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# Enhanced surveillance of notifications of hepatitis C to Queensland Health up to 19 years previously

TS Mekala Fernando, Stephen B Lambert, Robert Kemp, Linda A Selvey

## Abstract

In this study we aimed to assess the utility of following up historical hepatitis C notifications for enhanced surveillance and linking cases to further testing and treatment. Queensland hepatitis C notifications from June 2018, 2013, 2008 and 2003 who were not incarcerated at the time of testing were followed up. The most recent identified clinicians for cases were contacted by telephone. When no information about a current clinician was available, the case was contacted via a letter or text message. Clinicians and cases were encouraged to pursue further testing and treatment and provide information about management. Following notification but prior to this study's follow-up, a majority of cases (309/532; 58%) had a negative polymerase chain reaction (PCR) test or underwent treatment. Clinician follow-up was successful in 21% of eligible cases, with the proportion decreasing with increasing time since notification. In conclusion, contacting clinicians to link notified cases to further testing and treatment may increase testing and treatment in a small proportion of cases notified up to nine years post-notification. From our experience, the follow-up of notifications before this time is unlikely to result in improved outcomes.

Keywords: hepatitis C; notifiable diseases; follow-up; testing; treatment; enhanced surveillance

## Introduction

Australia is committed to a goal of eliminating hepatitis C (HCV) infection by 2030, consistent with the World Health Organization's target.<sup>1,2</sup> This is potentially achievable with the inclusion in the Pharmaceutical Benefits Scheme of highly effective direct antiviral agents (DAAs) against HCV in March 2016.<sup>3-5</sup> Between 2016 and the end of 2021, a total of 95,395 people had initiated DAA treatment in Australia, an estimated 43% of people living with hepatitis C.<sup>6</sup>

HCV testing typically involves testing blood for HCV antibodies, followed by a test for HCV ribonucleic acid (HCV-RNA) if antibody-positive. Prior to treatment, an assessment of the level of liver fibrosis is needed.<sup>7</sup> In Australia, HCV disproportionately affects people who have been incarcerated,<sup>8,9</sup> people who inject drugs

(PWID),<sup>10</sup> and Aboriginal and Torres Strait Islander peoples.<sup>11</sup> Testing and treatment for HCV is available in the community in a range of settings. However, even for general practitioners with large cohorts of cases with HCV infection, barriers remain for treating some PWID.<sup>12-15</sup>

Providing prompts and support to doctors and/or cases for follow-up testing and treatment for HCV-positive cases can result in increased RNA testing and/or treatment.<sup>16,17</sup> In this pilot study, we aimed to use data from Queensland Health's notifiable conditions system (NoCS) to follow up cases with a positive HCV antibody test and no subsequent negative HCV-RNA test who were notified up to 19 years previously, to assess the usefulness of this approach.

## Methods

Hepatitis C is a notifiable condition under the Queensland *Public Health Act 2005* and its subordinate regulation.<sup>18</sup> The laboratory provides the name of the clinician ordering the test and case contact details.

This project was undertaken from June to December 2022. The study participants were hepatitis C cases notified in June 2018, 2013, 2008 and 2003. Cases who had a subsequent negative HCV-RNA test, and those who were deceased or incarcerated at the time of notification, were excluded from further follow-up. Ethics approval for the evaluation of the project was obtained from the Darling Downs Human Research Ethics Committee (HREC/2022/QTDD/88797). A waiver of consent was granted by the Darling Downs Human Research Ethics Committee to use de-identified data gathered under the Queensland Public Health Act 2005 and its subordinate regulation for the purpose of the evaluation of the project.

Case-related data, including current medical practitioner and other related testing, were gathered from a range of sources. These included the Queensland Health NoCS database (subsequent notifications for other conditions including COVID-19); notifying clinicians; search results from laboratory data from public (Pathology Queensland) and the two largest private pathology laboratories (QML Pathology and Sullivan Nicolaides Pathology); and Queensland's death registry. Searches were conducted to assess whether further HCV testing had been undertaken subsequent to a case's most recent HCV notification, and if so the outcomes of those tests; to determine whether the case had died; and to find the most recent contact details for the case or for their most recent clinician. These searches were done for each case individually. The databases were not merged. Of the hepatitis C notifications in Queensland in 2018, 96% were notified from either Pathology Queensland, QML Pathology or Sullivan Nicolaides Pathology.

