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Research Paper

Hepatitis C antibody testing among opioid agonist therapy recipients, Victoria, Australia, 2012 to 2020

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ABSTRACT

Background: The high burden of hepatitis C among people who inject drugs in Australia underscores the need to increase testing within this population. Understanding hepatitis C screening uptake in primary care settings is therefore critical to the development of effective and targeted strategies to improve hepatitis C testing for people who inject drugs. Primary care services that prescribe OAT are well-positioned to provide hepatitis C testing among a priority population at-risk of hepatitis C.

Methods: This study used linked data from 5,429 individuals attending ten clinical services participating in the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance (ACCESS) who received their first recorded OAT prescription between 1st January 2012 and 31st December 2019. We estimated the proportion of OAT recipients who received a hepatitis C antibody test within 12 months of their first recorded OAT prescription, and the proportion of individuals tested who received a positive hepatitis C antibody test.

Results: Approximately one in five individuals (17%) received a hepatitis C antibody test in the 12 months following their first recorded OAT prescription. Over half of individuals tested (56%) received a positive hepatitis C antibody test result. Hepatitis C antibody testing was higher among individuals who attended 5–8 (aOR:2.98; 95%CI:2.41–3.69) and 9+ (aOR:6.17; 95%CI:5.13–7.43) clinical consultations, were women (aOR:1.20; 95%CI:1.08–1.34) and whose first recorded OAT prescription occurred in 2017 vs. 2012 (aOR:1.39; 95%CI:1.06–1.84). Hepatitis C antibody testing was lower among individuals prescribed methadone (aOR:0.81; 95%CI:0.73–0.91), and individuals aged 60+ years vs. 18-29 years (aOR:0.67; 95%CI:0.48–0.94).

Conclusion: Despite high positivity rates, hepatitis C antibody testing among individuals prescribed OAT remains low. There are opportunities for increased testing among populations exhibiting greater proportions of missed testing opportunities. Integrating routine hepatitis C screening in OAT settings will likely increase case-finding and contribute to Australia's hepatitis C elimination targets.

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Introduction

In 2019, an estimated 58 million people were chronically infected with hepatitis C globally (World Health Organization, 2021). The burden of hepatitis C among people who inject drugs is considerable, with an estimated 39% of the 15.6 million people who inject drugs currently infected with hepatitis C, corresponding to eight million people worldwide (Degenhardt et al., 2017). In high income countries, the burden of hepatitis C among people who inject drugs is even more pronounced. In Australia, hepatitis C antibody prevalence was estimated as 39% (Heard et al., 2021) among the 68,000–118,00 people who inject drugs in 2020 (Heard et al., 2019; Kwon et al., 2019). Further, injecting drug use was estimated to be the cause of 58% of new hepatitis C infections 2018 in Australia (Trickey et al., 2019). Ensuring that hepatitis C testing and treatment is available for people who inject drugs is therefore critical for achieving hepatitis C elimination.

In March 2016, the Australian Government subsidised unrestricted access to direct acting antivirals (DAAs) to all people living with hepatitis C, including through prescribing by non-specialists in primary care settings (Australian Government Department of Health, 2015). This widespread access to DAAs, which have cure rates of over 95%, has provided a mechanism for Australia to achieve hepatitis C elimination targets and inform global efforts to eliminate hepatitis C as a public health threat by the year 2030 (Falade-Nwulia et al., 2017; World Health Organization, 2017). However, recent mathematical modelling by Scott et al. (2020) indicates that Australia's success in eliminating hepatitis C is contingent on increasing the identification of individuals living with hepatitis C through widespread testing, particularly among people who are either currently injecting or have previously injected drugs (Scott et al., 2020).

Historically, hepatitis C care pathways in Australia were primarily based in tertiary and specialist settings (Dore, 2021). The introduction of DAA treatment presented a key opportunity to increase hepatitis C testing and treatment coverage by increasing prescribing authority in non-specialist primary care settings (Dore, 2021; Valerio et al., 2020). Within a hepatitis C treatment-as-prevention framework, primary care settings that provide services tailored to people who inject drugs have the potential to increase testing and treatment coverage among people at-risk of acquiring and transmitting hepatitis C (Hellard et al., 2016). Primary care services that prescribe opioid agonist therapy (OAT) represent one such setting, where established trust between clients and their prescribing clinicians, accessibility to hepatitis C care, and regular OAT prescribing visits can enhance engagement and retention in the hepatitis C cascade of care (Grebely et al., 2021). Further, the provision of hepatitis C care in OAT settings is highly acceptable among clients of these services (Grebely et al., 2016; Treloar et al., 2013).

