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ORIGINAL ARTICLE

Effectiveness of direct-acting antiviral therapy among Aboriginal and Torres Strait Islander peoples with HCV infection in Australia: A national real-world cohort (REACH-C)

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Abstract

Aboriginal and Torres Strait Islander peoples experience a disproportionate burden of hepatitis C virus (HCV) infection. This study assessed the effectiveness of direct-acting antiviral (DAA) therapy among Aboriginal peoples in the three years following universal access in Australia. REACH-C, a national multicentre prospective cohort study, evaluated HCV treatment outcomes from sequential DAA initiations across 33 health services between March 2016 and June 2019. DAA effectiveness was assessed by sustained virological response (SVR) in the total (full analysis set) and effectiveness (modified analysis set excluding those lost to follow-up) populations. Overall, 915 (10%) Aboriginal and 8095 (90%) non-Indigenous people commenced DAA therapy, of whom 30% and 16% reported current injecting drug use and 73% and 42% were treated in primary care, respectively. SVR in the total and effectiveness populations was 74% and 94% among Aboriginal people and 82% and 94% among non-Indigenous people, with loss to follow-up contributing to lower SVR in the total population analysis (22% Aboriginal, 13% non-Indigenous). Among Aboriginal people, returning for follow-up was positively associated with older age (aOR 1.20; 95% CI 1.04, 1.39) and SVR was negatively associated with cirrhosis (aOR 0.39; 95% CI 0.19, 0.80) and prior DAA treatment (aOR 0.14; 95% CI 0.04, 0.49). Factors reflecting higher vulnerability or inequity were not associated with returning for testing or SVR. DAA therapy was highly effective among Aboriginal peoples with HCV treated through primary and tertiary services. Tailored community-led interventions are necessary to optimize follow-up and engagement. Sustained DAA uptake and equitable access to care, treatment and prevention are required for HCV elimination.

Abbreviations: DAA, direct-acting antiviral; HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus; OAT, opioid agonist therapy; PBS, Pharmaceutical Benefits Scheme; RNA, ribonucleic acid; SVR, sustained virological response.

KEYWORDS
direct-acting antivirals, first nations, hepatitis C, indigenous, loss to follow-up, primary care

1 | INTRODUCTION

In 2016, the World Health Organization set the goal of 'elimination of viral hepatitis as a public health threat by 2030',[1] with the availability of direct-acting antiviral therapy (DAA) shifting the narrative in favour of HCV elimination.[2] Universal access to government subsidized DAA therapy has paved the way for elimination in Australia, with an estimated 49% of Australians living with HCV accessing DAA therapy between March 2016 and December 2019 following listing on the Pharmaceutical Benefits Scheme (PBS).[3–5] To achieve elimination, equitable DAA access and outcomes must be assured among key populations, including people who inject drugs and people in prison.

Indigenous peoples are another population requiring focussed attention given the disproportionate burden of HCV infection and potential inequalities in healthcare access.[6–8] Australia's Indigenous peoples, Aboriginal and Torres Strait Islander peoples (hereafter respectfully referred to as Aboriginal$_{\Delta}$), have been designated a priority population.[3,8–10] Ensuring Aboriginal people have equitable access to safe and effective HCV care and treatment is essential for health outcomes and to achieve HCV elimination targets.

An estimated 21,584 Aboriginal people were living with HCV at the end of 2020,[11] accounting for 18% of people with HCV in Australia (n = 117,810) despite comprising 3% of the general population.[12] Increased prevalence of injecting behaviours facilitating transmission among Aboriginal people who inject drugs[13] and high rates of incarceration perpetuate a cycle of exposure to harm.[14,15] This is compounded by systemic disadvantages faced by Aboriginal peoples, including transgenerational trauma and historical exclusion from healthcare, a lack of culturally safe and specific services, and stigma and shame associated with HCV and injecting drug use.[16]

The primary objective of this analysis was to assess DAA effectiveness among Aboriginal and non-Indigenous peoples with HCV infection in the three years following universal access in Australia. Secondary objectives included evaluation of factors associated with returning for post-treatment follow up and achieving a sustained virological response (SVR).

2 | METHODS

2.1 | Study design, population and setting

REACH-C was a multicentre prospective cohort study among people with HCV infection who commenced DAA therapy between 1 March 2016 and 30 June 2019 at 33 health services in Australia (Table S1).[17] All people who commenced DAA therapy at each site were eligible and enrolled sequentially, with a waiver obtained for individual consent. There were no additional eligibility requirements and no exclusion criteria. The choice of DAA regimen and duration of treatment was at the discretion of the treating clinician, as part of routine care. Additional data were collected following SVR assessment for individuals who received DAA retreatment for post-treatment HCV RNA recurrence (treatment failure or reinfection).

