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High Uptake of Postpartum Hormonal Contraception Among HIV-1-Seropositive Women in Kenya

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Abstract

Objectives—The objectives of this study were to determine patterns of contraceptive utilization among sexually active HIV-1-seropositive women postpartum and to identify correlates of hormonal contraception uptake.

Goal—The goal of this study was to improve delivery of family planning services to HIV-1-infected women in resource-limited settings.

Study Design—HIV-1-infected pregnant women were followed prospectively in a perinatal HIV-1 transmission study. Participants were referred to local clinics for contraceptive counseling and management.

Results—Among 319 HIV-1-infected women, median time to sexual activity postpartum was 2 months and 231 (72%) women used hormonal contraception for at least 2 months during follow-up, initiating use at approximately 3 months postpartum (range, 1–11 months). Overall, 101 (44%) used DMPA, 71 (31%) oral contraception, and 59 (25%) switched methods during follow-up. Partner notification, infant mortality, and condom use were similar between those using and not using contraception.

Conclusions—Using existing the healthcare infrastructure, it is possible to achieve high levels of postpartum hormonal contraceptive utilization among HIV-1-seropositive women.

Contraception allows women to prevent pregnancies that are unintended and that may result in greater economic demands on families in resource-limited settings, increased maternal or infant mortality, and among HIV-1-infected women, more HIV-1-infected infants and AIDS orphans. At a recent African regional meeting, the World Health Organization stated that affordable, high-quality family planning services remain one of the most important interventions to reduce maternal and infant morbidity and mortality, HIV infection in

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Written informed consent was obtained from all study participants. This study received ethical approval from the Institutional Review Boards of the University of Washington and the University of Nairobi and was conducted according to the guidelines set forth by the United States Department of Health and Human Services.

infants, and poverty.[1] A large proportion of women diagnosed with HIV-1 infection are identified antenatally, which makes the postpartum period an ideal time to introduce family planning. To provide effective reproductive health care and support services for HIV-1-seropositive women in resource-limited settings, it is important to understand the reproductive choices and behaviors of these women.

Hormonal contraception (oral contraceptive pills and depo medroxyprogesterone acetate) is the most popular and widely available form of contraception in Kenya.[2] It is also a safe and effective form of contraception for HIV-1-infected women.[3] Few studies have looked specifically at hormonal contraceptive use among HIV-1-infected women during the postpartum period. The studies describing hormonal contraception uptake after delivery have reported relatively poor uptake. In 2 studies conducted in West Africa, roughly one third of HIV-1-infected women used hormonal contraception postpartum.[4,5] In these studies, being married and being more educated were found to be significantly associated with contraceptive use among HIV-1-seropositive women.[5] In addition, disclosure of HIV-1 status to sexual partners has been associated with contraceptive use and family planning decision-making.[6,7] Disclosure of HIV-1 serostatus status allows couples to make more informed reproductive choices, which may lower the number of unintended pregnancies among HIV-1-infected women and increase uptake of antenatal HIV prevention interventions.[6,7] HIV-1-seropositive women who have lost a child or have had a poor pregnancy outcome are also more likely to become pregnant despite the risks to their health and the child's health.[4,7,8] Thus, the health status of the child may be indirectly related to contraceptive use because those women who have had a poor pregnancy outcome or have lost their most recent child may be less likely to use contraception.

To better understand patterns and correlates of contraceptive use among HIV-1-infected women, we prospectively analyzed hormonal contraceptive utilization in a cohort of HIV-1-seropositive pregnant women in Nairobi, Kenya. The specific objectives of this study were to describe timing of initiation, method of contraception, including changes in method, and to compare characteristics of contraceptive users versus nonusers.

