

Prevalence of Hepatitis C and treatment uptake in regional Victoria

Kristen Glenister,¹ William Kemp,² Dunya Tomic,² David Simmons,³ Stuart Roberts²

Global elimination of hepatitis C virus (HCV) infection is an important goal of the World Health Organization (WHO). Around 75% of people acquiring HCV develop chronic HCV infection.¹ Left untreated, chronic HCV is associated with significant morbidity and mortality including the development of cirrhosis and hepatocellular carcinoma.² In Australia, the prevalence of HCV is based on modelling using prevalence data within high-risk groups of people, including people in correctional facilities (prevalence of 30% among this group)³ and people who inject drugs (prevalence of 50% among this group)⁴ with extrapolation to the wider population. The estimated prevalence in Australia is 0.78%.⁵ These estimates are reliant on at-risk individuals being tested,⁶ receiving confirmatory testing⁷ or being screened frequently enough to identify reinfections,⁸ each of which is currently sub-optimal. An estimated 15% of HCV cases in Australia are undiagnosed.⁹ Studies using clinical data from community-based, randomly selected participants to assess HCV prevalence and treatment uptake in Australia are rare.

Modelled estimates predict that, without antiviral therapy, liver disease-related deaths would more than double by 2030.¹⁰ While the wide availability of highly effective direct-acting antiviral (DAA) therapy has led to more than 74,000 Australians receiving HCV treatment, an estimated 129,000 Australians are still living with chronic HCV infection (Prof. Greg Dore, Kirby Institute, personal communication, July 2020). Treatment rates

Abstract

Objective: The objective of this study was to assess the prevalence of hepatitis C virus (HCV) in regional Victoria and assess amenability to treatment.

Methods: Households were randomly selected and one adult from each was invited to a 'clinic', which included HCV, liver function and liver stiffness/fibrosis tests. Participants reactive to HCV were asked about their amenability to treatment.

Results: The study identified eight cases of HCV (antibody and PCR reactive, 1.1%) among 748 participants, half of which were new diagnoses. Most of the HCV-reactive participants were male (89%). Liver function and fibrosis were not significantly different between HCV-reactive and non-reactive participants. Most participants notified of their HCV were amenable to treatment.

Conclusions: The prevalence of HCV in this regional Victorian study (1.1%) was similar to the Australian modelled prevalence estimates. Most participants were amenable to treatment.

Implications for public health: The unique opportunity to eliminate HCV requires a reorientation of the public health response toward systematic implementation of treatment to address barriers and reduce stigma and discrimination for marginalised populations. This should include targeting regional areas where the HCV prevalence of undiagnosed cases may be higher than metropolitan areas.

Key words: hepatitis C, regional, rural, prevalence, treatment

peaked in 2016, likely reflecting a backlog of people awaiting access to subsidised DAA therapy.¹¹ Since 2016, treatment rates have decreased, and to meet WHO elimination targets, high levels of HCV testing (using both antibody and nucleic acid testing [NAT]) will be required to detect new cases and link patients to care.¹² A recent study estimated that HCV testing in Australia will need to increase by 50% to meet the WHO targets.¹² The importance of HCV case finding, treatment and management in primary care is seen as a priority area for action in the National Hepatitis C strategy.^{13,14} Universal,

subsidised HCV treatment in Australia offers a unique opportunity to reduce deaths.¹⁵ However, the public health response will need to include addressing the barriers to treatment uptake, including healthcare access for marginalised groups¹⁶ as well as stigma and discrimination related to injecting drug use, and psychosocial factors.¹⁵

Importantly, HCV prevalence is estimated to be higher, access to specialist HCV physicians lower and treatment uptake lower in rural/regional areas compared to metropolitan Australia,¹⁷ and in these areas in particular, GPs play an essential

1. Department of Rural Health, University of Melbourne, Victoria

2. Alfred Health, Melbourne, Victoria

3. School of Medicine, Western Sydney University, New South Wales

Correspondence to: Dr Kristen Glenister, Department of Rural Health, University of Melbourne, Docker Street, Wangaratta, Victoria 3677; e-mail: kristen.glenister@unimelb.edu.au

Submitted: April 2020; Revision requested: May 2020; Accepted: August 2020

The authors have stated they have no conflict of interest.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

Aust NZ J Public Health. 2020; 44:514-16; doi: 10.1111/1753-6405.13040

role in screening and connecting affected individuals to treatment.¹¹ Australian GPs are able to prescribe DAA therapy if they are experienced in the treatment of chronic HCV infection or consult with a gastroenterologist, hepatologist or physician experienced in the treatment of chronic HCV.¹⁸ GPs are ideally placed to ensure that HCV is managed holistically, addressing the increased risks of poor mental health, substance use and chronic disease among people with HCV,¹⁹ and to reduce stigma.¹³