2.2 | Data collection and definitions

Data collected at treatment initiation included demographic (age, gender, Aboriginal identification), clinical (presence of cirrhosis [assessed by Fibroscan or AST-to-platelet ratio index], coinfection with human immunodeficiency virus [HIV] or hepatitis B virus [HBV], current injecting drug use [last six months], current opioid agonist therapy [OAT], previous HCV treatment, HCV genotype, prescribed DAA regimen) and health service characteristics (treatment setting, prescriber type, location). Information related to treatment outcome was collected at follow-up. For individuals with HCV ribonucleic acid (RNA) detected posttreatment, HCV genotype or sequencing (if available) and prescribed DAA retreatment regimen (if commenced) were collected. Treatment and retreatment data were collected prospectively through October 2020.

Treatment settings were classified as tertiary services (specialist liver or infectious diseases clinics) and primary services (general practice, prisons, community health services [community health clinics, sexual health services, drug and alcohol services, outreach services, telehealth services, Aboriginal medical services and mental health services]).

SVR was defined as HCV RNA below the lower limit of detection at least 12 weeks posttreatment.[18] Reinfection was defined as HCV RNA detected after achieving SVR or HCV RNA detected at SVR with an HCV strain distinct from the pretreatment strain (identified by genotype/subtype switch or sequencing if available). Reinfection was only reported at SVR or retreatment; reinfections occurring after SVR and which were not retreated at a REACH-C site were not reported. Virological failure was defined as HCV RNA detected at SVR assessment with the same genotype and/or subtype as pretreatment, unless identified as reinfection by sequencing. Individuals who discontinued treatment early with HCV RNA detected at the SVR assessment were classified as virological failure for the purposes of this analysis. An individual was considered lost to follow-up, if they did not have an HCV RNA test at or after 12 weeks posttreatment.

2.3 | Ethical approval

Ethical approval for the REACH-C study was obtained from: St Vincent's Hospital Sydney Human Research Ethics Committee

(HREC/16/SVH/223), Aboriginal Health and Medical Research Council (1280/17), Northern Territory Department of Health and Menzies School of Health Research Human Research Ethics Committee (2018–3118), Central Australian Human Research Ethics Committee (CA-18-3172), Western Australian Aboriginal Health Ethics Committee, Kimberley Aboriginal Health Planning Forum (2018-008) and Tasmanian Health and Medical Research Ethics Committee (H0017728). Further approvals at Local Health District levels were acquired for public sites.

2.4 | Statistical analysis

Stratified by Aboriginal identification, baseline characteristics and treatment outcomes were described, with outcomes evaluated in two populations:

1. Total population: All individuals who commenced treatment (i.e. full analysis set). Missing outcome data were counted as failure.
2. Effectiveness population: Individuals who commenced treatment and underwent assessment for virological response at or after posttreatment week 12 (i.e. modified analysis set).

Factors associated with DAA effectiveness and return for follow-up were analysed using logistic regression in the effectiveness and total populations, respectively, with stratification by Aboriginal identification and adjustment for year of treatment commencement. Factors hypothesized to be associated with DAA effectiveness or return for follow-up were selected a priori and included sociodemographic (age, gender), clinical (liver fibrosis stage, HCV genotype, prior HCV treatment), behavioural (injecting drug use, OAT) and health service provision (service type, location). People who died prior to SVR were excluded from the analysis of factors associated with return for follow-up ($n = 71$). Statistical tests were two-sided and performed at the 5% significance level unless specified otherwise. Analysis was conducted using STATA (version 15.0; Stata Corporation, College Station, TX).

3 | RESULTS

3.1 | Participant disposition

From 1 March 2016 to 30 June 2019, 10,843 individuals who initiated DAA therapy were included in the REACH-C cohort, of whom 915 (8%) identified as Aboriginal and/or Torres Strait Islander and 8095 (75%) identified as non-Indigenous; Aboriginal status was not recorded for 1833 (17%), and these people were excluded from subsequent analyses (Figure 1).

Of 9010 people included in this analysis, median age was 51 years, 69% were male, 23% had cirrhosis, and most had HCV genotype 1 (52%) or genotype 3 (40%) infection (Table 1). Consistent with PBS availability during the study period, the most prescribed DAA regimen was sofosbuvir-ledipasvir (40%), with fewer people prescribed the pan-genotypic regimens, sofosbuvir-velpatasvir (21%) and glecaprevir-pibrentasvir (4%). Aboriginal people commencing DAA therapy were younger than non-Indigenous people (median age 43 vs. 52 years $p < .001$) and a higher proportion reported current injecting drug use (30% vs. 16%; $p < .001$). A higher proportion of Aboriginal people were treated through primary health services (73% vs. 42%; $p < .001$) and health services in regional or remote locations (50% vs. 38%; $p < .001$) compared to non-Indigenous people.

