Sexual and drug use risk behaviour trajectories among people treated for recent HCV infection: The REACT study

Joanne M Carson[1], Sebastiano Barbieri[2], Evan Cunningham[1], Eric Mao[1], Marc van der Valk[3,4], Jürgen K Rockstroh[5], Margaret Hellard[6,7], Arthur Kim[8], Sanjay Bhagani[9], Jordan J Feld[10], Ed Gane[11], Maria C Thurnheer[12], Julie Bruneau[13], Elise Tu[1], Gregory J Dore[1], Gail V Matthews[1], Marianne Martinello[1] on behalf of the REACT study group

[1]Kirby Institute, UNSW Sydney, Sydney, Australia, [2]The Centre for Big Data Research in Health, UNSW Sydney, Sydney, Australia, [3]Division of Infectious Diseases, Amsterdam Infection and Immunity Institute, Amsterdam, University Medical Centers, University of Amsterdam, The Netherlands, [4]Stichting HIV Monitoring, Amsterdam, the Netherlands, [5]University Hospital Bonn, Bonn, Germany [6]Burnet Institute, Melbourne, Australia, [7]The Alfred Hospital, Melbourne, Australia, [8]Massachusetts General Hospital, Boston, USA, [9]Royal Free Hospital, London, United Kingdom, [10]Toronto Centre for Liver Diseases, Toronto General Hospital, Toronto, Canada, [11]Auckland City Hospital, Auckland, New Zealand, [12]Department of Infectious Diseases, Bern Inselspital, Bern, Switzerland, [13]Research Center, Centre Hospitalier de l'Université de Montréal, Montréal, Canada

Background: Exploration of sexual and drug use behaviours following treatment for recent HCV infection (<12-months duration) is limited. This analysis modelled behavioural trajectories following treatment for recent HCV and assessed HCV reinfection and sexually transmitted infection (STI) incidence.

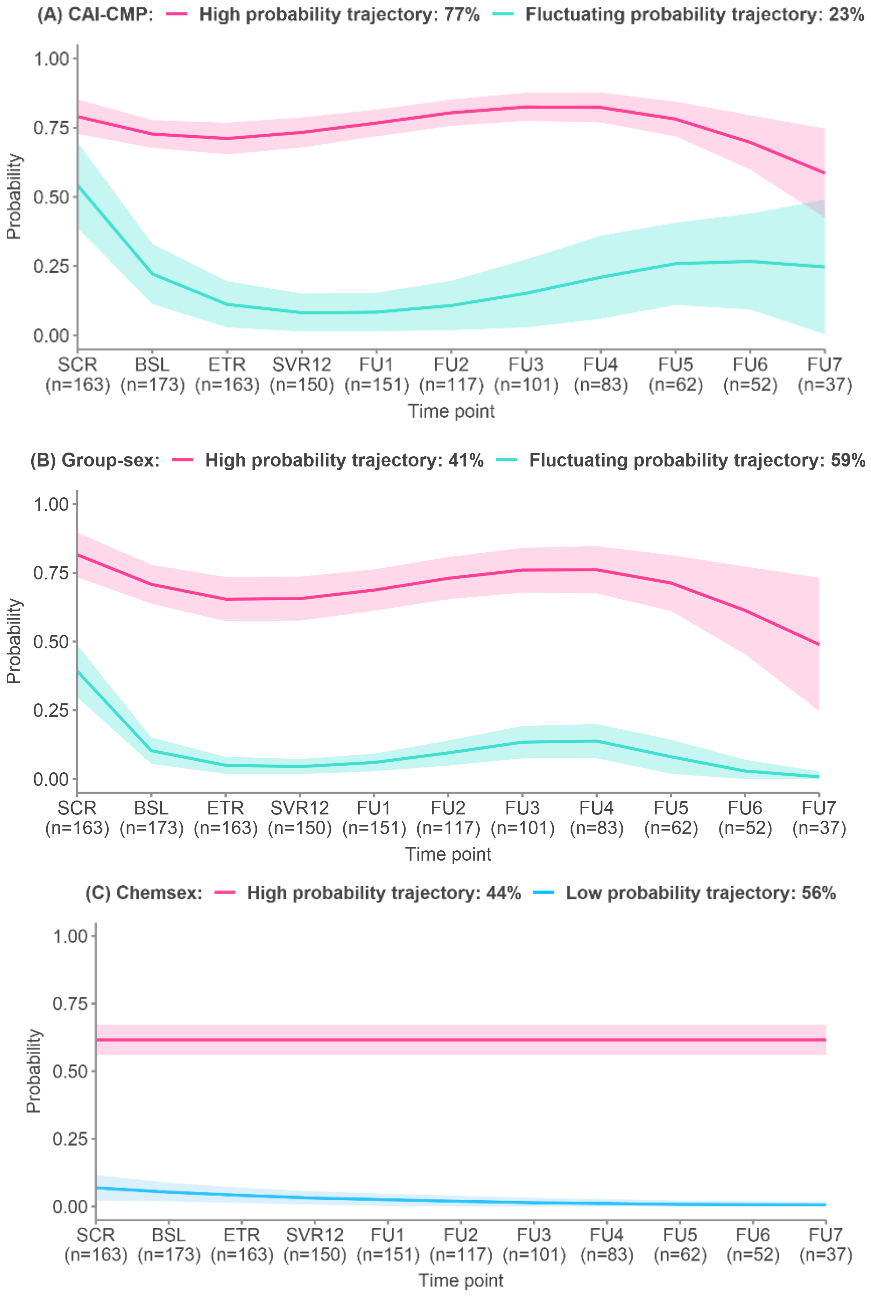
Methods: Participants treated for recent HCV in the REACT study (24-international sites) were followed at 3-monthly intervals for 2-years to assess longitudinal sexual and drug use behaviours. Population averaged behavioural changes were estimated using generalized estimating equations. Distinct trajectories of behaviour within the population were identified using group-based trajectory modelling. HCV reinfection and STI rates were calculated using person-years (PY) of observation.

