

Antiretroviral Therapy Given to Mother or Child Reduces Risk of HIV Transmission from Breast-Feeding

A 28-week regimen of antiretroviral prophylactic therapy during breast-feeding reduces the risk of mother-to-child HIV transmission for up to 48 weeks, whether the drugs are given to the mother or the infant.¹ In a randomized controlled trial conducted in Malawi, the cumulative risk of HIV transmission at 48 weeks was substantially higher in the control group (7%) than in the infant or mother prophylaxis groups (4% each). All mothers were instructed to wean their child by week 28 (far earlier than is usual in Malawi) to coincide with the cessation of antiretroviral therapy; regardless of intervention group, the rate of adverse events among infants (e.g., diarrhea, growth faltering, death) was higher during weeks 29–48 than during the first 28 weeks (1.1 vs. 0.7 per 100 person-weeks), suggesting that early weaning may increase infant morbidity.

When no safe alternatives to breast-feeding are available, the World Health Organization (WHO) recommends that HIV-infected mothers follow an antiretroviral regimen during breast-feeding; this approach is especially critical in low-resource countries. To determine the relative efficacy of antiretroviral prophylaxis when given to the mother or infant, researchers conducted a trial in 2004–2010 among women at a mother-to-child transmission prevention program in Lilongwe. HIV-positive women aged 14 or older were eligible if they were 30 or fewer weeks pregnant, had CD4 counts of at least 250 cells per μl (for those enrolled before July 2006, at least 200 cells per μl) and had never used antiretroviral drugs. In addition, infants had to weigh at least 2,000 g at birth, and neither mother nor infant could have a disorder that precluded antiretroviral treatment.

Mother-infant pairs were randomly assigned to one of three conditions: the maternal-antiretroviral group, the infant-nevirapine group and the control group. At the start of the trial, all mothers and their babies received one oral dose of nevirapine, as well as zidovudine and lamivudine to be taken for seven days. Participants in the control group

received no further antiretroviral treatment. Women in the maternal-antiretroviral group, but not their infants, continued taking zidovudine, lamivudine and nevirapine, although after February 2005 other drugs were substituted for nevirapine in this group because of toxicity concerns. Babies in the infant-nevirapine group received escalating doses of nevirapine during the intervention phase.

Mothers were advised to breast-feed exclusively for the first 24 weeks and to wean between weeks 24 and 28. Antiretroviral treatment was stopped when the women reported weaning their baby or after 28 weeks, whichever came first. Participants returned for 10 follow-up visits during the first 28 weeks and four additional visits during the next 20 weeks; breast-feeding practices were assessed at most of these visits, and adverse events were identified at follow-up visits and at any interim sick visits. Infants were tested for HIV at birth, as well as at weeks 2, 12, 28 and 48. Throughout the trial, any mother whose CD4 count fell below 250 cells per μl or who developed an AIDS-defining disease was referred for treatment. The primary outcomes of interest were HIV infection in infants at 48 weeks among all infants and among those uninfected at two weeks; secondary outcomes were infant HIV infection or death among all infants and among those alive and uninfected at two weeks. The Kaplan-Meier method was used to estimate the probability of HIV infection or death by infant age. Researchers used log-rank tests and Gray's test to identify differences among study groups, and the Cox proportional hazard model to estimate hazard ratios for HIV transmission.

In all, 2,369 mother-infant pairs were randomly assigned. Of these, 1,829 pairs were followed to week 28; by week 48, an additional 20% of the pairs in each group had been lost to follow-up. Social and demographic characteristics were similar across all study groups at the start of the intervention and among those still participating by week 28. The median age of the mothers was about 26 years; most women were married (92–93%), and almost one-third had attended more than eight years of school. The median baseline CD4 count for the women in each group ranged

from 429 to 442 cells per μl . During the first 24 weeks, exclusive breast-feeding was reported by 88–98% of mothers; by week 28, this figure had dropped below 10%. The proportion of women who reported no breast-feeding was higher in the intervention groups (96% each) than in the control group (88%) at week 32, but by week 36 the differences between groups were no longer significant.