In the REACH-C cohort, the number of people initiating HCV treatment declined each year, with 50% treated in 2016 and 5% in 2019 (Table 1). Over the study period, changes in key characteristics of the REACH-C population included increasing proportions of Aboriginal people (from 7% in 2016 to 17% in 2019), people aged under 35 years (from 7% in 2016 to 15% in 2019) and people reporting current injecting drug use (from 10% in 2016 to 21% in 2019) (Figure S1). The proportion of Aboriginal people treated for HCV who reported current injecting drug use increased from 23% in 2016 to

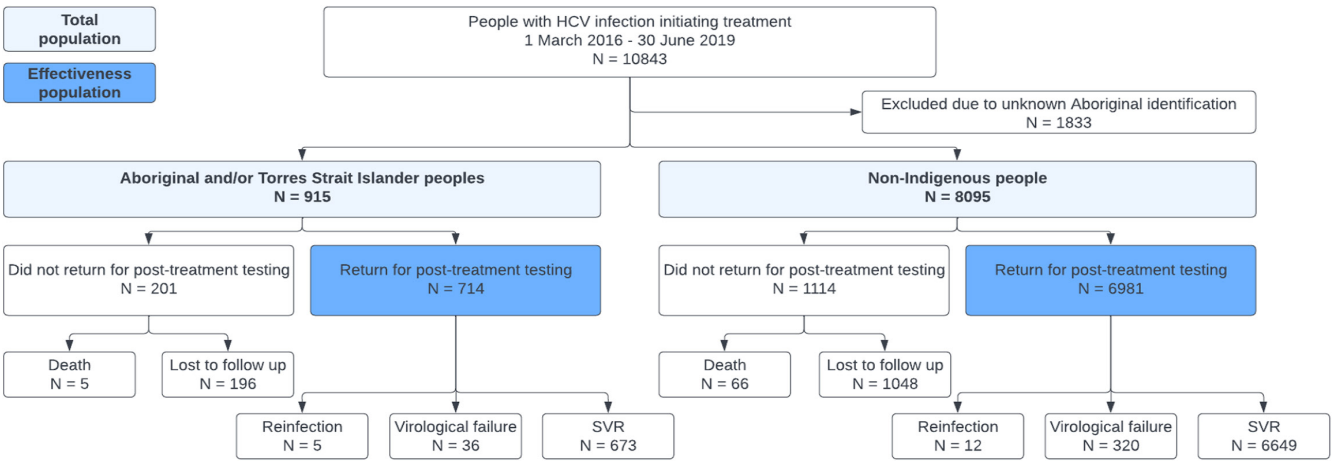

FIGURE 1 REACH-C participant flowchart, stratified by Aboriginal status. Abbreviations: HCV, hepatitis C virus; SVR, sustained virological response

TABLE 1 Enrolment demographic and clinical characteristics

Characteristic	Aboriginal *n* = 915	Non-Indigenous *n* = 8095	Total *n* = 9010
Age, median (IQR)	43 (35, 52)	52 (43, 58)	51 (42, 58)
Sex, *n* (%)			
Male	640 (70)	5637 (70)	6276 (69)
Female	275 (30)	2458 (30)	2733 (30)
Clinic setting, *n* (%)			
Specialist liver clinic	245 (27)	4688 (58)	4933 (55)
General practice	168 (18)	1246 (15)	1414 (16)
Community health clinic	319 (35)	1742 (22)	2061 (23)
Prison	183 (20)	419 (5)	602 (7)
Health service location, *n* (%)			
Major city	454 (50)	5023 (62)	5477 (61)
Regional or remote	461 (50)	3072 (38)	3533 (39)
IDU ± OAT, *n* (%)			
IDU	190 (21)	680 (8)	870 (10)
IDU + OAT	80 (9)	587 (7)	667 (7)
OAT	97 (11)	836 (10)	933 (10)
None	405 (44)	4910 (61)	5315 (59)
Unknown	143 (16)	1082 (13)	1225 (14)
HIV infection, *n* (%)			
Yes	31 (3)	327 (4)	358 (4)
No	884 (97)	7768 (96)	8652 (96)
Chronic hepatitis B infection, *n* (%)			
Yes	24 (3)	93 (1)	117 (1)
No	891 (97)	8002 (99)	8893 (99)
Cirrhosis, *n* (%)			
Yes	152 (17)	1940 (24)	2092 (23)
No	763 (83)	6155 (76)	6918 (77)
Previous HCV treatment, *n* (%)			
No	854 (93)	6924 (86)	7778 (86)
Interferon-containing	44 (5)	1051 (13)	1095 (12)
DAA (interferon free)	17 (2)	120 (1)	137 (2)
Genotype, *n* (%)			
1	432 (47)	4298 (53)	4730 (53)
2	25 (3)	372 (5)	397 (4)
3	437 (48)	3135 (39)	3572 (40)
4	7 (1)	83 (1)	90 (1)
5	0 (0)	2 (<0.5)	2 (<0.5)
6	3 (<0.5)	101 (1)	104 (1)
Mixed or unknown	11 (1)	104 (1)	115 (1)
DAA regimen, *n* (%)			
Glecaprevir-pibrentasvir	82 (9)	302 (4)	384 (4)
Grazoprevir-elbasvir	42 (5)	305 (4)	347 (4)
Sofosbuvir+daclatasvir	239 (26)	2294 (28)	2533 (28)
Sofosbuvir-ledipasvir	290 (32)	3270 (40)	3560 (40)