However, despite the benefits of providing hepatitis C care pathways in OAT settings, little is known about the standard provision of hepatitis C testing in the absence of targeted interventions and the gaps in clinical service delivery. Understanding testing uptake in these settings among people prescribed OAT will help to identify these critical gaps and improve access to hepatitis C testing and treatment among a priority population.

The current study used electronic medical record data from a sentinel surveillance network of ten primary care services in Victoria, Australia to estimate (i) the proportion of individuals who received a hepatitis C antibody test within 12 months of their first recorded OAT prescription, and (ii) the proportion of individuals tested who received a positive hepatitis C antibody test result.

Methods

Data source and study population

The Australian Collaboration for Coordinated Enhanced Sentinel Surveillance of BBVs and STIs (ACCESS, accessproject.org.au) is a sentinel surveillance system for the monitoring of testing, diagnosis and management for blood borne viruses and sexually transmissible infections among priority populations. A comprehensive description of the ACCESS surveillance system has been published elsewhere (Nguyen et al., 2020). Briefly, de-identified electronic medical record data, (including patient demographics, OAT prescribing and hepatitis C pathology results), are extracted from participating sites using specialised health data extraction software known as GRHANITE^{TM}, and a non-identifying unique hash code is created from patient information to allow linkage of patient records between and within participating sites (Boyle, 2015). Ethical approval, including waiver of consent, for the ACCESS project was granted by the human research ethics committee of Alfred Hospital in Melbourne (248/17).

In this study, we used electronic medical record data from a network of ten primary care sites participating in the ACCESS sentinel surveillance network in Victoria, Australia. These sites were selected on the basis of their provision of comprehensive and specialised health services for people who inject drugs, including needle and syringe dispensing, onsite hepatitis C testing and treatment and OAT prescribing, alongside general primary care. The sample included individuals who had evidence of an electronic prescription for OAT, and whose first recorded OAT prescription fell between 1st January, 2012, and 31st December, 2019. Hepatitis C pathology data was included until 31st December, 2020, to ensure every individual had 12 months of follow-up subsequent to their first recorded OAT prescription. Individuals who had a positive hepatitis C test (antibody or RNA) recorded in the 12 months (365 days) preceding their observation start date at the setting where they were prescribed OAT were excluded from the analysis to ensure that individuals had not recently received a test which indicated that they were hepatitis C antibody positive and eliminated the need for further hepatitis C antibody testing. Study data included individuals' age and sex, clinical consultation records, OAT prescriptions and hepatitis C pathology results.

Individual observation period

For each individual, the observation period start date was defined as one month (31 days) before the date of the first recorded OAT prescription in the ACCESS network. The decision to include the month preceding the first recorded OAT prescription was to ensure inclusion of the initial patient assessment appointment. For each individual, the observation period end date was defined as 12 months (365 days) following the date of their first recorded OAT prescription.

Outcome measures

The primary outcome of "hepatitis C antibody test within 12 months" was defined as a binary variable. Individuals were assigned "yes" where a recorded hepatitis C antibody test was conducted within 12 months (365 days) of their first recorded OAT prescription. Individuals who did not receive a hepatitis C antibody test during their observed period were assigned 'no'. The decision to define the primary outcome as "hepatitis C antibody test within 12 months" was guided by Australian OAT treatment guidelines, which recommend screening for blood borne viruses (HIV, hepatitis B, hepatitis C) be offered following the induction

and stabilisation periods, a process which varies between individuals and may take several months (Australian Government Department of Health, 2014). The sensitivity of the observation period was assessed by comparing a 13-month (396 days) and 14-month (426 days) cut-off following the date of the first recorded OAT prescription.

The secondary binary outcome of 'hepatitis C antibody positive' was inclusive of the subset of individuals who received a hepatitis C antibody test within 12 months of their first recorded OAT prescription. Individuals who tested hepatitis C antibody positive within 12 months of their first recorded OAT prescription were assigned "yes". Individuals were assigned 'no' when they did not receive a positive hepatitis C antibody test within 12 months of their first recorded OAT prescription.

