender and survival status), as well as information on their educational attainment, religion and household assets; the last were used to classify women into state-specific wealth quintiles. Differences in sex ratio trends by birth order and women's characteristics were identified using linear regression. To estimate the numbers of "missing" girls, the researchers compared the expected number of girls aged 0–6 (calculated from the natural sex ratio at birth and adjusted for age- and sex-specific mortality) with the actual numbers enumerated in the 1991, 2001 and 2011 Indian censuses; they calculated low, high and mean estimates.

Between 1990 and 2005, the sex ratio for second births after a firstborn daughter declined by 0.5% annually, from 906 females per 1,000 males in 1990 to 861 in 1997 and 836 in 2005. During the same period, the sex ratios for firstborns and for second births after a firstborn son did not change, remaining close to the natural sex ratio. The sex ratio for second births after a firstborn daughter was unchanged among mothers with no education and among those in the lowest wealth quintile, but fell among mothers reporting 10 or more years of education and among those in the highest wealth quintile. Among women with two daughters but no sons, the sex ratio for third births fell from 882 in 1990 to 768 in 2005, though the decline did not reach statistical significance.

The researchers noted that if no selective abortion of females had occurred and the two sexes had had equal mortality rates, the imbalances in the sex ratio should have been smaller than those they encountered. They concluded that most of the differences in the sex ratio could be explained by sex-selective abortions. After adjustments for age- and sex-specific mortality (e.g., mortality is higher among girls than among boys for most of the first five years of life), the estimated number of selective abortions of females per decade rose from about one million in the 1980s (range of estimates, 0–2.0 million) to 2.6 million in the 1990s (1.2–4.1 million) and 4.5 million in the 2000s (3.1–6.0 million), yielding a total of 8.1 million selective abortions (4.2–12.1 million). At 2010 birth and child mortality rates, a 1% drop in the sex ratio among children aged 0–6 is consistent with an additional 1.2–3.6 million abortions of females.

Although sex ratios of fewer than 950 females per 1,000 males have become widespread in India—the number of districts with such ratios increased from 336 to 433 between 2001 and 2011—the rate of increase in selective abortions of females appears to be slowing; the rate increased by 260% between 1991 and 2001, and by 170% between 2001 and 2011.

The researchers acknowledge several limitations of their analysis: Year-to-year differences in sex ratios may have been due in part to random variation, the estimates of the number of selective abortions were necessarily crude, and the estimated biological sex ratio of 950–975 females per 1,000 males is based on European and North American pop-

ulations and may not be applicable to India. Despite these limitations, the researchers conclude that selective abortion of females has increased in the past 30 years and has contributed to the widening gap in the child sex ratio. They suggest that the increases in sex-selective abortion may be due to son preference combined with declines in fertility; the finding that selective abortion of females appears to be especially common among educated and wealthy women may reflect that these women are better able than others to afford ultrasound and abortion services. The researchers note that a 1996 law aimed at curbing sex-selective abortion likely has been ineffective because few providers have been prosecuted; however, efforts to prevent selective abortions of females could benefit from "reliable monitoring and reporting of sex ratios by birth order in each of India's districts."–*L. Melhado*

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Peer Intervention Reduces STIs Among High-Risk Individuals in China

Although a five-country HIV and STI prevention intervention trial showed no overall reductions in STI acquisition or unprotected extramarital sex, a subanalysis of data from the China site suggests that the intervention's efficacy may have been masked by the inclusion of many participants with low-to-moderate behavioral risks.[1] When outcomes in the community-based, randomized controlled trial were examined according to participants' STI history, those who had had an STI at baseline were less likely to have an STI at 24 months if they had been in the intervention rather than control group (odds ratio, 0.5). Similarly, the proportion of these participants who reported having had unprotected extramarital sex in the past three months dropped from 11% at baseline to 5% at 24 months in the intervention group, but did not decline in the control group.