(Continues)

TABLE 1 (Continued)

Characteristic	Aboriginal n = 915	Non-Indigenous n = 8095	Total n = 9010
Sofosbuvir-velpatasvir	246 (27)	1627 (20)	1837 (21)
Other[a]	16 (1)	297 (4)	313 (4)
Prescribed duration, *n* (%)			
8 weeks	164 (18)	995 (12)	1159 (13)
12 weeks	686 (75)	6044 (75)	6730 (75)
16–24 weeks	65 (7)	1056 (13)	1121 (12)
Year of treatment commencement, *n* (%)			
2016[b]	315 (34)	4181 (52)	4496 (50)
2017	278 (30)	2250 (28)	2528 (28)
2018	243 (27)	1268 (16)	1511 (17)
2019[b]	79 (9)	396 (5)	475 (5)

Abbreviations: DAA, direct-acting antiviral; IDU, injecting drug use; OAT, opioid agonist therapy.

[a]Other includes: sofosbuvir+ribavirin (±interferon), paritaprevir-ritonavir-ombitasvir+dasabuvir, glecaprevir-pibrentasvir+sofosbuvir, grazoprevir-elbasvir+sofosbuvir, sofosbuvir-velpatasvir-voxilaprevir.

[b]Year of treatment commencement: Enrolment periods for 2016 (1 March–31 December) and 2019 (1 January–30 June) were less than 12 months.

44% in 2019. The proportion of people receiving treatment through primary services increased from 35% in 2016 to 65% in 2019.

3.2 | Return for follow-up and HCV RNA testing posttreatment

HCV RNA results at or after 12 weeks posttreatment were available for 7695 of 9010 people (85%). The proportion returning for follow-up testing was 78% among Aboriginal (714/910; 95% CI 76%, 81%) and 87% among non-Indigenous people (6981/8095; 95% CI 85%, 87%) (Figure 2A). Of those without posttreatment results, 1% died (71/9010; Aboriginal, *n* = 5; non-Indigenous, *n* = 66) and 14% (1244/9010) did not return for follow-up.

Among Aboriginal people, returning for follow-up was positively associated with older age and negatively associated with an unknown history of injecting drug use; current injecting drug use was not associated with returning for follow-up (Table 2). Among non-Indigenous people, returning for follow-up was positively associated with older age, cirrhosis, prior interferon-based therapy and HIV co-infection and negatively associated with treatment at a primary health service and current injecting drug use and/or OAT (Table 2). In adjusted analysis, Aboriginal identification was not associated with returning for follow-up (Table S2).

3.3 | Treatment outcomes and factors associated with SVR

In the total population (including those lost to follow-up), SVR was achieved in 81% (7322/9010; 95% CI 80%, 82%). SVR was achieved in 74% (95% CI 71%, 76%) and 82% (95% CI 81%, 83%) of Aboriginal and non-Indigenous people, respectively (Figures 2A and 3A, Table S3).

In the effectiveness population (excluding those lost to follow-up), SVR was achieved in 95% (7322/7695; 95% CI 95%, 96%). SVR was achieved in 94% (95% CI 92%, 95%) and 94% (95% CI: 94%, 95%) of Aboriginal and non-Indigenous people, respectively (Figures 2B and 3B).

Among Aboriginal people, prior interferon-free DAA treatment and cirrhosis were associated with decreased odds of achieving SVR (Table 3). Among non-Indigenous people, female gender and receipt of OAT were associated with increased odds of achieving SVR, while older age, cirrhosis, nongenotype 1 infection and treatment in a regional or remote setting were associated with decreased odds of SVR (Table 3). There was no association between achieving SVR and Aboriginal identification (Table S4).

Of those who returned for follow-up and did not achieve SVR (*n* = 373), there were 356 cases of virological failure and 17 of reinfection (Figure 1). The proportion with virological failure was similar among Aboriginal people compared to non-Indigenous people (5.0% vs. 4.6%; *p* = .24). Of those with virological failure (*n* = 356), 51% were retreated within REACH-C, including 25% (9/36) of Aboriginal people and 54% (172/320) of non-Indigenous people. A higher proportion of Aboriginal people were diagnosed with reinfection compared to non-Indigenous people (0.7% vs. 0.2%; *p* = .014; Figure 3). Of those diagnosed with reinfection (*n* = 17), 41% were retreated within REACH-C, including 40% (2/5) of Aboriginal people and 42% (5/12) of non-Indigenous people.