Covariates

Covariates available within the ACCESS sentinel surveillance network were limited to those which are extracted from individual's electronic medical records. The covariates selected for analysis were chosen as they were known to be empirically associated with hepatitis C antibody testing, and were deemed to have clinical relevance by study authors (Burnet Institute and Kirby Institute, 2021; Heard et al., 2021).

Demographic covariates included age categories (≤29,30–39,40–49,50–59,≥60 years) and sex (male, female). Clinical covariates included the number of clinical consultations within the observation period (1–4,5–8,≥9), the year of the first recorded OAT prescription and the type of OAT prescribed in the 12 months following initiation (methadone only, buprenorphine only, both). Individuals who were prescribed a regimen of buprenorphine and naloxone were categorised in the Buprenorphine group.

Analysis

Summary statistics of clinical characteristics, demographics and consultation patterns were presented for each covariate. The total number and proportion of individuals who (i) received a hepatitis C antibody test within 12 months of their first recorded OAT prescription and (ii) tested hepatitis C antibody positive were described overall and by covariates.

Adjusted and unadjusted logistic regression analyses were used to estimate associations between covariates and the two binary outcomes. Results were reported as odds ratios (OR) or adjusted odds ratios (aOR), along with 95% confidence intervals (95% CI). A two-tailed p value of 0.05 was set as the significance threshold.

Analyses were performed using Stata version 15.1 for Windows (StataCorp, Texas USA).

Results

Study sample

A total of 73,042 individuals attended at least one clinical consultation at an included primary health service within the ACCESS network between 1st January, 2012 and 31st December, 2019. Of these, 12,026 (16%) individuals received a prescription for OAT. Among individuals who received an OAT prescription within the study period, 54% (6,447/12,026) received their first OAT prescription before 1st January, 2012 and were excluded from the analysis. Among the 5,579 individuals who received their first recorded OAT prescription between 1st January, 2012 and 31st December 2019, 3% (150/5,579) had a positive hepatitis C antibody or hepatitis C RNA test within the ACCESS network in the 12 months preceding their entrance date into the study, and were excluded from the analysis. A total of 5,429 individuals were included in the final analysis (Fig. 1.).

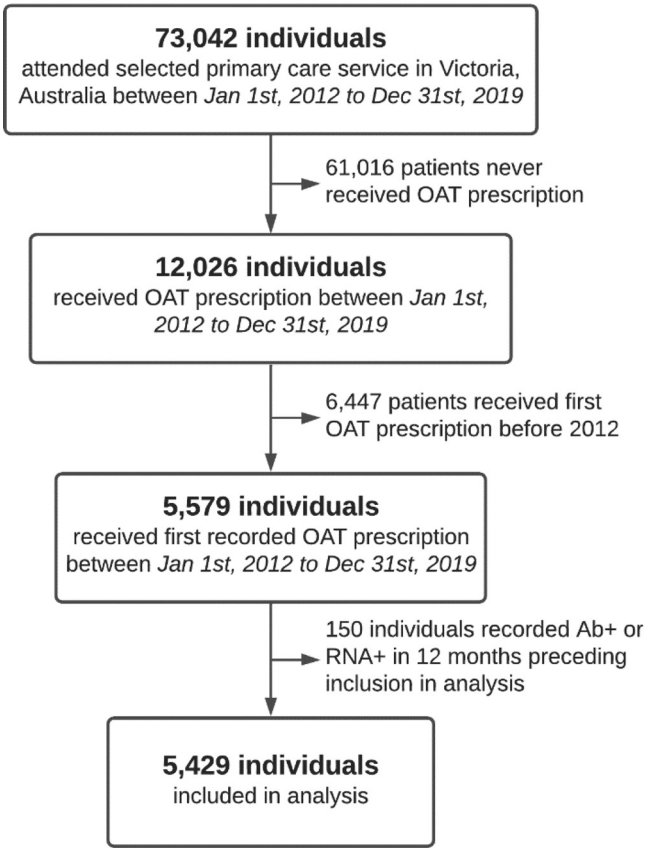

Fig. 1. Study sample selection process.