Materials and Methods

Clinical Procedures

From July 1999 through August 2003, HIV-1-infected pregnant women were recruited into a prospective cohort study of perinatal HIV-1 transmission.[9,10] Pregnant women who tested HIV-1-sero-positive at local antenatal clinics and were interested in additional counseling regarding interventions to prevent mother-to-child HIV-1 transmission were referred to the study clinic. Women were subsequently informed of the study and interested, eligible women were recruited. Study participants were enrolled at approximately 32 weeks gestation and provided zidovudine prophylaxis from 34 to 36 weeks gestation through delivery. At enrollment, data were collected regarding prior contraceptive use, obstetric history, and partner notification of HIV-1 serostatus. Study participants were encouraged to bring their partners for HIV-1 counseling and testing.

Mother–infant pairs were examined by physicians after delivery and evaluated monthly thereafter for 1 year. Information concerning maternal HIV-1 disease status was collected at enrollment and at monthly follow-up visits with CD4+ T-cell counts and HIV-1 RNA viral loads measured at 32 weeks of pregnancy and 1 month after delivery. Women were interviewed regarding the initiation and cessation of hormonal contraception and asked about their reasons for discontinuing at each visit. Study participants did not receive contraception as part of the study but were referred to Nairobi City Council Clinics for further contraceptive counseling and management.

Women were counseled antenatally to initiate contraception postpartum and dual contraception was encouraged. No particular method of contraception was given priority; however, hormonal methods were the most popular. This may be because of their wide availability and being female-controlled. Women who opted to formula feed their infants were counseled to initiate contraception 4 weeks after delivery, whereas those who opted to breast feed were counseled to initiate contraception 6 weeks after delivery. Breastfeeding women interested in oral contraception received progesterone-only pills and nonbreastfeeding women received combined oral contraceptive pills. DMPA was available for both breastfeeding and nonbreastfeeding women. Women who could not tolerate hormonal contraception were encouraged to use condoms. Hormonal contraceptive users returned to the clinics as needed, depending on their method of contraception.

Statistical Analysis

Hormonal contraceptive use was defined as receiving an injection of DMPA or using oral contraceptives for at least 2 consecutive months during the period of follow-up. Discontinuation of hormonal contraception was based on self-report at monthly study clinic interviews. Women who reported not using a hormonal contraceptive method for 2 consecutive months were considered to have discontinued the method. Women who changed from one hormonal method to another (oral contraceptives to DMPA or DMPA to oral contraceptives) were not counted as discontinuing because they were still using some form of hormonal contraception. Pearson's chi-squared tests and independent *t*-tests were used to compare dichotomous and continuous variables, respectively. Logistic regression was used to calculate unadjusted odds ratios for selected covariates. Originally, we planned to conduct a multivariate analysis, adjusting for covariates that were significant in the bivariate analysis. However, because there were no significant associations in bivariate analyses, a multivariate model was not necessary. Data were analyzed using STATA version 8.1 (College Station, TX).

Results

Study Population

Five hundred ten HIV-1-seropositive women were enrolled at 32 weeks of pregnancy and 457 women returned for postpartum follow-up (Fig. 1). During 12 months of postpartum follow-up, 12 (3%) women died as a result of HIV-related illnesses and 35 (10%) women were lost to follow-up. Among the 410 women completing 1 year of follow-up, 7 (2%) women had tubal ligations, 10 (2%) used intrauterine devices, and 11 (3%) used Norplant as their method of contraception. Forty-seven (12%) women remained abstinent with 7 (15%) of these women using hormonal contraception despite not being sexually active. Women who used forms of contraception other than oral or injectable methods or who were not sexually active during follow-up were excluded from all subsequent analyses. In addition, we excluded one woman who had a subsequent pregnancy during the period of follow-up, leaving 333 women with a median number of 11 follow-up visits (interquartile range [IQR] 7–12) (Fig. 1).

Among the 333 women in the cohort described here, there were 14 (4%) women who used oral contraception for only 1 month. These women were excluded from subsequent analyses to avoid misclassification. Thus, the final cohort for analysis consisted of 319 women, of which 231 (72%) used hormonal contraception for at least 2 consecutive months during follow-up and 88 (28%) who never used any form of contraception during follow-up.