Localised data regarding prevalence, proportion with undiagnosed HCV and relative risk factors are essential as they exhibit regional variation. Analysis of HCV notifications across Australia has highlighted that cases are not evenly distributed geographically and that areas of socioeconomic disadvantage, particularly in rural, regional and remote areas of Australia, have higher notification rates and higher unmet demand for HCV services.^{12,20}

Method

Thus, we assessed the HCV exposure risk among a sample of individuals from randomly selected households in the Goulburn Valley in regional Victoria and determined the characteristics and treatment uptake of HCV reactive participants as part of the Crossroads-II study, as previously described.²¹ Briefly, following ethics approval (GVH 20/16), households in four regional Victorian towns were randomly selected and consenting adults provided information about their health and health services utilisation. One adult from each participating household underwent liver enzyme testing, HCV immunoassay (EIA) and transient elastography to assess liver stiffness/fibrosis between October 2016 and December 2018. Confirmatory testing of HCV antibody-positive samples was by EIA plus NAT.

Results

Eight of 748 participants (1.1%) were HCV antibody and NAT positive, with one additional participant indeterminate by EIA but NAT negative. Of the seven participants able to be contacted in June 2019, three were aware of their exposure and had been treated prior to the study, while four were new diagnoses, of whom two had subsequently sought treatment, one was now being treated and one was open to treatment. Compared

to non-reactive participants, HCV-reactive subjects were more likely to be male (88.9% vs. 44.0% $p=0.007$), of similar age (55.6±9.7 vs. 59.0±16.4 years, $p=0.30$) and have an Australian birthplace (87.5% vs. 85.2%, $p=0.86$) and were more likely to smoke (42.9% vs. 9.5% $p=0.01$), consume more alcohol (14.2±5.0 vs. 6.5±8.2 drinks/week $p=0.03$) and use cannabis (60.0% vs. 7.2% $p<0.001$). HCV reactive participants had similar liver fibrosis scores to non-reactive subjects (aspartate aminotransferase to platelet ratio [APRI] 0.27 vs. 0.29, fibrosis-4 score (FIB4) 1.4 vs. 1.2, liver stiffness measure [LSM] 4.4 vs. 4.9). HCV reactive and non-reactive participants had similar liver function test abnormalities (elevated gamma-glutamyl transferase 11.1% vs. 9.7%, elevated alanine aminotransferase levels 22.2% vs. 42.8%).

Discussion

This cross-sectional study conducted in regional Victoria reports eight HCV reactive participants (antibody and PCR reactive) among 748 participants (1.1%), which is similar to the estimated prevalence of 0.78%.⁵ Four participants represented new diagnoses. People with reactive HCV were more often male, aged 55 years on average, more likely to smoke and consumed more alcohol than people who were non-reactive for HCV. These characteristics are also in agreement with previous studies.²² In this study, only 12% of people with reactive HCV were born outside of Australia, a very similar finding to the study by MacLachlan.²⁰ Our study was unable to assess the history of injecting drug use for research ethics reasons and this is a recognised limitation. Liver function and stiffness assessments suggest that the people with reactive HCV had not sustained significant liver damage, suggesting that HCV exposure had been within the previous few years.²³ A majority of HCV-reactive people were amenable to treatment.

Conclusion

These findings suggest that if hepatitis C elimination goals are to be met in Australia, it will be important to target regional areas where the prevalence rate is just as high as it is in metropolitan areas, but access to specialist care is more limited.¹⁷ Amenability to treatment appears high. GPs are well placed to identify and treat HCV in regional areas. As evidence of HCV exposure was

more common among males and associated with smoking, alcohol and cannabis use, GPs might consider targeted screening in such individuals to help identify people with HCV infection who would benefit from treatment.