Ninety-three infants became infected with HIV between weeks 2 and 48; of these, 30% became infected after week 28. The risk of infant seroconversion was higher in the control group (7%) than in either of the antiretroviral groups (4% for each). In comparison with the control group, the risk of HIV transmission during weeks 2–48 was 38% lower for the maternal-antiretroviral group and 48% lower for the infant-nevirapine group. After adjustment for maternal factors, the two antiretroviral regimens remained associated with reduced risk of HIV transmission between weeks 2 and 48 (hazard ratios, 0.3–0.5). The risk of HIV transmission or death was also lower in the two antiretroviral groups than in the control group.

Rates of serious adverse events in infants were higher in weeks 29–48 than during the intervention phase, regardless of group assignment (1.1 vs. 0.7 per 100 person-weeks). Diarrhea, malaria, growth faltering, tuberculosis and death all occurred more frequently after 28 weeks than before.

The researchers acknowledge a few limitations: Some increased morbidity is to be expected after 28 weeks, when infants begin to crawl and are introduced to new foods, and the researchers had fewer opportunities to detect morbidity after 28 weeks because follow-up visits were more infrequent during the trial's later stages. The investigators note that although both mothers and infants receiving antiretroviral prophylaxis had lower rates of postnatal HIV transmission than did controls, infant morbidity and mortality increased after cessation of breast-feeding and antiretroviral therapy; in keeping with current WHO guidelines, they suggest that "continued breast-

feeding with [antiretroviral] prophylaxis given for an extended period could improve infant survival.”—*L. Melhado*

REFERENCE

1. Jamieson DJ et al., Maternal and infant antiretroviral regimens to prevent postnatal HIV-1 transmission: 48-week follow-up of the BAN randomized controlled trial, *Lancet*, 2012, 379(9835):2449–2458.

Contraceptives Prevented A Quarter of a Million Deaths Worldwide in 2008

An estimated 272,000 maternal deaths were averted worldwide by contraceptive use in 2008, according to an analysis of data from 172 developing and developed countries.¹ Globally, more than 342,000 women aged 15–49 died in 2008 because of complications related to pregnancy and childbirth; without contraceptive use, however, that number would have increased by 80%, to 614,000. If women’s unmet need for contraception had been fully satisfied, an additional 104,000 maternal deaths would have been averted.

Data for the analysis were drawn from several World Health Organization (WHO) and United Nations databases, as well as from country population surveys. The researchers used two techniques to estimate maternal deaths averted by contraceptive use: counterfactual modeling and linear regression. The first approach replicated the method that WHO’s Maternal Mortality Estimation Inter-Agency Group used previously to estimate maternal mortality in 172 countries. The second method was used to estimate maternal mortality in 167 countries (five small countries for which contraceptive rates were unavailable, but had been imputed in the first analysis, were excluded from this analysis); in addition, the method was applied to estimate the number of maternal deaths that would have been averted if unmet need for contraception had been fully met—that is, if all married or sexually active single women aged 15–49 who were not using a contraceptive, but wanted to space or limit their childbearing, had used a method.

On the basis of their first analytic model, the researchers estimated that, in 2008, roughly 342,000 married or sexually active single women aged 15–49 died worldwide because of complications related to pregnancy and childbirth. Some 722 million of the 1.2

billion women included in the analysis practiced contraception. Without contraceptive use, an additional 272,000 maternal deaths would have occurred that year—for a total of 614,000 maternal deaths, a number 80% higher than in actuality. Nearly all of those extra deaths—270,000—would have been in developing regions, notably Asia (163,000); in fact, India alone accounted for nearly a third (86,000) of the averted deaths.

