

TITLE: REACHING HEPATITIS C VIRUS ELIMINATION TARGETS REQUIRES HEALTH SYSTEM INTERVENTIONS TO ENHANCE THE CARE CASCADE

Authors: Nick Scott^{1,2}, Joseph S. Doyle^{1,3}, David P. Wilson¹, Amanda Wade^{1,2}, Jess Howell^{1, 2, 4, 5}, Alisa Pedrana¹, Alexander Thompson^{4,5}, Margaret E. Hellard^{1,2,3}

¹ Centre for Population Health, Burnet Institute, Melbourne, VIC 3004, Australia

² Department of Epidemiology and Preventive Medicine, Monash University, Clayton, VIC 3008, Australia

³ Department of Infectious Diseases, The Alfred and Monash University, Melbourne, VIC 3004, Australia

⁴ Department of Medicine, The University of Melbourne, Parkville, VIC 3050, Australia

⁵ Department of Gastroenterology, St Vincent's Hospital Melbourne, Melbourne, VIC 3165, Australia

Background: Modelling suggests that achieving WHO elimination targets for hepatitis C virus (HCV) is possible by scaling up use of direct-acting antiviral (DAA) therapy. However, poor linkage to health services and retention in care presents a major barrier, in particular among people who inject drugs (PWID). We identify additional health system interventions required to achieve HCV elimination targets in Australia, a setting where all people living with HCV have access to DAA therapy.

Methods: We used a dynamic HCV transmission and liver-disease progression mathematical model, capturing testing, treatment and other features of the care cascade. Interventions tested were: availability of point-of-care RNA testing; increased testing of PWID; using biomarkers in place of liver stiffness measurement; and scaling up primary care treatment delivery.

Results: Without additional health system interventions the projected increase in treatment uptake substantially reduced the number of people living with HCV by 2030. However, most remaining infections were undiagnosed and chiefly among PWID. Scaling up primary care treatment delivery and using biomarkers in place of liver stiffness measurement produced only modest impacts on transmission but were estimated to save AU\$32 million by 2030, with no decrease in health outcomes. Adding point-of-care RNA testing increased the healthcare cost savings to AU\$62 million but critically, additional screening of PWID was required to achieve HCV elimination targets.

Conclusion: Even with unlimited and unrestricted access to HCV DAA treatment, interventions to improve the HCV cascade of care and target PWID will be required to achieve elimination targets.

Declaration of interests: JD, MH, AT, AW and the Burnet Institute receive investigator-initiated research funding from Gilead Sciences, AbbVie and BMS. JD's institution has received honoraria from Merck, Gilead and BMS. No pharmaceutical grants were received in the development of this study.