Characteristics for the cohort are listed in Table 1. At enrollment, median age of study participants was 25 years, 80 (25%) women reported being employed, and 282 (88%)

reported being married. The majority of women had finished primary school, with 8 years being the median duration of education. On average, women had a history of 3 lifetime sexual partners and one prior pregnancy. Approximately half of study participants reported previous use of hormonal contraception (Table 1). Postpartum, 242 (76%) women breast fed their infants for a median duration of 8 months (IQR 4 –12 months).

Patterns of Hormonal Contraception

The median time to initiation of sexual activity was 2 months after delivery (range, 1–11 months) and, of the women who used hormonal contraception for at least 2 consecutive months, median time to initiation of hormonal contraception was 3 months (range, 1–11 months). Among hormonal contraceptive users, 101 (44%) used DMPA, 71 (31%) used oral contraception, and 59 (25%) switched methods contraception during the follow-up period. Forty-four (19%) women switched from oral contraceptives to DMPA and 15 (6%) switched from DMPA to oral contraceptives. At each month of follow-up, a greater proportion of women used DMPA compared with oral contraceptives (Fig. 2). We also compared the proportion of sexually active women at each month of postpartum follow-up with the proportion of women using hormonal contraception during each month (Fig. 3). The greatest proportion of contraceptive use occurred between months 8 and 10 of follow-up, with approximately 70% using hormonal contraception during this time. This was also the period during which the greatest number of women were sexually active, with approximately 80% reporting sexual activity (Fig. 3).

Twenty-three (10%) women discontinued using hormonal contraception during the follow-up period. The most common reason for cessation of hormonal contraception was side effects, which included headaches, backaches, heavy bleeding with menses, bleeding between menses, fatigue, and dizziness. Additional reasons for discontinuing hormonal contraception included no longer having a partner or no longer being sexually active (partner deceased or not living in the home) and husband wanting them to stop. Six the 23 women who discontinued hormonal contraception had been using DMPA, 12 had been using oral contraceptives, and 5 had switched contraceptive methods during the follow-up period.

Correlates of Contraceptive Uptake

Marital status was associated with hormonal contraceptive use, with monogamously married women being roughly 2-fold more likely than other women to use hormonal contraception for at least 2 consecutive months (odds ratio = 1.8; 95% confidence interval = 0.99–3.29; $P = 0.05$) (Table 1). At enrollment, women who used hormonal contraception were similar to women who never used hormonal contraception. History of hormonal contraceptive use at enrollment was no different in the 2 groups, and women using hormonal contraception reported experiencing a similar frequency of HIV-related symptoms during pregnancy compared with women who never used hormonal contraception during the period of follow-up. CD4+ T-cell counts and viral loads at 32 weeks of pregnancy also did not differ significantly between the 2 groups (Table 1).

Among women who used hormonal contraceptives, 76% reported that they informed their partner of their HIV status. Similarly, 80% of women who did not use hormonal contraception during follow-up reported partner notification of HIV status, and bivariate analysis showed no association between partner disclosure and utilization of hormonal contraception. Further analysis of partners of study participants showed no association between hormonal contraceptive use and subsequent partner acceptance of HIV-1 testing or partner HIV-1-serostatus ($P = 0.8$ and 0.9, respectively).

Overall, 65% of women in this cohort reported using condoms at least once during follow-up. One hundred forty-two (61%) of 231 hormonal contraceptive users reported using condoms in addition to their hormonal method, and a similar number of women who never used hormonal contraception during follow-up used condoms at some point during follow-up (56 [63%]). Information was not available regarding consistent condom use or the number of discordant couples in this cohort.

Because infant mortality has been reported to be negatively associated with hormonal contraceptive uptake, we examined the association between infant mortality during follow-up and hormonal contraception use in this cohort. Among 319 mother–infant pairs seen in follow-up, 54 (17%) infants died during 1 year of follow-up of whom 20 (38%) were HIV-infected. Thirty-eight (16%) women who used hormonal contraception for at least 2 consecutive months and 16 (18%) women who never used hormonal contraception experienced an infant death during follow-up. This difference was not statistically significant ($P = 0.71$). Among hormonal contraceptive users who experienced an infant death during follow-up, 36 (95%) women continued to use hormonal contraception after the infant died.