The National Institute of Mental Health Collaborative HIV/STD Prevention Trial, conducted in 2002–2006 in China, India, Peru, Russia and Zimbabwe, sought to reduce HIV and STI risk by changing social norms for safer sex behaviors. Community leaders attended four training sessions in which they were taught skills for delivering theory-based HIV and STI prevention messages to their peers during casual conversations. During the training period, the community leaders practiced delivering their messages daily and gave weekly reports on the frequency of their conversations. After training, the leaders attended sessions bimonthly to support their messaging activities and to report on their efforts.

In China, food markets were identified as the venue for the trial, and migrant vendors were chosen to serve as the study population. Forty markets in a coastal city were selected, 20 of which were randomly assigned to receive the community leader intervention. Market vendors were eligible to participate if they were 18–49 years old and had engaged in unprotected sex in the past three months; half of the 3,912 market workers were assigned to the intervention group and half to the control group. About 20% of vendors were invited to serve as opinion leaders and underwent the training sessions; however, the intervention was not implemented in the control group until after the study's 24-month follow-up, so that researchers could assess the effectiveness of the intervention. Participants in both groups received STI diagnostic and treatment services, HIV and STI educational materials and presentations, access to condoms and regular monitoring.

Assessments were completed at baseline, 12 months and 24 months, and included an interview, a physical exam by a doctor, and STI testing of blood, urine and vaginal swabs. The primary biological outcome was any new STI (chlamydia, gonorrhea, syphilis, herpes, HIV or, among females, trichomonas), and the primary behavioral outcome was having had any unprotected extramarital sex in the previous three months. Differences between the intervention and control groups at baseline were tested using chi-square, t or Wilcoxon rank tests; the effectiveness of the intervention was examined using mixed-effects regression models.

More than half (55%) of the participants were female, and the mean age was 35 for men and 36 for women. Only 13% of the market workers had a high school education or higher, and 9% had no education. Ninety-seven percent of women and 87% of men were married. Eighty-seven percent of participants regularly earned money.

At baseline, about 7% of participants reported having had unprotected extramarital sex in the previous three months—12% of men and 2% of women. In addition, 20% had an STI—14% of men and 24% of women. During the trial, the intervention and control groups both had significant decreases in STIs and unprotected extramarital sex. At 24 months, women in the intervention group had a lower STI rate than those in the control group (6% vs. 8%), but levels of unprotected extramarital sex were similar in the two groups (<1%); neither outcome differed by intervention group among men.

Further analysis revealed that men, older participants and those who had not previously had an STI were less likely to acquire an STI by the 12- or 24-month follow-up than were women, younger participants and those who had had an STI at any time point, respectively. Next, researchers examined outcomes by STI history. In both the intervention and control groups, market workers who had not had an STI at baseline were unlikely to acquire one during the study period (<5% for each), and outcomes did not differ by intervention status. However, among high-risk participants—those who had had an STI at study entry—17% of those in the intervention group acquired a new STI by 24 months, compared with 30% of those in the control group. After adjustment for age and gender, the odds that a participant with an STI at baseline received a new STI diagnosis at the 24-month follow-up were significantly lower in the intervention group than in the control group (odds ratio, 0.5). Among women who had had an STI, those in the intervention group had reduced odds of acquiring any new STI (0.4) or any bacterial STI (0.5).

A similar trend was noted for unprotected extramarital sex. For the full sample, the decline in levels of unprotected extramarital sex was similar in the intervention and control groups. However, outcomes differed substantially by participants' STI history. Among those who had had no STIs at baseline, the percentage who reported having had unprotected extramarital sex in the past three months dropped in both the intervention group (from 6% to 4%) and the control group (from 7% to 4%). Among participants who had had an STI at baseline, the percentage reporting unprotected extramarital sex dropped from 11% to 5% in the intervention group, but did not significantly change

among control group participants (7% at baseline and 6% at 24 months).

