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## Fertility Intentions and Interest in Early Antiretroviral Therapy among East African HIV-1 Infected Individuals in Serodiscordant Partnerships

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### Keywords

HIV-1; Antiretroviral therapy; Fertility intentions; Africa

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### LETTER TO THE EDITOR

In sub-Saharan Africa, stable, heterosexual HIV-1 serodiscordant couples (i.e., one member is HIV-1 infected and the other uninfected) account for a substantial proportion of new infections and are a priority population for novel prevention interventions (1). Serodiscordant couples frequently have high pregnancy incidence and intentionally risk HIV-1 transmission in order to conceive (2, 3). Earlier antiretroviral therapy (ART) initiation (i.e., at CD4 counts >350 cells/ $\mu$ L) substantially reduces the risk of HIV-1 transmission within HIV-1 serodiscordant couples (4). Early ART may reduce peri-conception HIV-1 transmission risk due to decreased HIV-1 viral load and infectiousness (5, 6). We investigated fertility intentions and interest in early ART for HIV-1 prevention among East African HIV-1 infected individuals in serodiscordant partnerships.

Between July and December 2011, we conducted a cross-sectional study among Kenyan and Ugandan heterosexual HIV-1 serodiscordant couples participating in the Partners PrEP Study, a phase III, multisite, randomized, placebo-controlled trial of oral pre-exposure prophylaxis (PrEP) for HIV-1 prevention (7). During the trial, participants received standard HIV-1 prevention services including regular HIV-1 risk-reduction counseling and free condoms. They were informed and counseled about the results of clinical trials of new

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#### Author contributions

AM and JMB designed the study and wrote the first draft of the manuscript. AM performed the statistical analyses. All authors contributed to data collection, interpretation of the results and the writing of the manuscript, and all approved the final draft.

#### Competing interests

The authors report no competing interests.

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interventions for HIV-1 prevention, including HPTN 052 and the clinical and prevention benefits of early ART (4, 8). In July 2011, the independent data and safety monitoring board recommended that the placebo arm of the trial be discontinued due to clear demonstration of PrEP efficacy for HIV-1 prevention (8). Unblinding visits were conducted at which the results of the study were conveyed. HIV-1 uninfected partners in the placebo arm were thereafter offered active PrEP. Standardized questionnaires were administered regarding partnership status, willingness to have the HIV-1 infected partner start ART at CD4 counts >350 cells/ $\mu$ L if it would lower risk of transmitting HIV-1 to their partner, perceived benefits and concerns about early ART, and the number and timing of additional children.

For this analysis, data were analyzed from couples in which the HIV-1 infected participants had CD4 counts >350 cells/ $\mu$ L and did not have WHO stage 3 or 4 HIV-1 disease (i.e., did not meet criteria for initiation of ART under WHO guidelines at the time), were not already on ART, and whose serodiscordant partnership was intact. We used descriptive analytical methods and multivariate logistic regression models to evaluate the association between fertility intentions and interest in early ART after adjusting for *a priori* confounders (age, sex, education, partnership duration, number of children, coital frequency, unprotected sex and contraception). Data were analyzed using Stata 12.1 (StataCorp, College Station, TX). The University of Washington Human Subjects Review Committee and ethics review committees at collaborating institutions at each of the study sites approved the study procedures. All participants provided written informed consent.

A total of 571 HIV-1 serodiscordant couples completed the questionnaire and were included in the analysis, of which 368 (64%) were couples in which the HIV-1 infected partner was female. For HIV-1 infected partners, the median age was 34 years (interquartile range [IQR] 28, 40), and the median CD4 cell count was 586 cells/ $\mu$ L (IQR 461, 765). Couples had a median duration of partnership of 8.3 years (IQR 3.6, 14.8), and a median of 2 children (IQR 1, 4).