Discussion

In 2001, the United Nations General Assembly special session on HIV/AIDS set the goal to reduce the proportion of HIV-1-infected infants, and a major component of the proposed prevention strategy was to prevent unintended pregnancies among HIV-1-infected women.[11] At this meeting and in more recent reports in the literature, it was stated that preventing unintended pregnancies among HIV-1-infected women could produce equivalent reductions in infant HIV-1 incidence with the use of antiretroviral prophylaxis during pregnancy.[12,13] By linking antenatal and post-natal HIV-1 care with family planning services, our study represents an important step in this direction. The majority (72%) of HIV-1-infected women followed in this prevention of mother-to-child HIV-1 transmission cohort initiated hormonal contraception during postpartum follow-up. This proportion was high compared with other studies in similar settings in which contraception use ranged from 23% to 39%.[4,5,14] These findings support the concept that antenatal clinics are an ideal entry point in resource-limited settings for family planning in the setting of HIV-1 infection because this is when a large proportion of women learn they are HIV-1-seropositive.

The current study also provides valuable information regarding specific patterns of hormonal contraceptive use among HIV-1-seropositive women in a developing country. In this urban cohort of HIV-1-infected women, 77% women resumed sexual activity within the first 3 months after delivery. The median time to initiation of hormonal contraception among women who used hormonal contraception for at least 2 consecutive months was also 3 months. This suggests that healthcare providers need to address issues of postpartum sexual activity and contraception early after delivery or even late in the last trimester to provide women with the appropriate knowledge to allow them to make informed decisions regarding their reproductive futures.

Finally, our study was able to examine correlates of hormonal contraceptive uptake among HIV-1-infected women postpartum. Other studies have demonstrated positive associations between the successful uptake of family planning interventions and partner disclosure. In addition, a recent study of antenatal voluntary counseling and testing in Kenya found that partner participation in couples counseling increased uptake of interventions to prevent mother-to-child transmission of HIV-1 such as nevirapine and formula feeding, and was associated with 4-fold greater likelihood of condom use.[7] In light of these data, we originally hypothesized that women who disclosed their HIV status to their partner would be

more likely to become hormonal contraceptive users. This was not supported by our analysis, which showed no significant association between reported partner disclosure and hormonal contraceptive use during postpartum follow-up. This result, when coupled with our finding that there were no other significant correlates for contraception uptake except marriage, is encouraging and suggests that a universal approach to delivery of hormonal contraception to HIV-1-seropositive women can be used.

The primary limitation of this study is that these women were study participants, which could make results less relevant to populations unwilling to participate in research. Participants self-selected to receive additional information regarding antenatal HIV-1 interventions and may have been more motivated to initiate and adhere to mother-to-child transmission interventions, as well as postpartum contraception, than women who chose not to follow-up. However, because contraceptive counseling and administration did not take place in the research setting but in public clinics, we believe lessons learned from this cohort are applicable to the general population of postpartum women in urban settings. Operational research without these limitations could further clarify reproductive choices and behaviors of HIV-1-infected women.

Over the past several years, through prevention of mother-to-child HIV-1 transmission programs and the MTCT-Plus initiative, maternal and child HIV-1 care has transitioned toward providing quality primary care and treatment for HIV-1 infected mothers.[15] The MTCT-Plus initiative also calls for the integration of reproductive health services.[16] Access to family planning not only gives women control over their reproductive futures, but also has the potential to significantly reduce the number of pediatric infections. A small reduction (<5%) in the number of unintended pregnancies in areas of high HIV-1 prevalence may prevent similar, if not greater, numbers of pediatric infections than antenatal nevirapine prophylaxis.[12] This study demonstrates how postpartum HIV-1 care and reproductive health care can be provided through partnerships with local family planning programs. We encourage others to integrate basic reproductive health services such as access to contraception, reproductive counseling, and the management of unintended pregnancies with HIV-1 care for women.