Among the 5,429 individuals included in the sample, a combined 51,574 clinical consultations were attended in the 12 months following every individual's first recorded OAT prescription in the ACCESS network. There was a median of nine clinical consultations (IQR = 3–13) in the year following their first recorded OAT prescription in the ACCESS network per individual. 629 (12%) individuals attended one clinical consultation and 1,628 (30%) individuals attended between one and four clinical consultations. Over two-thirds of individuals included in the sample were male (68%) (Table 1). The median age at the first recorded OAT prescription in the ACCESS network was 42 years (IQR = 36–49).

Hepatitis C antibody testing

Of the 5,429 individuals included in the sample, 940 (17%) had a hepatitis C antibody test in the 12 months following their first recorded OAT prescription. Among the 940 individuals who received a hepatitis C antibody test in the 12 months following their first recorded OAT prescription, 39 (4%) had received a negative hepatitis C antibody test in the 12 months preceding their observation period start date. Assessment of the sensitivity of the observation period showed similar proportions of individuals had a hepatitis C antibody test when using 13 and 14 months as a cut-off (18% respectively).

In the adjusted regression model (Table 2.), the odds of receiving a hepatitis C antibody test within 12 months of the first recorded OAT prescription was higher among women (aOR 1.20, 95% CI 1.08–1.34) and individuals who attended 5–8 clinical consultations (aOR 2.98, 95% CI 2.41–3.69) or 9 or more clinical consultations (aOR 6.17, 95% CI 5.13–7.43). Hepatitis C antibody testing was lower among methadone recipients compared to buprenorphine recipients (aOR 0.81, 95% CI 0.73–0.91), and among individuals aged ≥60 years compared to individuals aged 18-29 (aOR 0.67, 95% CI 0.48–0.94). The adjusted model

Table 1
Sociodemographic and clinical characteristics at first recorded OAT prescription, Victoria, Australia, 2012–2019. (N = 5,429).

Characteristics	Individuals, n (%)
Sex	
Male	3,684 (67.9)
Female	1,718 (31.6)
Other	27 (0.5)
Age group (years)	
18–29	365 (6.7)
30–39	1,648 (30.4)
40–49	2,069 (38.1)
50–59	1,006 (18.5)
60+	334 (6.2)
Missing	7 (0.1)
Number of clinical consults in 12 months following first recorded OAT prescription	
1–4 consults	1,628 (30.0)
5–9 consults	1,064 (19.6)
10+ consults	2,737 (50.4)
OAT prescribed within 12 months of first recorded prescription	
Buprenorphine	2,511 (46.3)
Methadone	2,333 (43.0)
Both	585 (10.8)
Year of first recorded OAT script	
2012	699 (12.9)
2013	598 (11.0)
2014	663 (12.2)
2015	663 (12.2)
2016	611 (11.3)
2017	958 (17.7)
2018	701 (12.9)
2019	536 (9.9)

showed an increase in the probability of individuals receiving a hepatitis C antibody test within 12 months of their first recorded OAT prescription in 2017 compared with 2012 (aOR 1.39, 95% CI 1.06–1.84). This finding did not continue into 2018 or 2019.

Hepatitis C antibody test results

Hepatitis C antibody test results were available for 99% (935/940) of individuals who had a hepatitis C antibody test within 12 months of their first recorded OAT prescription, with five test results recorded as indeterminate. Among the 935 individuals for whom hepatitis C antibody test results were available, 56% (524/935) of the individuals tested were hepatitis C antibody positive (Table 3).

In the adjusted regression model, the probability of individuals testing hepatitis C antibody positive was higher among individuals aged 40–49 years (aOR 3.02, 95% CI 1,76–5.2), 50–59 years (aOR 5.68, 95% CI 3.19–10.11) and ≥60 years (aOR 5.04, 95% CI 2.56–9.92) compared to individuals aged 18-29. The adjusted regression model also showed an increase in the probability of individuals testing hepatitis C antibody positive among individuals prescribed only methadone (aOR 2.29, 95% CI 1.82–2.89) and individuals prescribed both methadone and buprenorphine (aOR 1.90, 95% CI 1.39–2.60) compared to buprenorphine (Table 3).