Fertility intentions were common, expressed by 36% of HIV-1 infected women and 28% of HIV-1 infected men. For the majority of couples (76%), HIV-1 uninfected partners were in agreement with the fertility intentions of their HIV-1 infected partners: for 314 couples (55%), both members did not want more children, whereas for 121 couples (21%), both members desired additional children. One hundred thirty-six couples (24%) had discordant fertility intentions, the majority of which (74%) were couples in which the HIV-1 uninfected male partner desired additional children but their HIV-1 infected female partner did not.

A majority of the 571 HIV-1 infected participants with CD4>350 cells/ $\mu$ L indicated willingness to start early ART for HIV-1 prevention: 76% and 71% of men and women. HIV-1 infected partners with fertility intentions were significantly more likely to express interest in early ART for HIV-1 prevention (adjusted odds ratio [aOR] 1.83, 95% confidence interval [CI], 1.12-2.99,  $p=0.02$ ) than those without fertility intentions. Younger age (<25 years), male sex, lack of children with their partner, and unprotected sex in the prior month were also associated with fertility intentions among the HIV-1 infected partners (Table 1).

In summary, fertility intentions were common and interest in early ART for HIV-1 prevention was high among East African HIV-1 infected individuals in heterosexual, mutually-disclosed serodiscordant partnerships. All couples had received counseling about the efficacy of ART for HIV-1 prevention, and those who desired to have children were nearly twice as likely to express interest in early ART as those without fertility intentions.

Our finding that HIV-1 infected individuals with fertility intentions were more likely to report unprotected sex is consistent with other studies from sub-Saharan Africa (2, 9), and reflects the need for safer conception counseling and services for HIV-1 serodiscordant

couples. Our findings suggest that both men and women in HIV-1 serodiscordant partnerships desire children, with somewhat higher interest for men, possibly reflecting desire to have biologic children with a current partner, the perception of fertility as proof of virility, or sociocultural pressures (10, 11).

The World Health Organization (WHO) has recently recommended early ART for HIV-1 infected members of serodiscordant couples to reduce risk of HIV-1 transmission to uninfected partners (12). Our results emphasize that a majority of HIV-1 infected persons with higher CD4 counts may be interested in early ART, particularly those who desire to conceive. Future studies should explore the feasibility and acceptability of implementing early ART for HIV-1 prevention in African HIV-1 serodiscordant couples desiring children.

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**Table 1**

Correlates of Fertility Intentions Among East African HIV-1 Infected Women and Men (N=571)

Factor	Fertility Intentions		Risk Estimates	
	Yes (N=190)	No (N=381)	Adjusted OR (95% CI)	p-value
Interest in early ART <sup>a</sup>				
No	45 (29)	108 (71)	Ref	
Yes	145 (35)	273 (65)	1.83 (1.12, 2.99)	0.02
Age				
45	8 (12)	58 (88)	Ref	
35-44	33 (19)	144 (81)	1.68 (0.67, 4.22)	0.3
25-34	88 (39)	137 (61)	4.97 (1.96, 12.63)	0.001
18-24	61 (59)	42 (41)	10.63 (3.68, 30.70)	<0.001
Sex				
Women	134 (36)	234 (64)	Ref	
Men	56 (28)	147 (72)	1.65 (1.00, 2.73)	0.05
Education (years)				
None	18 (31)	40 (69)	Ref	
Primary	120 (32)	251 (68)	0.87 (0.43, 1.76)	0.7
Secondary	52 (37)	90 (63)	0.98 (0.45, 2.14)	0.9
Partnership duration (years)				
5	97 (50)	97 (50)	Ref	
6-10	47 (35)	89 (65)	0.76 (0.43, 1.76)	0.3
11-37	42 (18)	181 (81)	0.67 (0.45, 2.14)	0.2
Children with partner				
Any	136 (29)	338 (71)	Ref	
None	54 (56)	43 (44)	2.54 (1.42, 4.53)	0.002
Unprotected sex, prior month				
None	126 (32)	272 (68)	Ref	
Any	46 (46)	54 (54)	1.67 (1.00, 2.77)	0.05

<sup>a</sup>ART = antiretroviral therapy