

Abstract 153LB: HIV Transmission Risk Through Condomless Sex If HIV+ Partner On Suppressive ART: PARTNER Study

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Background: The absolute risk of sexual HIV transmission on stable ART (HIV RNA viral load (VL) <200 c/mL) from condomless sex is unknown. Current limited data are largely focusing on vaginal sex.

Methodology: The international, observational multi-centre PARTNER study prospectively follows serodifferent couples (heterosexual (HT) and MSM) who had condomless penetrative anal or vaginal sex in the month prior to study entry, and where the HIV+ve partner is on ART. Every 6 months, each partner completes a sexual behaviour questionnaire and the negative partner tests for HIV. Eligibility of follow-up time in this transmission rate analysis required: continued condomless sex; not using PEP or PrEP; and latest VL <200 c/mL. For new diagnoses, phylogenetic analysis compared HIV-1 pol and env sequences by couple, after samples were anonymised. This planned analysis reports the rate of occurrence of linked transmissions.

Results: By 1st November 2013, 1110 couples were enrolled. Of 1151 couple-years of follow-up (CYFU), 894 were eligible (586 in HT and 308 in MSM). At baseline, the median duration on ART was 4.9 years (IQR: 1.9-11.4) and couples reported having condomless sex for a median 2 years (IQR: 0.5-6.3). Condomless sex with a different partner outside the partnership during follow-up was reported by 27% MSM and 2% HT HIV-negative partners. During follow-up, couples had condomless sex a median of 45 times/ year (IQR: 16-90). Although some negative partners became HIV positive during FU, no phylogenetically linked transmissions occurred, giving a rate of within-couple HIV transmission during eligible couple-years of zero (95% CI: 0-0.40/100 CYFU)(Table). The upper limit of the 95% CI for the rate of transmission was 0.96/100 CYFU for condomless anal sex (HT and MSM) and 1.97/100 CYFU for condomless receptive anal sex with or without ejaculation (MSM).

Conclusions: The overall risk of HIV transmission (in the context of previous sex without transmission) through condomless anal or vaginal sex from HIV positive people on ART with plasma VL < 200 copies/mL is extremely low, but uncertainty over the risk remains, particularly over receptive anal sex. Additional follow-up in MSM is essential to provide more precise estimates for transmission risk given the current assumptions of safety in some communities.

Risk Behaviour Reported by the HIV Negative Partner and Rates of Transmission							
HIV status and sexual orientation of couples	Risk behaviour reported by HIV -ve partner	Number of events (linked HIV transmissions)	Couple-years of follow up (CYFU)	Estimated number of sex acts	Transmission risk per condomless sexual contact (95% CI)	Rate of within couple HIV transmission (per 100 CYFU) (95% CI)	10 year risk of within couple HIV transmission (95% CI)
Overall	Condomless sex	0	894	44,439	0 (0 - 0.00008)	0 (0-0.40)	0 (0 - 3.9%)
	Condomless sex VL<50	0	836	41,479	0 (0 - 0.00009)	0 (0-0.43)	0 (0 - 4.2%)
	Condomless anal sex	0	374	21,032	0 (0 - 0.00017)	0 (0-0.96)	0 (0 - 9.2%)
HT m+/f-partners	Condomless sex	0	288	13,728	0 (0 - 0.00028)	0 (0-1.25)	0 (0 - 11.7%)
	Condomless vaginal sex with ejaculation	0	191	8,915	0 (0 - 0.00043)	0 (0-1.88)	0 (0 - 17.1%)
	Condomless vaginal sex without ejaculation	0	174	6,377	0 (0 - 0.00060)	0 (0-2.07)	0 (0 - 18.7%)
HT m-/f+ partners	Condomless sex	0	298	14,295	0 (0 - 0.00027)	0 (0-1.21)	0 (0 - 11.4%)
	Condomless vaginal sex	0	272	14,149	0 (0 - 0.00027)	0 (0-1.32)	0 (0 - 12.4%)

MSM	Condomless anal sex	0	308	16,416	0 (0 - 0.00023)	0 (0-1.17)	0 (0 - 11.0%)
	Condomless receptive anal sex (with or without ejaculation)	0	182	7,738	0 (0 - 0.00050)	0 (0-1.97)	0 (0 - 17.9%)
	Condomless insertive anal sex	0	262	11,749	0 (0 - 0.00033)	0 (0-1.37)	0 (0 - 12.8%)