Overall, the use of contraceptives led to a 44% reduction in maternal deaths worldwide. In regions with a high contraceptive prevalence rate, such as East Asia (85%) and Latin America (75%), the reduction was about 60%. By contrast, in regions with a low contraceptive prevalence, the reduction was smaller: For example, in Sub-Saharan Africa, where contraceptive prevalence was 22%, the reduction in maternal deaths caused by contraceptive use was only 32%. The proportion of potential maternal deaths averted by contraceptive use varied widely by individual country, ranging from 7% in Chad to 61% in most developed countries and many developing countries, including Brazil, China, Iran, Mauritius, Russia and Thailand. (Additional analyses indicated that once a country’s contraceptive prevalence reaches 65%, the proportion of potential maternal deaths prevented by contraceptive use tends to plateau around 60%.)

Estimates from the second analytical model were similar to those from the first: In 2008, approximately 359,000 maternal deaths occurred worldwide and 299,000 maternal deaths were averted by contraceptive use. If all unmet need for contraception had been satisfied, an additional 104,000 maternal deaths would have been averted—mostly in Sub-Saharan Africa (59,000) and South Asia (32,000).

The authors note several limitations of their study, such as the uncertain quality of the underlying data (particularly in developing countries) and their reliance on modeled fertility and mortality outcomes. Nevertheless, they conclude that their results provide evidence that “contraceptive use is a substantive and effective primary prevention strategy to reduce maternal mortality in developing countries.” The findings also point to a need for “increased access to contraception in countries with a low prevalence of contraceptive use, where gains in maternal mortality prevention stand to be the greatest.” —*J. Rosenberg*

REFERENCE

1. Ahmed S et al., Maternal deaths averted by contraceptive use: an analysis of 172 countries, *Lancet*, 2012, 380(9837):111–125.

As Circumcision Wound Heals, Some Men Ignore Advice to Abstain from Sex

Many Zambian men who undergo circumcision have sex during the healing period, putting themselves and their partners at risk for HIV, according to a recent observational study.¹ Despite having been advised to abstain from sex for six weeks following their circumcision, one in four men in the study resumed having sex during the healing period, and substantial proportions of the nonabstainers had unprotected sex (82%) or multiple partners (37%). If the levels of behavior exhibited by study participants are typical, then premature resumption of sexual activity following circumcision may be undercutting the effectiveness of circumcision programs, though the researchers estimate that the HIV transmissions prevented by circumcision still greatly outnumber those resulting from intercourse during the healing period.

The results of three randomized trials conducted in Sub-Saharan Africa suggest that after healing, and in the absence of compensatory behavior, circumcised men are only about a third as likely as uncircumcised men to become infected with HIV. Newly circumcised men are counseled to abstain from sex for at least six weeks, as the unhealed wound provides a route for transmission of HIV; however, data from the three trials indicate that some men ignore this recommendation.

To assess the prevalence and predictors of early resumption of sex and explore its impact on transmission rates, researchers analyzed data from a Zambian study conducted in 2010–2011 to examine risk behaviors following circumcision. Of the approximately 3,000 men aged 15–29 who participated in the household-based survey, 248 who were about to undergo circumcision were recruited to take part in a substudy focusing on sexual behavior during the immediate postcircumcision period. The men were interviewed at the time of their procedure and again six weeks later. Men answered questions about their social and demographic characteristics, sexual behavior, risk perceptions and STI history; sensitive questions were administered via

audio computer-assisted self-interviews. To reduce the likelihood that participants would give socially desirable answers at follow-up, participants were not asked directly whether they had had sex since their circumcision; instead, they were asked whether they were sexually active, and those who responded affirmatively were probed with follow-up questions to determine the timing of resumption of sex.

The researchers conducted multivariate regression analyses to identify characteristics and behaviors associated with premature resumption of sexual activity. They used modeling to estimate the impact of early resumption of sexual activity on HIV transmission at the population level, taking into account such factors as men's HIV status, their number of sexual partners and their partners' HIV status.

On average, the 225 men who returned for follow-up interviews six weeks after their circumcision were 21 years old and had had 10 years of schooling; most were unmarried (92%), and fewer than half had a regular sex partner (44%). The vast majority (96%) lived in urban or periurban areas, which were where Zambia's circumcision programs were being administered at the time. Compared with men in the broader household-based sample, men in the circumcision subgroup were younger, more educated and more likely to have a regular partner.