4 | DISCUSSION

In this well-characterized national cohort enrolled from diverse Australian healthcare services between 2016 and 2019, DAA

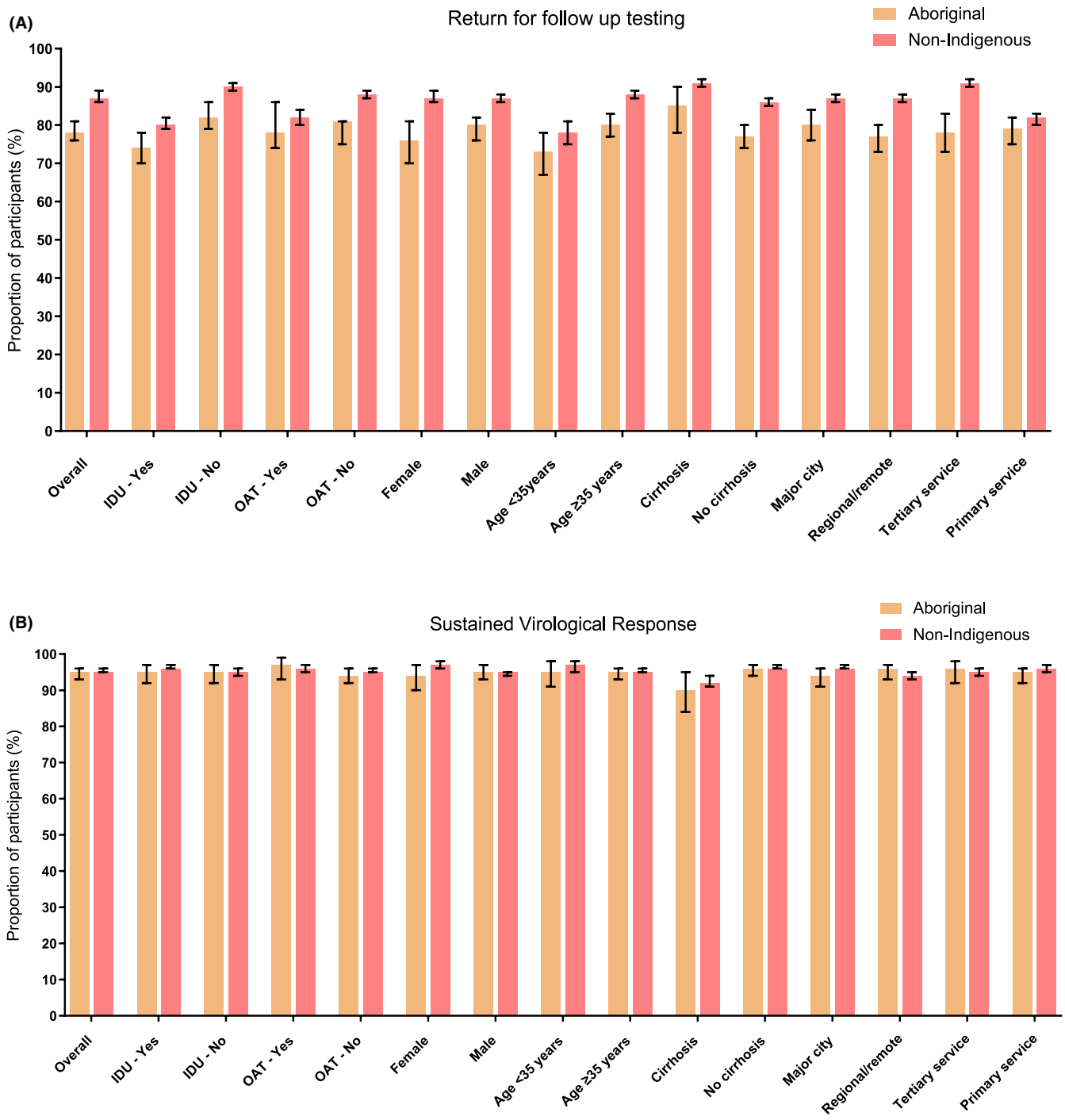

FIGURE 2 Return for follow-up and treatment effectiveness. Proportion of people in REACH-C who returned for follow-up HCV RNA testing in the total population (A) and achieved SVR in the effectiveness population (B), stratified by Aboriginal status. Error bars indicate 95% confidence intervals. Abbreviations: IDU, injecting drug use; OAT, opioid agonist therapy

therapy was highly and comparably effective among Aboriginal and non-Indigenous people with HCV infection. However, a lower proportion of Aboriginal people returned for posttreatment follow-up and HCV RNA testing than non-Indigenous people, providing insights into HCV care among vulnerable populations which may impact elimination progress. Although most of those without follow-up are likely to have been successfully treated, strategies are required to enhance retention in care to confirm cure, monitor for reinfection and manage ongoing liver disease.

