UNDETECTABLE VIRAL LOAD PREVENTS HIV TRANSMISSION IN MALE SERODISCORDANT COUPLES IN AUSTRALIA, THAILAND AND BRAZIL

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Background: Prospective data on the association of HIV transmission and undetectable viral load (UVL) in homosexual male HIV-serodiscordant couples (HM-SDC) are limited. We report the final results from the Opposites Attract cohort study of HM-SDC in Australia, Brazil and Thailand.

Methods: HM-SDC were recruited through clinics. At each visit, HIV-negative partners (HNPs) reported sexual behaviours and were tested for HIV antibodies/sexually transmitted infections (STIs), and positive partners (HPPs) for HIV viral load/STIs. Phylogenetic analysis of pol and env genes was performed to identify linked HIV transmissions within couples based on genetic distance and monophyletic grouping. Incidence was calculated per couple-year of follow-up (CYFU), and stratified by pre-exposure prophylaxis (PrEP) use and by whether different forms of condomless anal intercourse (CLAI) were reported. UVL was defined as <200 copies/mL. One-sided upper 95% confidence limits (UCL) were calculated.

Results: By end 2016, 343 couples had attended at least one follow-up visit (Australia=153, Brazil=93, Thailand=97), and 591 CYFU were accrued. At baseline, 43.2% of couples had been having sex for 12 months or less; 79.9% of HPPs were on antiretroviral therapy (ART) and 77.8% had UVL; STI prevalence was 14.3%/11.7% in HPPs/HNPs respectively. Over follow-up, 38.5% of HNPs reported CLAI with outside partners; STI incidence was 23.2 and 16.2/100 CYFU in HPPs/HNPs respectively. There were 318 CYFU in periods where within-couple CLAI was reported and 16,889 reported acts of CLAI. Overall HIV incidence was 0.5/100 person-years but there were no phylogenetically-linked transmissions. The overall UCL of the transmission rate of zero was 1.16/100 CYFU when CLAI was reported, and it was 1.56/100 CYFU when there was CLAI, UVL in the HPP, and no daily PrEP in the HNP.

Conclusions: Our results provide strong support for the hypothesis that undetectable viral load prevents HIV transmission in homosexual men.

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