

HIV-1 Transmission Risk Persists During The First 6 Months Of Antiretroviral Therapy

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Background

Combination antiretroviral therapy (ART) decreases the risk of sexual HIV-1 transmission by suppressing HIV-1 RNA concentrations in blood and genital secretions to below undetectable levels [1,2]. However, HIV-1 transmission may still occur prior to complete viral suppression.

Objective

To estimate the risk of heterosexual HIV-1 transmission from persons on ART.

Methods

- Using data from a prospective study of heterosexual HIV-1 serodiscordant African couples enrolled in the placebo arm of the Partners PrEP Study, we quantified HIV-1 transmission risk in 3 time periods: between ART eligibility and treatment initiation, during the first 6 months of ART, and after 6 or more months of ART by when viral suppression is usually achieved.
- Sexual behavior, self-report of ART use by infected partners, and HIV-1 status of uninfected partners were assessed every 1-3 months.
- HIV-1 testing was performed using paired rapid antibody tests, with positive results confirmed by ELISA.
- The primary outcome was phylogenetically-linked HIV-1 transmission within the couple.
- Plasma HIV-1 RNA concentrations were quantified from archived EDTA samples which were batch tested at the end of the study.

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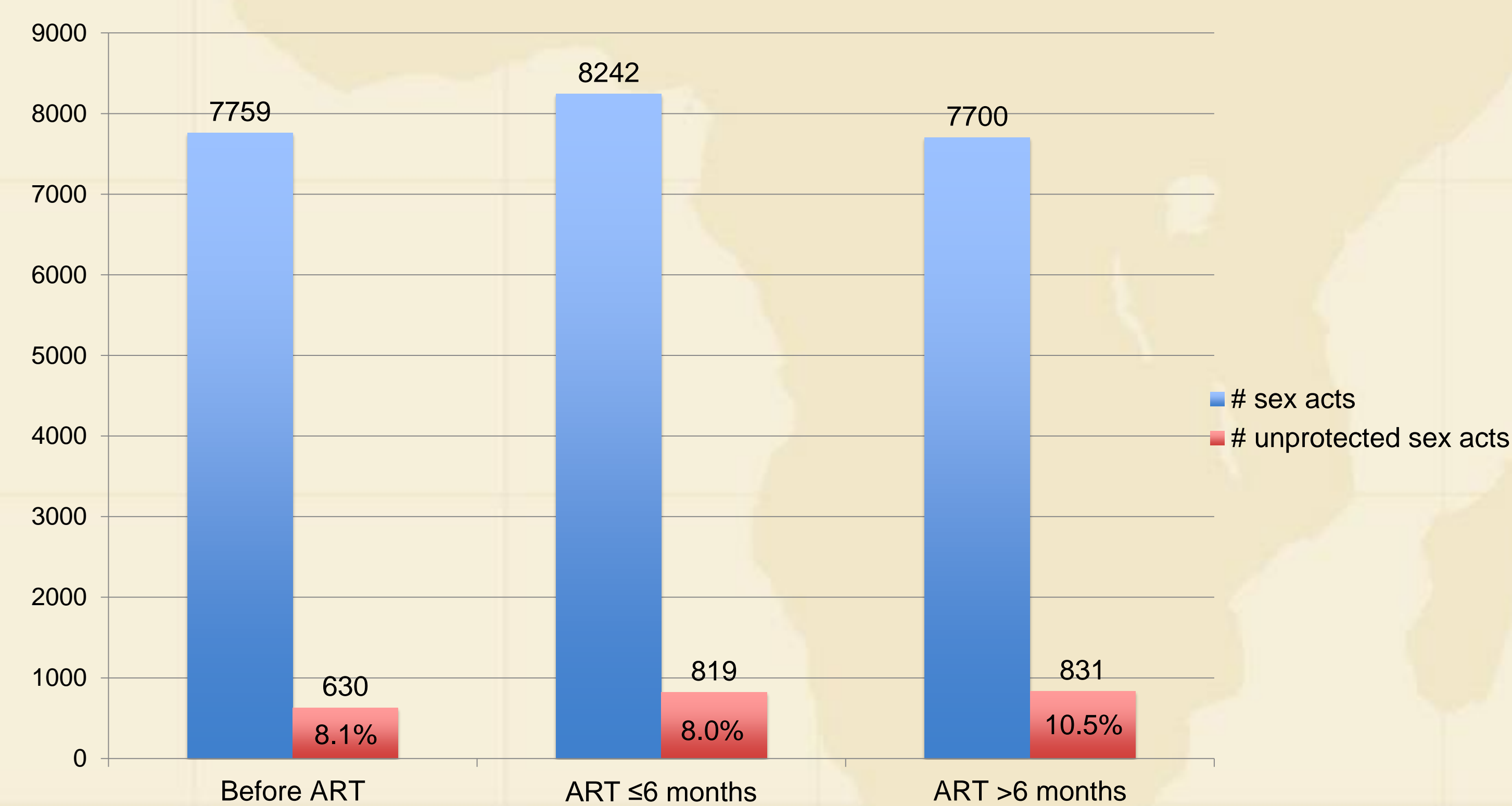
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Results