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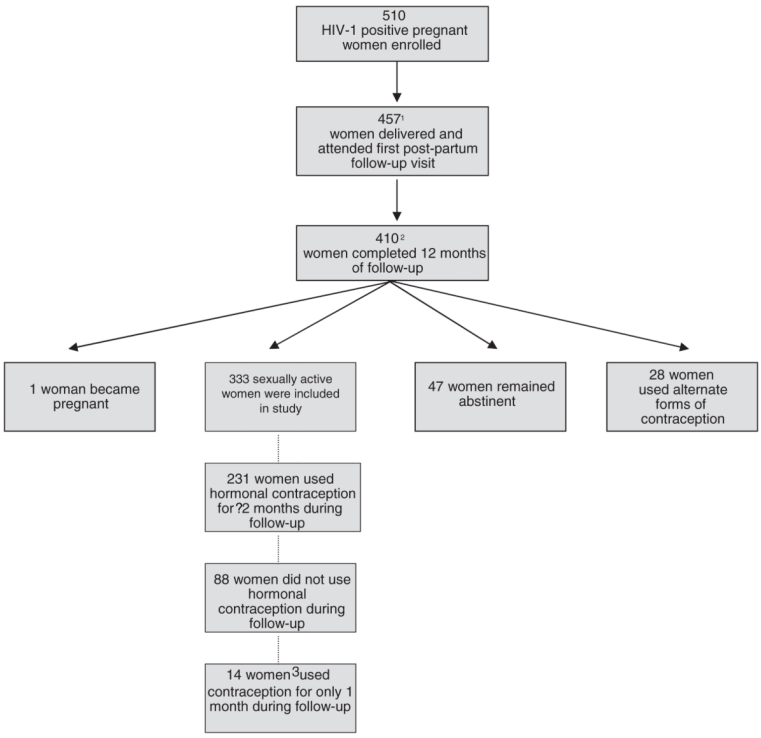

Fig. 1.

Enrollment flow chart. [1]Fifty-three (10%) women were lost to follow-up before delivery or experienced an infant death in the month after delivery. [2]There were 12 (3%) maternal deaths and 35 (10%) women were lost to follow-up. [3]Fourteen (4%) women used contraception for only 1 month and were excluded from the analysis.

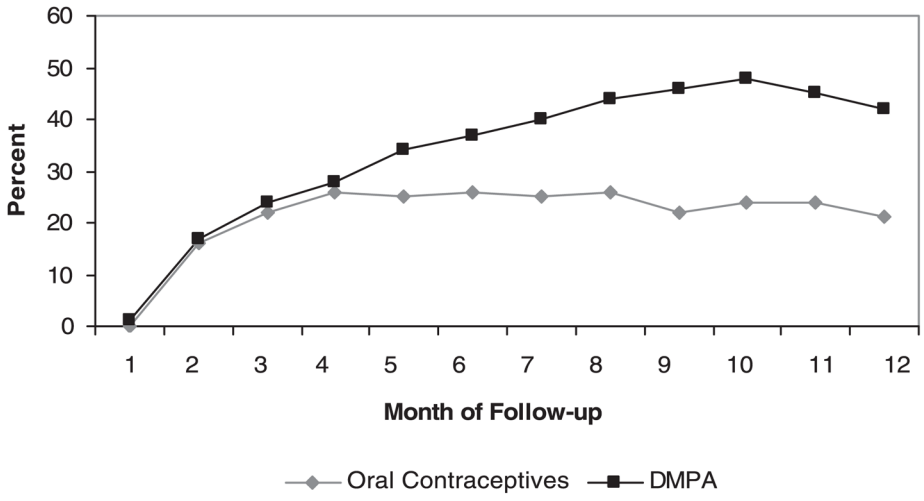

Fig. 2.
Oral and injectable postpartum contraceptive use among sexually active HIV-1-infected women by month of follow-up (N = 319).