High SVR (95%) was observed among Aboriginal people, consistent with outcomes reported from registeredl clinical trials and other real-world cohorts.[19,20] While expected, evaluating real-world DAA effectiveness is essential among Aboriginal and other Indigenous peoples and minority populations who may have been precluded, under-represented or historically absent from inclusion in clinical trials. High DAA effectiveness was demonstrated across all subpopulations of Aboriginal people, including those who have previously been considered 'difficult to treat' (i.e. people with

TABLE 2 Logistic regression analysis of factors associated with returning for testing in the Aboriginal ($n = 910$) and non-Indigenous ($n = 8029$) populations[a]

	Aboriginal				Non-Indigenous			
	Tested ($n = 714$) *N* (%)	Not tested ($n = 196$) *N* (%)	aOR[b] (95% CI)	*p*	Tested ($n = 6981$) *N* (%)	Not tested ($n = 1048$) *N* (%)	aOR[b] (95% CI)	*p*
Age (per 10 years)	44[c] (35, 52)	40[c] (32, 48)	1.20 (1.04, 1.39)	.02	52 (44–58)	45 (38–53)	1.49 (1.40, 1.58)	<.001
Gender								
Male	504 (80)	130 (20)	ref	-	4836 (87)	737 (13)	ref	-
Female	207 (76)	66 (24)	0.84 (0.60, 1.18)	.31	2135 (87)	308 (13)	1.03 (0.89, 1.19)	.66
Health service type								
Tertiary	190 (78)	53 (22)	ref	-	4218 (91)	428 (9)	ref	-
Primary	122 (73)	46 (27)	1.19 (0.83, 1.72)	.35	2763 (82)	620 (18)	0.54 (0.47, 0.62)	<.001
Health service location								
Major city	362 (80)	89 (20)	ref	-	4318 (87)	657 (13)	ref	-
Regional or remote	352 (77)	107 (23)	0.77 (0.56, 1.07)	.12	2663 (87)	391 (13)	0.98 (0.85, 1.22)	.76
IDU ± OAT								
None	331 (82)	71 (18)	ref	-	4410 (90)	467 (10)	ref	-
OAT	76 (78)	21 (22)	0.74 (0.43, 1.29)	.29	708 (85)	121 (15)	0.61 (0.49, 0.76)	<.001
IDU + OAT	66 (84)	13 (16)	1.24 (0.64, 2.39)	.53	444 (77)	136 (23)	0.44 (0.35, 0.54)	<.001
IDU	143 (75)	47 (25)	0.72 (0.47, 1.10)	.12	506 (75)	167 (25)	0.41 (0.33, 0.50)	<.001
Unknown	98 (69)	44 (31)	0.47 (0.30, 0.74)	<.001	913 (85)	157 (15)	0.52 (0.42, 0.63)	<.001
HIV infection								
No	687 (78)	192 (22)	ref	-	6674 (87)	1030 (13)	ref	-
Yes	27 (87)	4 (13)	1.62 (0.56, 4.74)	.38	307 (94)	18 (6)	2.04 (1.26, 3.32)	<.01
Cirrhosis								
No	588 (77)	173 (23)	ref	-	5246 (86)	877 (14)	ref	-
Yes	126 (85)	23 (15)	1.55 (0.96, 2.51)	.07	1735 (91)	171 (9)	1.62 (1.36, 1.93)	<.001
Prior HCV treatment								
No	663 (78)	186 (22)	ref	-	5895 (86)	973 (14)	ref	-
Interferon-containing	36 (82)	8 (18)	0.99 (0.44, 2.19)	.97	988 (95)	55 (5)	2.38 (1.79, 3.16)	<.001
DAA	15 (88)	2 (12)	2.91 (0.65, 13.02)	.16	98 (83)	20 (17)	1.30 (0.79, 2.15)	.30

Abbreviations: IDU, injecting drug use; OAT, opioid agonist therapy.

[a]Total population.

[b]Adjusted for year of treatment commencement.

[c]Median age and IQR.

cirrhosis) or 'difficult to reach' (i.e. people who inject drugs, people living in regional and remote settings).[18,19] Importantly, a more diverse population commenced DAA therapy over time, with increasing proportions of Aboriginal people, young people and people who inject drugs, supporting broad access to HCV care and treatment.