For each identified case, a team member first contacted by telephone the notifying or the most recently attended clinician's practice to request details. The most recently attended clinician's practice was the clinical practice that the patient attended for the most recent notification for any condition in the NoCS database or other Queensland Health information systems. If no subsequent records were found, attempts were made to contact the notifying clinician or the practice where the notifying clinician previously worked. If the case was still under their care, they were asked to recall the case and to complete HCV-RNA testing if required, and where appropriate offer treatment. They were also asked to provide information about the HCV testing and treatment status of the case.

If the case no longer attended the practice or the practice could not be contacted, a letter was sent to the most recently available case address via person-to-person registered post or a text message was sent to the most recent mobile telephone number. If the case did not respond or if the messages were not delivered the case was designated lost to follow-up.

At least four weeks after contacting either the case or their medical practice, we searched the pathology databases for evidence of treatment work up. This included HCV-RNA testing and/or a combination of liver function tests (aspartate aminotransferase, AST) and full blood count (platelet count) for calculating the AST to platelet ratio index (APRI) or Fibrosis-4 scores.

## Results

A total of 673 HCV cases were notified in the study period and 532 were not identified as deceased or having been incarcerated at the time of notification and therefore were eligible for follow-up. Of the 532 eligible cases, 293 (55%) had a subsequent HCV-RNA negative result identified on follow-up, and no further follow-up was undertaken with them. Of the remaining 239 cases we could not identify a

**Table 1: Summary outcomes of clinician/case follow-up of eligible notifications that were notified in the month of June during 2018, 2013, 2008 and 2003 and that did not have an identified subsequent negative RNA test**

Category	2018 n (%) <sup>a</sup>	2013 n (%) <sup>a</sup>	2008 n (%) <sup>a</sup>	2003 n (%) <sup>a</sup>	Total n (%) <sup>a</sup>
<b>Total cases eligible for follow-up</b>	<b>115</b>	<b>129</b>	<b>159</b>	<b>129</b>	<b>532</b>
<b>Eligible cases without a negative RNA test</b>	<b>41</b>	<b>47</b>	<b>78</b>	<b>73</b>	<b>239</b>
Eligible case – no RNA test available	15 (37)	13 (28)	35 (45)	46 (63)	109 (46)
Eligible case – positive RNA test only	26 (63)	34 (72)	43 (55)	27 (37)	130 (54)
No contact details available <sup>b</sup>	2 (5)	17 (36)	45 (58)	48 (66)	112 (47)
Moved interstate / overseas	6 (15)	3 (6)	14 (18)	3 (4)	26 (11)
Followed up with clinician / practice	13 (32)	14 (30)	10 (13)	13 (18)	50 (21)
Followed up with case	20 (49)	13 (28)	9 (12)	9 (12)	51 (21)

a Percentages shown are of eligible cases without a subsequent negative RNA test.

b The clinician and their medical practice were no longer contactable and no case contact details were available.

subsequent HCV-RNA test in 109, and 130 had a positive HCV-RNA test after their antibody test (Table 1).

Among the cases included in the study, 138 (58%) were lost to follow-up because either the clinician and their medical practice were no longer contactable and no case contact details were available (112, 47%), or the case had moved interstate or overseas (26, 11%). The proportion of cases that were lost to follow-up increased with increasing time since notification (Table 1). Overall, 21% of the treating clinicians of the 239 cases could be identified and contacted (Table 1). This was higher for cases notified in 2018 (32%) and 2013 (30%) than for cases notified in 2008 (13%) and 2003 (18%).

From the follow-up with clinicians, we ascertained that 19 cases had either been previously treated (16) or had previously declined treatment (3). Overall, 309 of the 532 eligible cases (58%) had either been treated or had spontaneously resolved their infection prior to the study. A response was received from 7/51 cases (14%) to whom letters or text messages were sent (Table 3). Pathology results after three months of follow-up were found for three cases (suggesting

that there was further testing in response to our follow-up). Data on follow-up treatment were not available.

## Discussion

In this study, the majority of the historically notified HCV cases had a subsequent negative HCV-RNA result already available on existing data systems, but time and effort was required to collate these data. Among those who were eligible for follow-up, the majority were lost to follow-up due to unavailability of recent contact details of the case and clinician. We were more successful contacting the clinician than contacting the case, with this possibly reflecting the fact that those contacted through a clinician were still engaged in care. Unsurprisingly, the success in follow-up decreased over the time since the initial notification, with very few opportunities to contact cases who were notified in 2003 and 2008 or their clinicians.