Discussion

Across a sentinel surveillance network of 10 primary care clinics providing specialist services to people who inject drugs in Victoria, we found that approximately one in five clients whose first recorded prescription for OAT was between 2012 and 2019 received a hepatitis C antibody test within 12 months of their first recorded OAT prescription. Of the individuals who received a hepatitis C antibody test, over half tested positive. The low level of hepatitis C testing, combined with a high proportion who tested positive across the eight years of observation suggests considerable undertesting of hepatitis C in a priority group, that persisted throughout the study period.

Following an initial increase in hepatitis C antibody testing in 2017 following the introduction of DAAs, we found minimal evidence of a sustained increase on hepatitis C antibody testing in primary care OAT settings. These findings are consistent with other Australian data, which show declines in hepatitis C testing in primary care settings after the

Table 2
Factors associated with receiving hepatitis C antibody test within 12 months of first recorded OAT script (N=5,395)*†.

Factor	Individuals	Hepatitis C antibody tested, n (%)	OR	95% CI	aOR	(95% CI)
Total	5,395	929 (17.2)	-	-	-	-
Sex						
Male	3,682	598 (16.2)	ref.		ref.	
Female	1,713	336 (19.6)	**1.26**	**(1.09–1.46)**	**1.20**	**(1.08–1.34)**
Age group						
18–29	362	70 (19.3)	ref.		ref.	
30–39	1,639	322 (19.7)	1.02	(0.76–1.36)	1.15	(0.86–1.53)
40–49	2,062	330 (16.0)	0.79	(0.60–1.06)	0.80	(0.60–1.07)
50–59	1,001	169 (16.9)	0.85	(0.62–1.15)	0.76	(0.56–1.02)
60+	331	43 (13.0)	**0.62**	**(0.41–0.94)**	**0.67**	**(0.48–0.94)**
No. clinical consults within 12 months of first recorded OAT prescription						
1–4	1,617	77 (4.8)	ref.		ref.	
5–8	1,057	150 (14.2)	**3.31**	**(2.48–4.41)**	**2.98**	**(2.41–3.69)**
9+	2,721	707 (26.0)	**7.02**	**(5.50–8.96)**	**6.17**	**(5.13–7.43)**
OAT prescribed within 12 months of first recorded prescription						
Buprenorphine	2,494	433 (17.0)	ref.		ref.	
Methadone	2,323	396 (16.3)	0.91	(0.78–1.06))	**0.81**	**(0.73–0.91)**
Both	578	138 (22.7)	1.23	(1.0–1.53)	0.98	(0.83–1.15)
Year of first recorded OAT script						
2012	698	101 (14.5)	ref.		ref.	
2013	594	110 (18.5)	1.34	(1.00–1.81)	1.20	(0.88–1.64)
2014	657	97 (14.8)	1.02	(0.76–1.38)	0.93	(0.68–1.28)
2015	658	97 (14.7)	1.02	(0.76–1.38)	0.91	(0.66–1.24)
2016	608	111 (18.3)	1.32	(0.98–1.77)	1.12	(0.82–1.52)
2017	955	198 (20.7)	**1.55**	**(1.19–2.01)**	**1.39**	**(1.06–1.84)**
2018	693	124 (17.9)	1.29	(0.97–1.72)	1.17	(0.86–1.58)
2019	532	96 (18.0)	1.30	(0.96–1.77)	1.18	(0.85–1.63)

* Individuals with complete data included in the regression model; n=34 Individuals with incomplete data excluded.
† Two out of ten sites only contributed data until 2019.aOR: adjusted odds ratio; CI: confidence interval; OR: odds ratio; ref.: reference category.

Table 3
Factors associated with testing hepatitis C antibody positive among people accessing OAT who received a test within 12 months of index OAT script (N=929).