The researchers note that despite the negative findings of the larger study, their sub-analysis shows that the intervention reduced STI incidence and behavioral risk among the community members at highest risk. Unlike most efficacy trials, which focus on high-risk individuals, the current study focused on high-risk communities; however, the large proportion of participants at low-to-moderate risk masked the intervention's effects. The researchers conclude by noting that although "community-level interventions are likely to be most relevant when all members of a population are in need of intervention," in general, significant intervention effects "can only be expected among the highest risk participants." They suggest that when evaluating the efficacy of interventions, future researchers consider the differing levels of risk within samples.–*L. Melhado*

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Program for Malawian Males Results in Increased Contraceptive Use

Contraceptive use in Malawi increased among couples who participated in an educational intervention that trained men to talk with their partner about the financial and health-related benefits of family planning.[1] At the end of the randomized trial, 78% percent of men in the intervention group reported using birth control with their partner, compared with 59% of those in the control group. Ease and frequency of communication with one's partner about contraception were the strongest predictors of birth control use.

Rates of early marriage and fertility are high in Malawi, but contraceptive use is low, especially among young women; one-third of females aged 15–19 have been pregnant, and only 8% use a modern birth control method. However, efforts to promote family planning may be hindered by gender inequality, as men make the health care decisions in most marriages. To examine the potential benefits of involving men in family planning, researchers

conducted a randomized trial of the Malawi Male Motivator intervention, a program in which trained male peer educators (motivators) discuss family planning and gender issues with other men in the community.

Researchers recruited 400 men from 257 villages in the Mangochi district of Malawi to participate in the trial. Men were eligible if they were at least 18 years old and were married to or living with a female partner younger than 25 who was neither pregnant nor breast-feeding an infant younger than six months. In addition, they and their partner could not have been sterilized, or have used a modern contraceptive method during the past three months.

After completing a baseline survey, men were randomized into the intervention or control group; no more than one man from each village was assigned to the intervention. Motivators met with each intervention group member five times during the six-month trial to discuss gender norms and family planning; encourage him to discuss contraception with his partner; and practice having such discussions. One key goal was to challenge the idea that having a large family is an indicator of virility. Data collectors met with control group members only once, to complete the postintervention survey that was administered to both groups. The survey included scales assessing family planning attitudes, behavior and knowledge; gender norms; and ease of communication. The researchers used paired t tests to examine within-group changes in these measures and generalized estimating equations to examine changes between groups. Items that significantly correlated with contraceptive use, along with demographic variables, became covariates in a multiple logistic regression model.

In all, 397 men completed the baseline survey; 197 were assigned to the intervention group and 200 to the control group. Demographic characteristics were similar in both groups; on average, participants were 25 years old and had two children. The mean age difference between men and their partners was five years. A total of 289 men completed the postintervention survey.

At the end of the study, 78% of men in the intervention group and 59% of those in the control group reported that they and their partner were using birth control. Since neither group had been practicing contraception at baseline, these proportions represented substantial and statistically significant in-

creases in use. Both groups also showed changes on measures of family planning knowledge, including attitudes, self-efficacy, gender norms, and communication ease and frequency.

In multiple logistic regression analyses, men in the intervention group were more likely than those in the control group to have initiated contraceptive use (odds ratio, 2.4); no demographic variables were associated with initiation. However, frequency of discussing family planning with one's partner was associated with contraceptive initiation (1.6), and a marginally significant association emerged between ease of discussing family planning and contraceptive uptake (1.6).

These findings were mirrored by qualitative data from interviews with randomly selected intervention group members. More than half credited the intervention with helping them to discuss family planning with their partner; many attributed their increased comfort with the topic and improved partner communication to their interactions with the motivator. The financial benefit of family planning was the most often-cited reason for practicing contraception; concerns about partners' or children's health also motivated men to use birth control.

The researchers acknowledged some study limitations. For example, the mean ages of participants and their partners, and their mean number of children, suggest that increases in contraceptive use could partially reflect couples' maturation. Although men reported nonuse of contraceptives at baseline, they may have been unaware of their partner's use; such use may have come to light when the couple began discussing contraception. Moreover, the researchers could not determine whether reported contraceptive use had been forced.

Nevertheless, they note that "male involvement in family planning matters." The study results, they conclude, indicate that "targeting men with messages focused on the financial and health-related benefits of family planning, information about contraceptive methods and activities to challenge gender norms" can be a "relevant and successful" approach to promoting contraceptive use.–*A. Kott*

REFERENCE
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