Table: HIV incidence in serodiscordant couples by ART exposure group

ART exposure before transmission	N	# Linked HIV infections	Person-years of follow up	Incidence per 100 P-Y (95% CI)
ART eligible but prior to ART start	249	3	175	1.71 (0.35-5.01)
≤6 months of ART	364	3	168	1.79 (0.37-5.22)
>6 months of ART	242	0	167	0.00 (0.00-2.20)

Figure: Estimated number of sex acts with HIV-infected partner, prior month



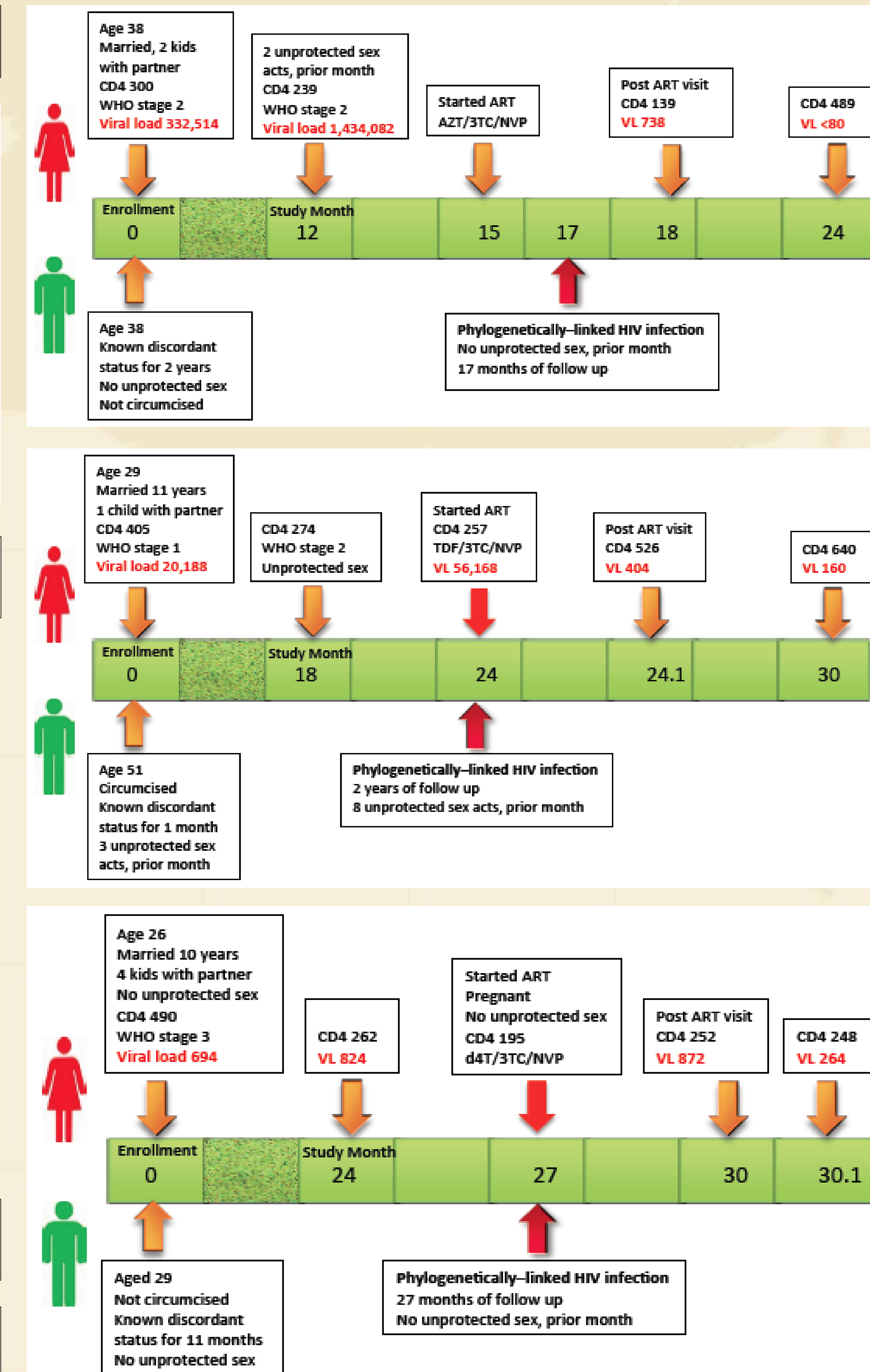
Discussion

- We observed residual risk of HIV-1 transmission within 6 months of ART initiation and prior to complete viral suppression in the HIV-1 infected partner.
- Condom use and HIV incidence during this period were similar to that prior to ART initiation.
- Prevalence of unprotected sex was comparable before and after ART.
- For HIV-1 serodiscordant couples in which the infected partner is starting ART, or is ART eligible but delays or declines treatment, other prevention options including antiretroviral pre-exposure prophylaxis (PrEP) are needed.

References

- Baeten JM *et al.* Genital HIV-1 RNA predicts risk of heterosexual HIV-1 transmission. *Science translational medicine* 2011,**3**:77ra29.
- Cohen MS *et al.* Prevention of HIV-1 infection with early antiretroviral therapy. *N Engl J Med* 2011,**365**:493-505.

Figure: Description of linked HIV infections from HIV-1 infected partners on ART <6 months



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***HIV serodiscordant couples who test, screen, & participate**