Factor	Individuals	Hepatitis C antibody positive, n (%)	OR	95% CI	aOR	95% CI
Total	929[‡]	520 (56.0)				
Sex						
Male	595	336 (56.5)	ref.		ref.	
Female	334	184 (55.1)	0.95	(0.72–1.24)	1.09	(0.88–1.35)
Age group						
18–29	69	26 (37.7)	ref.		ref.	
30–39	321	126 (39.3)	1.07	(0.63–1.83)	1.10	(0.64–1.90)
40–49	330	212 (64.2)	**2.97**	**(1.74–5.08)**	**3.02**	**(1.76–5.20)**
50–59	167	126 (75.5)	**5.08**	**(2.79–9.27)**	**5.68**	**(3.19–10.11)**
60+	42	30 (71.4)	**4.13**	**(1.81–9.46)**	**5.04**	**(2.56–9.92)**
OAT prescribed within 12 months of first recorded prescription						
Buprenorphine	424	187 (44.1)	ref.		ref.	
Methadone	375	257 (68.5)	**2.76**	**(2.06–3.69)**	**2.29**	**(1.82–2.89)**
Both	130	76 (58.5)	**1.78**	**(1.20–2.66)**	**1.90**	**(1.39–2.60)**
Year of first recorded OAT script						
2012	101	56 (55.5)	ref.		ref.	
2013	110	66 (60.0)	1.21	(0.70–2.08)	1.52	(0.84–2.04)
2014	96	51 (53.1)	0.91	(0.52–1.60)	0.85	(0.46–1.55)
2015	97	47 (48.5)	0.76	(0.43–1.32)	0.88	(0.48–1.62)
2016	109	68 (62.4)	1.33	(0.77–2.31)	1.31	(0.71–2.40)
2017	197	125 (63.5)	1.40	(0.86–2.27)	1.53	(0.89–2.9562
2018	124	62 (50.0)	0.80	(0.47–1.36)	0.94	(0.53–1.67)
2019	95	45 (47.4)	0.72	(0.41–1.27)	0.77	(0.41–1.43)

Abbreviations: aOR: adjusted odds ratio; CI: confidence interval; OR: odds ratio; ref.: reference category.
[†] Two out of ten sites only contributed data until 2019.

introduction of DAAs, and even greater declines during the COVID-19 pandemic (Burnet Institute and Kirby Institute, 2021; WHO Collaborating Centre for Viral Hepatitis, 2020). Our findings further support other research that found DAA treatment availability alone is not a sufficient driver to increase and sustain hepatitis C testing at the levels required to achieve WHO 2030 elimination targets (Doyle et al., 2019). Efforts to increase the identification of Australians living with hepatitis C infection in primary care settings must therefore be enhanced, especially in services with high numbers of OAT prescribing.

In the adjusted analysis, multiple factors associated with the odds of receiving a hepatitis C antibody test within 12 months of the first recorded OAT prescription were identified. We found that individuals prescribed methadone were less likely to receive a hepatitis C antibody test than buprenorphine recipients, despite also finding those on methadone were more likely to receive a positive test result. This finding suggests undertesting among methadone recipients; however there are likely unmeasured differences between individuals prescribed methadone and buprenorphine which influence hepatitis C testing, such as living status, incarceration history and peer and social supports (Arum et al., 2021; Grebely et al., 2015; Stone et al., 2018). Nonetheless, further efforts are required to increase hepatitis C screening in this group.

A further notable finding was the strong, positive association between the number of clinical consultations attended by individuals and their uptake of hepatitis C antibody testing. Our data indicates that among the one-third of individuals who attend fewer than five clinical consultations in the year following their OAT prescription in the ACCESS network, less than 5% received a hepatitis C antibody test. This finding reflects increased hepatitis C testing opportunities through retention in clinical care, and supports previous research identifying the importance of developing person-centred, respectful and trustful patient-GP relationships in hepatitis C care (Alavi et al., 2013; Swan et al., 2010; Treloar et al., 2014). Additionally, the significant number of individuals who attend a limited number of clinical consultations highlights the importance of prioritising hepatitis C testing as early as possible among people who are initiating OAT.

Despite Victorian OAT prescribing guidelines recommending clinicians provide harm reduction information to reduce the transmission of blood borne viruses, there are currently no recommendations to prioritise hepatitis C testing for people prescribed OAT (Department of Health and Human Services, 2016). Further, national Australian guidelines for OAT prescribing were last updated in 2014, and therefore do not account for the availability of DAAs and still recommend hepatitis C care be provided in specialist settings (Australian Government Department of Health, 2014). Despite government policies and subsidies facilitating widespread access to DAAs in primary care settings to all people living with hepatitis C, our findings indicate ongoing barriers to the integration of addiction and hepatitis C care in Victorian primary care settings. This finding is supported by recent studies exploring barriers to the provision of hepatitis C care among OAT prescribers, which have identified multiple barriers at both the practitioner and health-system level, such as a lack of awareness of hepatitis C testing and treatment guidelines among OAT prescribers, limited support from clinic managers to engage in hepatitis C care with their patients and barriers to accessing onsite liver disease staging equipment (Marshall et al., 2020). To achieve hepatitis C elimination targets in Australia, it is imperative that those at risk of infection be tested and provided opportunities to treatment and cure. Our findings indicate a need to prioritise the integration of hepatitis C care with drug treatment programs, including updating Victorian OAT guidelines to recommend testing as part of treatment initiation.