This study found that contacting clinicians was more successful than contacting cases directly as a follow-up method. A 2019 study in Vienna found that 36% of cases were able to be contacted through their physician via phone call and 58% of these were subsequently

**Table 2: Outcomes of follow-up of cases through their clinician/practice**

Category	2018 n (%)	2013 n (%)	2008 n (%)	2003 n (%)	Total n (%)
<b>Followed up with clinician / practice</b>	<b>13</b>	<b>14</b>	<b>10</b>	<b>13</b>	<b>50</b>
Further testing within three months of contact	2 (15)	0 (0)	1 (10)	0 (0)	3 (6)
Treated prior to contact	4 (31)	6 (43)	2 (20)	4 (31)	16 (32)
Patient declined treatment	0 (0)	2 (14)	1 (10)	0 (0)	3 (6)
Lost to follow-up <sup>a</sup>	7 (54)	6 (43)	6 (60)	9 (69)	28 (56)

a The clinician and their medical practice were no longer contactable and no case contact details were available.

**Table 3: Outcomes of attempts to follow up cases directly (via registered post or SMS) where no recent clinicians were identified**

Category	2018 n (%)	2013 n (%)	2008 n (%)	2003 n (%)	Total n (%)
<b>Attempted to follow up with case</b>	<b>20</b>	<b>13</b>	<b>9</b>	<b>9</b>	<b>51</b>
Case responded	2 (10)	2 (15)	2 (22)	1 (11)	7 (14)
Case did not respond, or letter not delivered	18 (90)	11 (85)	7 (78)	8 (89)	44 (86)

started on treatment.<sup>19</sup> Further, a study in Spain also showed that after the incorporation of an alert for physicians, the rate of RNA testing increased from 62% to 78% ( $p < 0.001$ ).<sup>16</sup> This suggests that contacting physicians can be a useful way to increase HCV testing and treatment. Our study shows that this becomes less useful when the initial test was some years previously.

We attempted to contact cases directly when no clinician details were available. We either contacted cases via letter or text message, depending on what details were available. Where phone numbers were available, we did not contact the cases by telephone because of capacity constraints. A recent qualitative study involving people who inject drugs and their representative organisations found a strong preference for telephone calls over text message if aiming to link notified cases to treatment.<sup>20</sup> A study that followed up cases of hepatitis C in New York city found that a combination of a letter and a phone call to cases was more effective in increasing testing and treatment uptake compared to a letter alone and that the combination of a letter,

phone call and text message did not increase the success rate compared to a letter and phone call without the text message.<sup>21</sup> These findings suggest that phone calls may be a more effective and acceptable way of contacting notified cases than text messages. This would be an important subject of further research.

One of the main strengths of the study was that the researchers were able to collate available testing data to find the most recently contacted clinicians and the cases' most recent contact details. Further, the high rates of coronavirus disease 2019 (COVID-19) testing in Queensland during the pandemic has provided more recent contact details, both for cases and for their current clinicians. A limitation of this study was that we excluded people who were incarcerated at the time of the study because of limited contact information. However, as we approach HCV elimination, they are an important already-marginalised group worthy of outreach. To conduct this enhanced surveillance, we only had access to pathology databases from the three largest pathology laboratories in the state. There are several other smaller pathology

laboratories that may have tested some of the cases and, ideally, future work would include testing results from these. We did not have the resources to contact the clinicians again after follow-up, so had to rely on laboratory evidence of further testing as a proxy.

## Conclusion

This study illustrates that it is possible to follow up HCV cases who were notified several years previously when recently contacted clinicians' details were available. This resulted in a small number of cases accessing further testing and treatment. Direct contact with clinicians was more effective than contacting cases directly. The follow-up yield dropped with increasing years since notification, but as we approach elimination and HCV treatment use declines, enhanced surveillance and follow-up of even older cases on notifications systems may be worthwhile.

## Author contributions

All authors designed the project, LAS and MF designed the project evaluation. TSMF wrote the first draft of the manuscript. All authors reviewed drafts of the manuscript and approved the final version. The authors declare no competing interests.

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