Results: During follow-up of 212 participants (median age 43 years; 84% gay and bisexual men [GBM]; 69% HIV; 26% injecting drug use [IDU] in past month), behavioural trajectories for IDU and stimulant use (past month) did not change. However, population averaged decreases in the likelihood of daily IDU (adjusted odds ratio [AOR] 0.83; 95% CI 0.72, 0.95) and opioid use (AOR 0.84; 95% CI 0.75, 0.93) were observed. Among GBM, behavioural trajectories for chemsex did not change (**Figure**). Population averaged decreases in condomless anal intercourse with casual male partners (CAI-CMP; AOR 0.95; 95%CI 0.90, 0.99) and group-sex (AOR 0.86; 95%CI 0.80, 0.93) were observed, but masked distinct behavioural trajectories. While some of the population had decreased probability of CAI-CMP (23%) and group-sex (59%) following treatment, a substantial proportion retained high probability of these behaviours. HCV reinfection incidence was highest for those with sustained high probability of IDU (33.0/100 PY; 95%CI 17.7, 61.3) and chemsex behaviours (23.3/100 PY; 95%CI 14.5, 37.5). STI incidence was highest for those with sustained high probability of group-sex behaviour (161.1/100 PY; 95%CI 136.4, 190.2).

Conclusion: Limited behavioural change was observed following treatment for recent HCV infection. Findings support regular reinfection surveillance and rapid access to retreatment.

Disclosure of Interest Statement: The REACT study was funded by National Institutes of Health. Study medication was provided by Gilead Sciences Inc. The Kirby Institute is funded by the Australian Government Department of Health and Ageing. The views expressed in this publication do not necessarily represent the position of the Australian Government.

Figure. Group based trajectory modelling of sexual behavioural outcomes among gay and bisexual men. Behavioural trajectories for (A) condomless anal intercourse with casual male partners, (B) group-sex, and (C) chemsex before, during, and following treatment for recent HCV infection



Abbreviations: CAI-CMP, condomless anal intercourse with casual male partner; SCR, screening; BSL, baseline; ETR, end or treatment; SVR12, sustained virological response testing 12-weeks post treatment; FU, follow-up