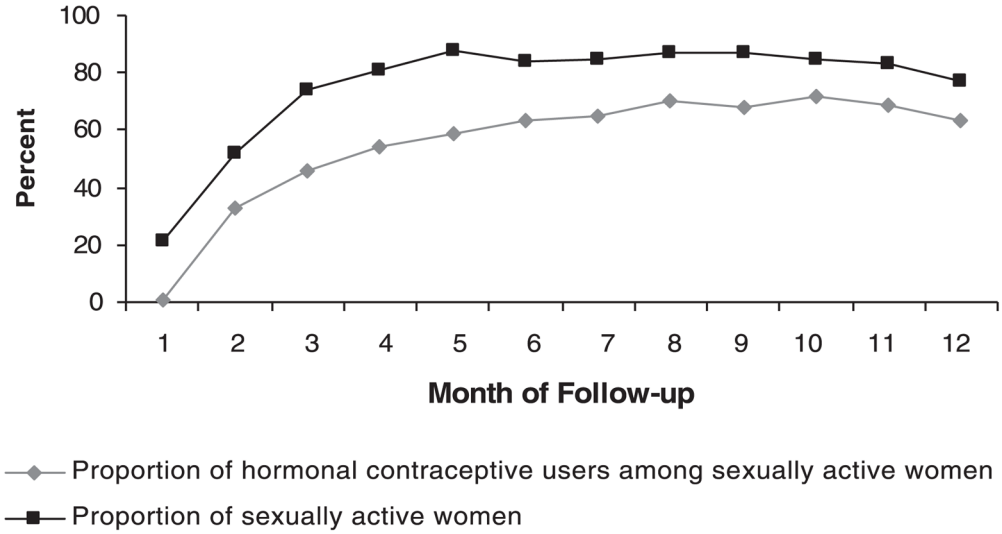

Fig. 3.
Postpartum hormonal contraceptive use and sexual activity by month of follow-up (N = 319).

TABLE 1

Cohort Characteristics for Hormonal Contraceptive Users and Nonusers During the Postpartum Period

	Hormonal Contraceptive Users*† (N = 231)		Hormonal Contraceptive Nonusers*‡ (N = 88)		Odds Ratio**	95% Confidence Interval
Selected demographic variables at enrollment						
Age	25	(18–42)	25	(18–38)	1.02	0.96–1.07
Years of education	8	(0–14)	8	(0–16)	1.32	0.78–2.22
Employed	60	(26)	20	(23)	1.19	0.67–2.13
Married§	201	(91)	81	(92)	1.80	0.99–3.29
Parity at enrollment	1	(0–6)	1	(0–6)	1.05	0.86–1.28
Sexual and contraceptive history						
Number of lifetime sex partners	3	(1–50)	2	(1–30)	1.02	0.94–1.11
Age at first sex (years)	17	(12–29)	17	(12–25)	1.04	0.94–1.14
History of previous hormonal contraceptive use	115	(50)	40	(45)	1.19	0.73–1.95
History of previous condom use	6	(3)	0	(0)	—	—
Other potential correlates to contraceptive uptake						
Disclosed HIV status to partner	173	(75)	69	(80)	0.76	0.41–1.40
Infant mortality	38	(16)	16	(18)	0.88	0.47–1.68
Maternal CD4+ count <200 cells/μL at 32 wk gestation‖	22	(10)	10	(12)	0.80	0.37–1.78
Maternal log transformed viral load at 32 wk gestation¶	1.5	(0.6–1.9)	1.5	(0.6–1.8)	1.23	0.35–4.31

*Data presented as N (%) or median (range).

†Women who used hormonal contraception for at least 2 consecutive months during follow-up.

‡Women who never used hormonal contraception during follow-up.

§Includes monogamous and polygamous marriage.

‖CD4+ results available for 315 women (229 hormonal contraceptive users and 86 nonusers).

¶Log viral loads available for 303 women (223 hormonal contraceptive users and 80 nonusers).

**Hormonal contraceptive nonusers = referent group.