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

Bavinton BR[1], Grinsztejn B[2], Phanuphak N[3], Jin F[1], Zablotska IB[1], Prestage GP[1], Kelleher A[1], Pinto AN[1], Cooper DA[1], Moore R[4], Fairley C[5,6], Templeton D[1,7], Hoy J[6,8], Tee BK[9], Grulich AE[1], for the Opposites Attract Study Group

[1] Kirby Institute, UNSW Sydney, Sydney, Australia
[2] Instituto de Pesquisa Clínica Evandro Chagas, Rio de Janeiro, Brazil
[3] Thai Red Cross, AIDS Research Centre, Bangkok, Thailand
[4] Northside Clinic, Melbourne, Australia
[5] Melbourne Sexual Health Centre, Melbourne, Australia
[6] Monash University, Melbourne, Australia
[7] RPA Sexual Health, Royal Prince Alfred Hospital, Sydney, Australia
[8] The Alfred Hospital, Melbourne, Australia
[9] Centre Clinic, Melbourne, Australia

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 anti-retroviral 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.

Disclosure of interest statement: The Kirby Institute receives funding from the Australian Government Department of Health and Ageing. The Kirby Institute is

affiliated with the Faculty of Medicine, UNSW Sydney. The Opposites Attract Study received unconditional research grants from the National Health and Medical Research Council, the American Foundation for AIDS Research, ViiV Healthcare, and Gilead Sciences.