Prior to their circumcision, men were told to allow six weeks for healing and were counseled to abstain from sex during that time. Nonetheless, at the six-week follow-up interview, one in four men (24%) reported having already resumed having sex; more than one in five (22%) of these sexually active men had had sex in the first week after the procedure, and almost half (46%) during the first three weeks. The vast majority (82%) of men who had had sex during the first six weeks had had unprotected sex at least once during that time, and more than two in five (43%) had had unprotected sex during the first three weeks. Slightly more than a third (37%) had had sex (protected or unprotected) with two or more partners. Thirty-two percent had engaged in both risky behaviors—having unprotected sex and having sex with multiple partners.

In multivariate analyses, few demographic or behavioral characteristics were associated with sexual behavior during the healing period. The odds of having had sex during the first six weeks after circumcision were elevat-

ed among older men (odds ratio, 1.2 per additional year) and among those who had had unprotected sex in the four weeks prior to circumcision (2.4); men were more likely to have had unprotected sex within six weeks if they were older (1.2 per year), and less likely to have had unprotected sex within three weeks if they were better educated (0.8 per year). Having had both unprotected sex and multiple partners during the healing period was associated with two measures: lifetime number of partners (1.3 per partner) and having had a casual partner in the four weeks prior to circumcision (5.6).

Using a transmission model, the researchers estimate that in 2010, when Zambia's circumcision services were scaled up and 61,000 men underwent the procedure, early resumption of sexual activity (assuming it occurred at the levels seen in the current study) resulted in 69 HIV infections that would not otherwise have occurred. They estimate that in 37 of these extra cases, an already infected man transmitted the virus to his female partner during the healing period, while in 32 the partner infected the man. Nonetheless, the model suggests that the infections prevented by the scale-up of circumcision services outnumbered those resulting from premature resumption of sex, yielding a net total of 230 infections averted during the first year alone. The number of infections caused by early resumption of sex, and the proportion of these infections occurring in women, would have been smaller if levels of sex during the healing period had been lower, condom use had been higher, or the prevalence of HIV had been lower among circumcised men than was observed in the program (6%).

The researchers note that the men who took part in the study were "early adopters" of circumcision, and as such may not have been representative of all men in the study regions. Other limitations of the study include that men may have underreported their sexual activity during the postcircumcision period, and that the analysis of infections prevented did not take into account the longer-term benefits of circumcision. These limitations aside, the investigators conclude that "the prevalence of risky sexual behavior during the wound-healing period is relatively high," and that "programs need to continue to emphasize to clients the risks associated with early resumption of sex." They add that future research should examine whether interventions to reduce levels of unprotected sexual activity dur-

ing the healing period would be useful; one approach might be to alert women that they are putting themselves at risk for HIV if they have sex with their partner in the immediate postcircumcision period.—*P. Dosek*

REFERENCE

1. Hewett PC et al., Sex with stitches: assessing the resumption of sexual activity during the postcircumcision wound-healing period, *AIDS*, 2012, 26(6): 749–756.

Voucher Program Increases Use of Maternal Health Services in Bangladesh

A pilot program that provided vouchers to pregnant women in Bangladesh was effective in increasing use of maternal health services, a recent analysis suggests.¹ After initiation of the program, which provided free access to antenatal care, institutional delivery and other services, women in the voucher areas who had recently given birth were more likely than their counterparts in comparison areas to have had three antenatal visits (55% vs. 34%), a qualified provider at their delivery (64% vs. 27%), an institutional delivery (38% vs. 19%) and at least one postnatal care visit with a qualified provider (30% vs. 15%). In multivariate analyses that controlled for baseline differences between groups, women in the intervention areas were 35 percentage points more likely than those in comparison areas to have had a delivery by a qualified provider and 18 percentage points more likely to have had an institutional delivery.