Loss to follow-up contributed substantially to lower SVR in the total as compared with the effectiveness population. Among Aboriginal people, return for follow-up was positively associated with older age and negatively associated with unknown current injecting drug use status; return for follow-up was not associated with other individual or structural factors. The negative association with unknown injecting status may reflect lower engagement with health services resulting in incomplete data or stigma associated with injecting drug use and a reluctance to disclose to health services.[21,22] Shame and stigma are commonly cited barriers for Aboriginal people in accessing healthcare, including HCV care and harm reduction services.[16,23–25] Expansion of culturally safe harm reduction and HCV prevention strategies for Aboriginal people who inject drugs, including tailored needle and syringe programmes, opioid agonist therapy and HCV education, may assist in preventing primary infection and reinfection.[11]

Most Aboriginal people in the REACH-C cohort received DAA treatment in primary care settings. Encouragingly, return for follow-up and treatment outcomes were similar for Aboriginal people treated in primary and tertiary settings and in major cities and

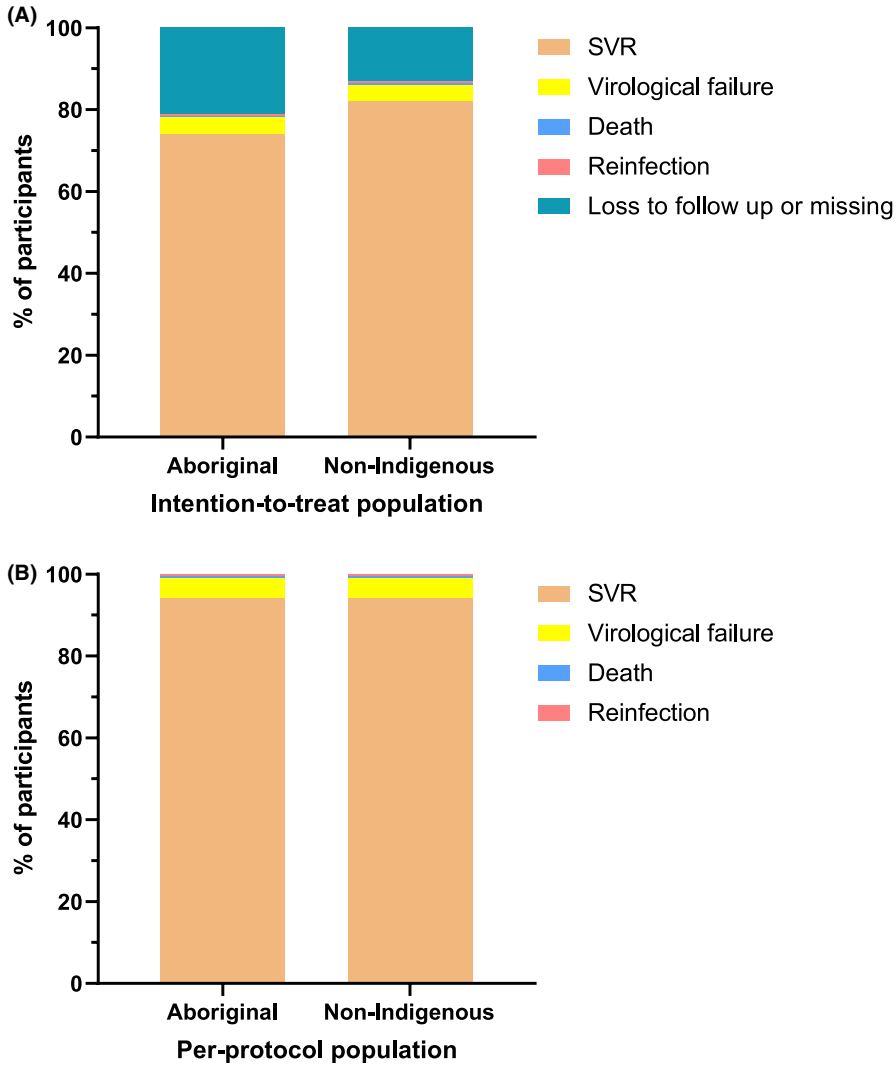

FIGURE 3 Treatment outcome in the total (A) and effectiveness (B) populations, stratified by Aboriginal identification. Outcomes are summarized for the first treatment course documented in REACH-C (retreatment outcomes are not included).

regional centres. Community-based health services that provide accessible, holistic, culturally safe care for Aboriginal people may promote health seeking behaviours.[23–27] Tailored models of care and treatment delivery to best engage and support Aboriginal people living with and at risk of HCV infection may enhance retention in care.[25] This is particularly important for people with advanced liver disease and comorbidities that require ongoing management following SVR. A multifaceted strategy involving integration of HCV treatment, education, harm reduction and social support within services frequented by Aboriginal people, including people who inject drugs, may help achieve parity in health outcomes.[27,28]

This analysis had limitations. Aboriginal identification was not recorded for all people in REACH-C. However, the enrolment characteristics of those for whom Aboriginal identification was unknown were similar to the included non-Indigenous population (data not shown). The number of people for whom Aboriginal identification was not recorded highlighted the need for robust future data collection to recognize the valuable contribution of Aboriginal people to research. Additional variables which may have had an impact on outcomes were not collected, including housing and financial security, mental health and alcohol consumption. Relative differences in size of the study populations may have impacted the power to assess factors associated with SVR and return for follow-up among Aboriginal people, particularly injecting drug use. However, consecutive sampling of a large and diverse population across a variety of health services has provided important insight into the real-world DAA outcomes among Aboriginal peoples and detailed information regarding those accessing care.