This study had several limitations. First, the study was unable to include records of hepatitis C antibody tests which were conducted outside of the ACCESS network. Consequently, individuals may have disclosed previous testing to their clinician and therefore not required further antibody testing, which may have led to an underestimation in the proportion of individuals who received a hepatitis C antibody test. Second, this study used the first recorded OAT prescription in the ACCESS system as a proxy for OAT treatment initiation. Individuals who initiated OAT at a clinic not in the ACCESS system and changed to an ACCESS prescriber may therefore have received a positive hepatitis C antibody test with a previous OAT prescriber, and not required further antibody testing. Third, the motivation of the patient or clinicians to test for hepatitis C antibody testing (which may or may not be recorded in a patient management system) are not extracted by the process that ACCESS uses. Hence it is not possible to determine why an individual was offered or not offered testing and if a clinical criterion was used. Fourth, the decision to use a 12 month cut-off to assess hepatitis C antibody testing may have underestimated the proportion of OAT recipi-

ents who received a hepatitis C antibody test subsequent to their first recorded OAT prescription. However, this was assessed by conducting a sensitivity analysis which used a 13-month and 14-month cut-off, which showed minimal change in the proportion of individuals who received a hepatitis C antibody test within 12 months of their first recorded OAT prescription. Fifth, hepatitis C testing which may be recorded separately from the patient management system of selected services would not be included in our analysis, such as rapid oral or point-of-care tests. This may have led to an underestimate of the proportion of individuals who received a hepatitis C antibody test. However, no hepatitis C antibody rapid tests are currently approved through the Therapeutic Goods Administration (TGA) for use in Australia, and we are confident rapid testing was not a part of routine care in any of the participating sites across the study period. Sixth, our analysis assumed that individuals with no previously recorded positive hepatitis C antibody or RNA test would receive an initial antibody test, in line with Australian clinical guidelines (Gastroenterological Society of Australia, 2020). It is therefore unknown whether individuals received a hepatitis C RNA test to screen for active infections. Last, injecting drug use is not comprehensively recorded in the patient management systems of participating ACCESS clinics. While we are not aware of any Australian data which estimates the proportion of people accessing OAT in Australia who have a history of injecting drug use, ACCESS sites included in the analysis were selected based on their provision of specialised services for people who inject drugs, and are therefore likely to have high caseloads of people who inject drugs.

Conclusion

This study found low rates of hepatitis C antibody testing among OAT recipients within 12 months of their first recorded prescription despite a high proportion of individuals who were tested recording a positive test result. The results of this study suggest multiple missed opportunities for hepatitis C antibody testing. The results of this study reinforce the need to ensure services have systems for ensuring individuals prescribed OAT have received or been offered a hepatitis C antibody test. Our findings highlight the need to increase efforts to increase hepatitis C testing in primary care settings with high levels of OAT prescribing if the WHO 2030 hepatitis C elimination targets are to be achieved in Australia.

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Ethics approval

Ethics approval for ACCESS was provided by the Human Research Ethics Committees at Alfred Hospital (248/17), Central Australia (CA-19-3355), Northern Territory Department of Health and Menzies School of Health (08/47), University of Tasmania (H0016971), Aboriginal Health and Medical Research Council (1099/15), ACON (2015/14), Victorian AIDS Council / Thorne Harbour Health (VAC REP 15/003), Western Australian Aboriginal Health Ethics Committee (885), and St. Vincent's Hospital (08/051). As our study analyses de-identified data collected under the auspices of public health surveillance, individual patient consent was not required. Individuals were able to opt-out of the surveillance system if they wish.

Declarations of Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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