Financial barriers are among the most important obstacles to use of maternal health services in developing countries, including Bangladesh, where most women give birth at home without the aid of a trained provider. To encourage use of antenatal, delivery and postnatal care, Bangladesh initiated a voucher program in 2004. Originally launched in just two of Bangladesh's 489 subdistricts, the pilot program remains limited in scale; in 2011, it was available in only 46 subdistricts, and to about 10 million people.

The program provides pregnant women with vouchers that allow them to obtain, at no charge, the following services: three antenatal care visits; safe delivery at a facility, or at home, with a trained provider; emergency obstetric care, if necessary; and one postnatal care visit. In addition, participants receive

cash to help cover transportation costs, as well as a gift box and another cash payment following delivery by a qualified provider. Women are eligible for the program only if they are having their first or second delivery; if it is their second, they must have practiced contraception between pregnancies. Most participating subdistricts offer the program only to poorer women, though some provide vouchers regardless of household income and assets.

Because rigorous evidence of the program's success was lacking, researchers conducted a large household-based survey in 2009. The survey was conducted in 32 subdistricts, half of which had implemented the voucher program two years earlier; the remaining districts, which were chosen because they were near an intervention subdistrict that had a similar literacy rate and number of hospital beds, served as a comparison group. In each subdistrict, the researchers chose several villages that had a large number of births and attempted to interview all women who had had a singleton delivery in the past six months. The 2,208 respondents provided information about their social and demographic characteristics; they also answered questions regarding their use of health services related to each of their deliveries in the past five years and their out-of-pocket expenditures for their latest birth.

Using cross-sectional, multivariate and panel analyses, the investigators compared use of maternal health services in the intervention areas with that in the comparison areas, controlling, where appropriate, for respondent, household and birth characteristics, as well as for preintervention levels of service use and subdistrict service capacity (number of community skilled birth attendants and availability of emergency obstetric care). The primary outcomes of interest were use and number of antenatal care visits, institutional delivery, delivery by a qualified provider (doctor, nurse, midwife, paramedic, family welfare visitor or community skilled birth attendant), cesarean delivery, postnatal care, and total out-of-pocket expenditures for pregnancy- and delivery-related services.

The final analytic sample consisted of 2,861 deliveries—the 2,208 most recent births, 141 earlier births that had occurred after the voucher program's initiation and 512 deliveries that predated the program. On average, women in the intervention areas were slightly younger than those in the comparison areas

(24 vs. 25 years); in both groups, about half of women had no more than a primary education and nine-tenths were Muslim. Intervention areas had a slightly higher density of community skilled birth attendants than did comparison areas (eight vs. seven per 10,000 population) and were much more likely to have emergency obstetric care available (81% vs. 22%).

For their most recent births, women in the voucher areas were more likely than those in comparison areas to have had at least one antenatal visit (92% vs. 76%), three antenatal visits (55% vs. 34%), a qualified provider at the delivery (64% vs. 27%) and at least one postnatal care visit with a qualified provider (30% vs. 15%); they were also more likely to have delivered in an institution (38% vs. 19%). The proportion of deliveries done by cesarean section did not differ between groups (9–10%), a “notable” finding, the authors say, given concerns that the voucher program might encourage providers to perform unnecessary cesareans because such deliveries are reimbursed at higher rates than vaginal deliveries. Although the proportion of women who incurred out-of-pocket expenses was similar in the two groups (87–90%), women in the voucher group paid 34% less, on average, than did women in the comparison group.

Additional analyses suggest that the differences in service use between the voucher and comparison areas increased over time. For example, the proportion of deliveries attended by a qualified provider was slightly higher in the intervention areas than in the comparison areas before program implementation (19% vs. 14%), but the difference was much larger for births during the first part of the voucher period (33% vs. 15%) and greater still for women's most recent births (64% vs. 28%). Similarly, the proportion of deliveries that took place in institutions rose slowly at first in intervention areas but then increased dramatically (from 15% at baseline to 20% and then 38%), while the increases in comparison areas were consistently small (from 11% to 13% to 18%). Subanalyses revealed that increases in service use among women in the poorest quintile were at least as large as, and in one case larger than, those among wealthier women.