References

- Micallef JM, Kaldor JM, Dore GJ. Spontaneous viral clearance following acute hepatitis C infection: A systematic review of longitudinal studies. *J Viral Hepat*. 2006;13(1):34-41.
- Ireland G, Mandal S, Hickman M, Ramsay M, Harris R, Simmons R. Mortality rates among individuals diagnosed with hepatitis C virus (HCV); An observational cohort study, England, 2008 to 2016. *Euro Surveill*. 2019;24(30):1800695.
- Kirby Institute. *HIV, Viral Hepatitis and Sexually Transmissible Infections in Australia: Annual Surveillance Report 2017*. Sydney (AUST): University of New South Wales Kirby Institute; 2017.
- Martin NK, Vickerman P, Grebely J, Hellard M, Hutchinson SJ, Lima VD, et al. Hepatitis C virus treatment for prevention among people who inject drugs: Modeling treatment scale-up in the age of direct-acting antivirals. *Hepatology*. 2013;58(5):1598-609.
- Kirby Institute. *HIV, Viral Hepatitis and Sexually Transmissible Infections in Australia: Annual Surveillance Report 2018*. Sydney (AUST): University of New South Wales Kirby Institute; 2018.
- Guise A, Witzel TC, Mandal S, Sabin C, Rhodes T, Nardone A, et al. A qualitative assessment of the acceptability of hepatitis C remote self-testing and self-sampling amongst people who use drugs in London, UK. *BMC Infect Dis*. 2018;18(1):281.
- Snow K, Scott N, Clothier HJ, MacLachlan JH, Cowie B. Limited provision of diagnostic services to Victorians living with hepatitis C antibodies, 2001–2012: A multi-level modelling analysis. *Aust N Z J Public Health*. 2017;41(2):193-8.
- Scott N, Sacks-Davis R, Pedrana A, Doyle J, Thompson A, Hellard M. Eliminating hepatitis C: The importance of frequent testing of people who inject drugs in high-prevalence settings. *J Viral Hepat*. 2018;25(12):1472-80.
- Blach S, Zeuzem S, Manns M, Altraif I, Duberg A-S, Muljono DH, et al. Global prevalence and genotype distribution of hepatitis C virus infection in 2015: A modelling study. *Lancet Gastroenterol Hepatol*. 2017;2(3):161-76.
- Kwon JA, Dore GJ, Grebely J, Hajarizadeh B, Guy R, Cunningham EB, et al. Australia on track to achieve WHO HCV elimination targets following rapid initial DAA treatment uptake: A modelling study. *J Viral Hepat*. 2019;26(1):83-92.
- Doyle JS, Scott N, Sacks-Davis R, Pedrana AE, Thompson AJ, Hellard ME. Treatment access is only the first step to hepatitis C elimination: Experience of universal antiviral treatment access in Australia. *Aliment Pharmacol Ther*. 2019;49(9):1223-9.
- Scott N, Sacks-Davis R, Wade AJ, Stooze M, Pedrana A, Doyle JS, et al. Australia needs to increase testing to achieve hepatitis C elimination. *Med J Aust*. 2020;212(8):365-70.
- van Driel ML, Lim D, Clark PJ. Hepatitis C in Australia - a role for general practitioners? *Med J Aust*. 2017;207(2):53.
- Australian Department of Health. *FIFTH National Hepatitis C Strategy 2018-2022*. Canberra (AUST): Government of Australia; 2018.
- Wallace J, Richmond J, Ellard J, Power J, Lucke J. Eradicating hepatitis C: The need for a public health response. *Global Public Health*. 2018;13(9):1254-64.
- Edmunds BL, Miller ER, Tsourtos G. The distribution and socioeconomic burden of Hepatitis C virus in South Australia: A cross-sectional study 2010-2016. *BMC Public Health*. 2019;19(1):527.
- MacLachlan J, Thomas L, Cowie B. *Viral Hepatitis Mapping Project: National Report 2017*. Darlinghurst (AUST): Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine; 2017.

18. Gastroenterological Society of Australia. *Hepatitis C Virus Infection Consensus Statement Working Group. Australian Recommendations for the Management of Hepatitis C Virus Infection: A Consensus Statement*. Melbourne (AUST): GESA; 2018.
19. Thompson AJ. Australian recommendations for the management of hepatitis C virus infection: A consensus statement. *Med J Aust*. 2016;204(7):268-72.
20. MacLachlan JH, Romero N, Higgins N, Coutts R, Chan R, Stephens N, et al. Epidemiology of chronic hepatitis B and C in Victoria, Australia: Insights and impacts from enhanced surveillance. *Aust N Z J Public Health*. 2020;44(1):59-64.
21. Glenister KM, Bourke L, Bolitho L, Wright S, Roberts S, Kemp W, et al. Longitudinal study of health, disease and access to care in rural Victoria: The Crossroads-II Study: Methods. *BMC Public Health*. 2018;18(1):670.
22. Baden R, Rockstroh JK, Buti M. Natural history and management of hepatitis C: Does sex play a role? *J Infect Dis*. 2014;209(Suppl 3):S81-S5.
23. Butt AA, Yan P, Lo Re V III, Rimland D, Goetz MB, Leaf D, et al. Liver fibrosis progression in hepatitis C virus infection after seroconversion. *JAMA Intern Med*. 2015;175(2):178-85.