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HIV Transmission in Male Serodiscordant Couples in Australia, Thailand and Brazil

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Abstract Body:

Background: Numerous prospective studies have demonstrated that HIV transmission is greatly reduced in heterosexual HIV serodiscordant couples when the HIV-positive partner (HPP) is receiving combination anti-retroviral therapy (cART) with undetectable viral load (UVL). Comparable data in homosexual male serodiscordant couples (HM-SDC) are extremely limited. We report a pre-specified interim analysis of the relationship between UVL and HIV transmission in the Opposites Attract observational cohort study of HM-SDC in Australia, Bangkok and Rio de Janeiro.

Methods: HM-SDC reporting regular anal intercourse with each other were recruited through clinical sites. Detailed information on sexual risk behaviours was collected at each visit from the HIV-negative partner (HNP). HNPs were tested at baseline and follow-up for HIV antibodies and STIs (sexually transmitted infections), and HPPs for HIV viral load and STIs. Incidence rates were calculated per couple-year of follow-up (CYFU) using person-year methods, and stratified by whether different forms of condomless anal intercourse (CLAI) were reported. UVL was defined as

Results: By December 2014, 234 HM-SDC were enrolled: 135 from Australia, 52 from Bangkok and 47 from Rio de Janeiro. There were a total of 150.0 CYFU in 152 couples with at least one follow-up visit of whom 65 (42.8%) were in a non-monogamous relationship. At baseline, 84.2% of HPPs were on cART and in total 82.9% had UVL. STI prevalence was 11.2% in HPPs and 6.6% in HNPs. There were 90.8 CYFU in periods where CLAI was reported with a total of 5,905 acts of CLAI in 88 couples. There were no linked HIV transmissions. The upper limit of the 95% CI of the transmission rate was 4.06/100 CYFU for periods in which CLAI was reported, and 6.46/100 CYFU for periods in which receptive CLAI was reported.

Conclusions: There were no linked HIV transmissions in 150 CYFU in these HM-SDC, despite close to 6,000 acts of CLAI. The upper confidence limit of the transmission rate during follow-up in periods during which CLAI was occurring was 4.06/100 CYFU. These data add to emerging evidence that the rate of HIV transmission in HM-SDC is very low

when the HIV-positive partner is on ART. Further follow-up of a larger sample size is required to accurately delineate any residual risk.

	Linked transmissions (n)	Couple-years of follow up (CYFU)	No. of CLAI acts	Incidence rate per 100 CYFU (95% CI)
Overall	0	149.96	5905	0 (0-2.46)
Any CLAI	0	90.83	5905	0 (0-4.06)
Insertive CLAI	0	77.87	3569	0 (0-4.74)
Receptive CLAI	0	57.08	2337	0 (0-6.46)
Any CLAI when VL	0	88.59	5656	0 (0-4.16)
Any CLAI when VL >200 copies	0	2.00	237	0 (0-184)