Three different types of multivariate analysis provided further evidence of the program's benefits. For example, difference-in-difference regression analyses that controlled for base-

line differences in service provision and other variables found that the proportion of deliveries attended by qualified providers was 35 percentage points higher in the intervention areas than in the comparison areas; the corresponding difference for institutional delivery was 18 percentage points. Other regression approaches (cross-sectional multivariate regression and fixed-effects regression) yielded similar results. None of the analyses found differences in rates of cesarean delivery.

Overall, the findings suggest that the voucher program had “large and positive effects on the utilization of maternal health services,” according to the authors. Such increases in service use, they note, could have a “substantial” impact on maternal and infant health. However, they caution that if the voucher program is expanded, the benefits in other regions may be smaller than those found here, in part because the density of reproductive health facilities and providers in the intervention areas was greater than is typical in Bangladesh.—*P. Doskoch*

REFERENCE

1. Nguyen HTH et al., Encouraging maternal health service utilization: an evaluation of the Bangladesh voucher program, *Social Science & Medicine*, 2012, 74(7):989–996.

In Malawi, End of One's Reproductive Years Does Not Mean End of HIV Risk

Results of a Malawian study suggest that, contrary to usual practices, individuals aged 50 or older should not be routinely excluded from HIV studies, as many of these individuals remain sexually active and at risk for HIV.¹ Although levels of sexual activity declined with age among study participants, a considerable proportion of 50–64-year-olds—84% of males and 50% of females—reported having had sex in the past year. Moreover, 9% of males and 5% of females aged 50–64 tested positive for HIV; although females in that age-group were less likely than 15–49-year-olds to have the virus (odds ratio, 0.5), males aged 50–64 were more likely than younger men to be HIV-positive (2.0).

Most HIV studies and reproductive health programs in Sub-Saharan Africa have focused on persons aged 15–49, and relatively little is known about sexual activity and HIV risk among older individuals. The new study

explored these issues using data from the Malawi Longitudinal Study of Families and Health, which has surveyed residents of three rural districts biennially since 1998. The original sample consisted of 1,541 ever-married women aged 15–49 and 1,065 of their spouses; the sample was expanded in 2004 by the addition of roughly 1,500 youth aged 15–24, and in 2008 by the addition of about 800 parents of study participants. The current analysis combined demographic and behavioral data from the 2010 survey with HIV data from 2008. Using both descriptive analyses and multivariate regression analyses that controlled for background characteristics, the researchers compared HIV prevalence, sexual behavior and HIV risk perceptions among men and women aged 15–49, 50–64 and 65 or older. In addition, they used nonparametric regression to examine outcomes and behaviors by age in greater detail.

Of the 3,719 study participants who completed the 2010 survey, a third (31%) were 50 or older, and 13% were 65 or older. The vast majority of men (87%) and women (77%) were married. About two-thirds of respondents had been tested for HIV in 2008. Among females, the overall prevalence of HIV was 7%, and the prevalence among women aged 50–64 (5%) was not significantly different from that among those aged 15–49 (8%). Among males, the prevalence was 5% overall, and was higher among men aged 50–64 (9%) than among younger men (4%). In fact, males aged 50 or older accounted for 43% of HIV cases among men, even though they represented only 33% of the males tested; women aged 50 or older accounted for 16% of female HIV cases and 30% of the tested female sample. For both sexes, HIV prevalence was about 1% among respondents aged 65 or older.

About 90% of men and women aged 15–49 reported having had sex in the past year. Although the proportion declined with age, levels of sexual activity remained substantial. Among men, 84% of those aged 50–64 and 74% of those 65 or older had had sex in the past year; while the decline with age was steeper among women, 50% of those aged 50–64 and 27% of those 65 or older remained sexually active. The proportion of respondents who had had more than one partner in the past year did not differ by age, and was uniformly higher among men (14–20%) than among women (1–2%). About one in four men and women of reproductive age (23–27%) said they worried “a lot” about

HIV infection; although this concern was less common among older men and women, 14–15% of those aged 50–64 and 8–16% of those 65 or older said they worried a lot.