As with other Indigenous and First Nations peoples, Aboriginal people carry a substantial proportion of the HCV burden in Australia. To achieve equity in DAA uptake and outcomes, integrated models of care that are community-led and culturally safe should be evaluated to optimize cure and facilitate ongoing healthcare engagement among Aboriginal peoples living with and at risk of HCV. Ensuring equitable treatment access and outcomes among Aboriginal and other Indigenous peoples is essential to achieving both individual and population-level benefits and moving towards regional and global HCV elimination. Viral hepatitis elimination strategies must focus on and involve Indigenous and First Nations peoples in decision-making, policy development, care delivery and research.

TABLE 3 Logistic regression analysis of factors associated with achieving SVR in the Aboriginal ($n = 709$) and non-Indigenous ($n = 6969$) populations[a]

	Aboriginal				Non-Indigenous			
	SVR ($n = 673$) *N* (%)	No SVR ($n = 36$) *N* (%)	aOR[b] (95% CI)	*p*	SVR ($n = 6649$) *N* (%)	No SVR ($n = 320$) *N* (%)	aOR[b] (95% CI)	*p*
Age (per 10 years)	44[c] (35, 52)	44[c] (35, 51)	0.75 (0.54, 1.06)	0.79	52 (44, 58)	54 (45, 59)	0.84 (0.75, 0.94)	<0.01
Gender								
Male	477 (95)	24 (5)	ref	-	4564 (95)	262 (5)	ref	-
Female	193 (94)	12 (6)	0.83 (0.41, 1.70)	0.62	2075 (97)	58 (3)	2.05 (1.53, 2.73)	<0.01
Health service type								
Tertiary	181 (96)	8 (4)	ref	-	4004 (95)	209 (5)	ref	-
Primary	492 (95)	28 (5)	0.88 (0.39, 2.01)	0.77	2645 (96)	111 (4)	1.29 (1.01, 1.63)	0.04
Health service location								
Major city	339 (94)	21 (6)	ref	-	4146 (96)	164 (4)	ref	-
Regional or remote	334 (96)	15 (4)	1.32 (0.66, 2.61)	0.43	2503 (94)	156 (6)	0.63 (0.50, 0.79)	<0.001
IDU ± OAT								
None	311 (94)	19 (6)	ref	-	4178 (95)	230 (5)	ref	-
OAT	74 (97)	2 (3)	2.26 (0.52, 9.92)	0.28	688 (97)	20 (3)	1.89 (1.19, 3.01)	0.01
IDU + OAT	63 (97)	2 (3)	1.92 (0.44, 8.47)	0.39	419 (95)	23 (5)	1.02 (0.65, 1.59)	0.94
IDU	132 (94)	8 (6)	1.01 (0.43, 2.36)	0.99	472 (95)	27 (5)	0.98 (0.65, 1.48)	0.92
Unknown	93 (95)	5 (5)	1.14 (0.41, 3.13)	0.80	892 (2)	20 (2)	2.43 (1.53, 3.87)	<0.001
HIV								
No	646 (95)	36 (5)	-	-	6351 (95)	312 (5)	ref	-
Yes	27 (100)	0 (0)	-	-	298 (97)	8 (3)	1.78 (0.87, 3.64)	0.11
Cirrhosis								
No	560 (96)	24 (4)	ref	-	5049 (96)	189 (4)	ref	-
Yes	113 (90)	12 (10)	0.39 (0.19, 0.80)	0.01	1600 (92)	131 (8)	0.45 (0.36, 0.57)	<0.001
Genotype								
1	319 (96)	12 (4)	ref	-	3671 (97)	109 (3)	ref	-
Non-1	354 (94)	24 (6)	0.58 (0.28, 1.18)	0.14	2978 (93)	211 (7)	0.42 (0.33, 0.53)	<0.001
Previous HCV treatment								
No	630 (96)	29 (4)	ref	-	5628 (96)	257 (4)	ref	-
Interferon-containing	33 (92)	3 (8)	0.41 (0.12, 1.49)	0.18	932 (94)	55 (6)	0.75 (0.56, 1.02)	0.07
DAA	10 (71)	4 (29)	0.14 (0.04, 0.49)	<0.01	89 (92)	8 (8)	0.54 (0.26, 1.14)	0.11

Abbreviations: IDU, injecting drug use; OAT, opioid agonist therapy.

[a]Effectiveness population.

[b]Adjusted for year of treatment commencement.

[c]Median (IQR).

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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