In multivariate analyses, a woman’s odds of having HIV were lower if she was aged 50–64 (odds ratio, 0.5) or 65 or older (0.1) than if she was aged 15–49. However, men aged 50–64 were more likely than younger men to be infected with HIV (2.0). Like their female counterparts, men 65 or older had reduced odds of having HIV (0.1). Among both men and women, respondents in the two oldest age-groups were less likely than those aged 15–49 to have had sex in the past year or to be worried about HIV; however, number of sex partners in the past year did not differ by age.

The nonparametric regression graphs indicated that a woman’s likelihood of being infected with HIV peaked in her 30s and then steadily declined, while a man’s did not peak until about 10 years later and remained stable for another decade. At nearly every age, men were more likely than women to be sexually active and to have had multiple partners in the past year. The proportion of women who worried a lot about becoming infected with

HIV was highest during adolescence and early adulthood (30–37%) and declined steadily, nearly disappearing by age 90; among men, the proportion started lower (about 25%), declined much more slowly and leveled off around 18% at about age 60.

The researchers conclude that individuals 50 or older can, and should, be included in HIV research and prevention efforts in Sub-Saharan Africa; they note that if their study, like most, had been restricted to individuals aged 15–49, they would have missed more than two-fifths of the HIV-positive males and one in six of the HIV-positive females in the sample. Moreover, they note that as access to antiretroviral drugs spreads throughout Sub-Saharan Africa, “it is likely that HIV-positive individuals will live to older ages,” and that the “sexual behavior of older individuals may be of increasing significance in determining the future of the HIV/AIDS epidemic.”

–P. Doskoch

REFERENCE

1. Freeman E and Anglewicz P, HIV prevalence and sexual behaviour at older ages in rural Malawi, *International Journal of STD & AIDS*, 2012, 23(7): 490–496.

Reproductive Health Clinicians in Southern Africa Often Counsel Male Clients About Circumcision

In national surveys examining providers’ practices and attitudes regarding the use of male circumcision for HIV prevention, many South African and Zimbabwean clinicians who provided STI or contraceptive services reported that they also performed male circumcisions (17%) or offered referrals (49%), and one in five (18%) said they usually or always counseled male patients about circumcision.¹ Physicians were more likely than nurses to offer the procedure, and circumcision services were more common in urban than in rural areas, and at hospitals than at clinics. Six in 10 respondents were interested in receiving circumcision training.

The prevalence of HIV infection is high in both Zimbabwe (14%) and South Africa (18%). Circumcision reduces the risk of HIV transmission, but relatively few men have been circumcised (10% of adult males are circumcised in Zimbabwe, and 35% in South Africa). A major challenge in each country is training enough clinicians to perform circumcisions, which will require the involvement of

nonphysician clinicians such as nurses and clinical officers. To help guide such efforts, researchers conducted national probability surveys in 2008–2009 of 1,444 clinicians (830 in Zimbabwe and 614 in South Africa) who were providing contraceptive, HIV and STI services at 75 hospitals and 166 clinics. Respondents were asked about their demographic, clinic and patient characteristics, and about their attitudes and practices regarding HIV, STI and contraceptive services. Researchers used ordered and multinomial logistic regression analyses to identify associations between characteristics and the provision of circumcision counseling, services or referrals, as well as the desire for training.

Seventy-two percent of respondents were advanced nurses (with at least three years of training), 20% were midlevel nurses and 8% were physicians; eight in 10 had been trained in HIV and STI prevention. Almost half of all respondents worked in urban locations, about a third in rural areas, and the remainder in small towns or periurban locales; 55%

practiced in hospitals and 45% in clinics. More than eight in 10 clinicians provided voluntary counseling and testing services, and nearly all served HIV-positive patients, as well as those at risk for STI infection. Finally, 85% said they counseled most or all of their patients about condom use.

More than half of clinicians reported counseling male patients about how circumcision reduces the risk of HIV infection; 18% said they usually or always provided such counseling (25% in South Africa and 13% in Zimbabwe), and another 39% said they sometimes offered such counseling. In addition, nearly half talked with female patients about male circumcision. While 49% of respondents (66% in South Africa and 37% in Zimbabwe) offered referrals for circumcision, only 17% (22% and 14%, respectively) said they performed the procedure. Notably, physicians were more likely than nurses to perform circumcisions (56% vs. 14%); provision was twice as high in urban as in rural areas (23% vs. 11%), and it was more likely to be offered at hospitals than at clinics (30% vs. 2%). Six in 10 respondents were interested in receiving training for the procedure (62% of nurses and 49% of physicians); interest was similar in rural and urban areas.

When asked about patients' attitudes toward circumcision, 31% of clinicians agreed that patients would be upset about having the procedure because of cultural beliefs, 44% believed they would worry about what their partner thinks and 35% said that men would not undergo the operation. Substantial minorities of clinicians believed that men would take more risks after having a circumcision (43%) and would not abstain from sex during the postoperation recovery period (27%). In general, clinicians' perceptions of patients'

attitudes toward circumcision were more positive in South Africa than in Zimbabwe.

In multivariate analysis, professional training and practice-related characteristics were not associated with the frequency of patient counseling about circumcision for HIV prevention. However, a number of clinicians' beliefs concerning patients' attitudes were associated with less counseling: Respondents who said that patients would be upset about the procedure because of cultural beliefs, would not want the procedure, would increase risky behaviors as a result of the procedure or would not abstain from sex during recovery were less likely than their counterparts to frequently counsel patients (odds ratios, 0.5–0.7). In contrast, clinicians who provided condom counseling to most or all of their patients, as well as those who thought that abstinence counseling was highly effective, were more likely than others to frequently counsel patients about circumcision and HIV risk (1.5 and 2.0, respectively).

In other analyses, physicians were more likely than midlevel nurses to perform circumcisions rather than offer neither services nor referrals (odds ratio, 3.8), and clinicians in South Africa were more likely to do so than those in Zimbabwe (6.8). Respondents who thought patients would be upset about the procedure for cultural reasons or would engage in increased risky behaviors if they were circumcised, as well as those who believed that condom counseling was highly effective, had decreased odds of providing services (0.5–0.7). Not surprisingly, provision of circumcisions was far less likely at clinics than at hospitals (0.1).

The likelihood of providing referrals for circumcision services was much greater among clinicians in South Africa than in Zimbabwe

(odds ratio, 7.5) and at clinics than at hospitals (2.0); the likelihood of referrals was also greater among respondents who provided voluntary counseling and testing services (1.7). Clinicians who believed patients would be upset about the procedure for cultural reasons or who thought patients would not abstain during postoperation recovery had reduced odds of offering referrals (0.7 for each).

Finally, South African clinicians were less likely than their Zimbabwean counterparts to desire circumcision training (odds ratio, 0.6); desire for such training was also lower among physicians than among midlevel nurses, and among respondents who thought that patients would be upset about receiving a circumcision because of cultural beliefs than among other clinicians (0.5–0.7).

Although a strength of the study was its use of national probability surveys, it had several limitations: a lower response rate in South Africa than in Zimbabwe, a lower response among physicians than among nurses in South Africa, and a focus on clinicians offering STI and HIV prevention services in low-resource settings. Yet the researchers believe that their findings "show great potential" for the diffusion of circumcision provision to nurses, especially those in clinics and in nonurban areas, and that nurses should be targeted for training to increase patients' access to circumcision. Furthermore, the authors suggest that "training programs should help clinicians to address cultural and other patient-related concerns" regarding male circumcision.—*J. Thomas*

REFERENCE

1. Sheldon WR et al., Male circumcision for HIV prevention: clinical practices and attitudes among healthcare providers in South Africa and Zimbabwe, *Sexually Transmitted Diseases*, 2012, 39(7):567–575.