

## CASE STUDIES

# 'Lifting the invisibility cloak' on the pivotal role of nurses in hepatitis C (HCV) testing, diagnosis and management – findings from an integrated primary healthcare service for marginalised people in inner Sydney, Australia

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### ABSTRACT

**Objective:** We sought to quantify the number of episodes of care made by doctors and nurses to six hepatitis C care milestones at an integrated primary healthcare service for marginalised people in inner Sydney, Australia.

**Background:** While nurses are at the coalface of hepatitis C care, they are not adequately represented in workforce data and therefore are less visible.

**Methods:** We conducted a retrospective audit of clinical database records between 2016 (when direct-acting antiviral therapy was introduced in Australia) and 2019 for six hepatitis C care milestones.

**Results:** Results revealed nurses' essential and increasingly substantial contribution to a broad range of hepatitis C care milestones (hepatitis C polymerase chain reaction testing, hepatitis C

antibody testing, hepatitis C treatment assessment, Fibroscan, and sustained virologic response confirmation).

**Conclusion:** Findings demonstrate the utility of nurses in accessing marginalised populations and shine a light on the growing value and substantial contribution of nurses to clinical care in the management and treatment of hepatitis C.

**Implications for research, policy, and practice:** The findings presented here highlight the increasing role and broader scope of practice that nurses play in hepatitis C care. Nursing leadership and governance is critical to improving the visibility of nurses through comprehensive workforce data collection to strengthen the nursing workforce and justify role expansion.

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### What is already known about the topic?

- Nurses have an essential role in the testing, diagnosis and management of people with hepatitis C (HCV).
- Although nurses hold this essential role, the extent of their work is not adequately understood given the poor representation of nurses in workforce data.
- There is a need for evidence that highlights the role of the nurse in HCV care, to support decision making and justify role expansion.

### What this paper adds

- These findings shine a light on the growing value and substantial contribution of nurses to clinical care in the management and treatment of HCV.

- The findings also demonstrate the utility of nurses in supporting the healthcare of marginalised populations.
- Evidence of the increased role that nurses play in HCV care provides support for ongoing workforce development and extension of the role of the nurse in HCV testing, diagnosis, treatment and management.

**Keywords:** Capacity building, Hepatitis C, nurses, public health

## BACKGROUND

Nurses have an essential role in the testing, diagnosis and management of people with hepatitis C (HCV).<sup>1,2</sup> They are at the coalface of HCV care,<sup>3</sup> yet nurses are not adequately represented in workforce data,<sup>4</sup> and therefore are less visible. For example, a recent systematic review showed that published datasets generally consider HCV outcomes by prescriber, usually a specialist or a primary care physician,<sup>5</sup> or group nurse practitioners together with other prescribers which excludes the contribution from the large workforce of non-prescribing nurses.<sup>5,7</sup> Furthermore, studies have focused on HCV treatment outcomes which overlooks the contribution nurses make to other parts of the HCV care cascade such as HCV testing, assessment, linkage to care and ongoing management.<sup>5</sup>

The Kirketon Road Centre (KRC) is a targeted primary healthcare facility in inner Sydney, Australia, focused on the prevention, treatment and care of viral hepatitis, HIV and sexually transmissible infections among marginalised populations. About 4,000 clients engage with KRC each year (including Aboriginal and/or Torres Strait Islander people (20%), homeless people (15%), people who inject drugs (60%), sex workers (30%) and men who have sex with men (30%). Kirketon Road Centre is a highly integrated service where nurses work in a multidisciplinary team (including counsellors, doctors and health education officers (HEOs)) to address clients' often complex health and psychosocial needs.<sup>8</sup>

In 2016, when direct acting anti-viral (DAA) therapy became available in Australia, KRC expanded its HCV treatment service to prescribe and monitor DAA therapy and offer transient elastography (Fibroscan) assessment of liver health, in-house and in outreach clinics.<sup>8</sup> During this time, nurses working within the primary healthcare setting increased their scope of practice through an extended, autonomous role; assessing clients for HCV treatment, especially

in outreach settings which included HCV testing and performing Fibroscans.

In response to calls to 'lift the invisibility cloak' concealing nurses' activity and properly recognise the work of nurses in HCV care,<sup>4</sup> we sought to quantify the number of episodes of care made by doctors and nurses to six hepatitis C care milestones at KRC. Quantifying the contribution of nurses across the continuum of HCV care more adequately recognises the work they do by increasing visibility and is important to developing an effective HCV response.

## METHODS

This was a retrospective audit of episodes of care from the clinical database between 2016 and 2019. The number of episodes of care included in the analysis varied by HCV care milestone and year.

When a client presents at KRC for HCV testing and assessment for treatment, or a clinician (a nurse or doctor) identifies risk factors that indicate these are recommended, the episode of care is recorded in the clinical database. We examined the following categories of episodes of care:

1. *HCV antibody testing*: where venipuncture for HCV serology performed;
2. *HCV RNA testing*: where venipuncture for HCV polymerase chain reaction (PCR) performed;
3. *Assessment for HCV treatment*: where client was assessed for HCV treatment and provided with education about treatment;
4. *HCV treatment commencement*: where DAA script or medication was provided;
5. *Fibroscan*: where transient elastography was performed; and
6. *SVR12 confirmation*: where venipuncture was performed for sustained viral response at 12 weeks post-treatment.

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We determined from database records whether each episode of care was provided by a nurse or a doctor. The number and proportion of episodes of care attributable to nurses and to doctors was reported for each of the above categories: (1) for the four year period in total; and, (2) for each calendar year. Data were analysed by year using the Extended Mantel Haenszel Chi-Square test for linear trend in proportions (Chi-Square statistic, p value reported) in OpenEpi.<sup>9</sup>

Approval for the audit of routinely collected clinical activity was provided by the data custodian (Dr Phillip Read, Director, Kirketon Road Centre). Client records were not accessed at any point and further ethical review was not required.

## RESULTS

Between 2016 and 2019, across the six HCV care milestones examined, there were a total of 5,561 episodes of care provided by a nurse/doctor (Table 1). This included 2,315 HCV antibody testing episodes (467 HCV antibody testing episodes in 2016; 425 in 2017; 375 in 2018; and, 1,048 in 2019; Table 1) and 307 HCV treatment commencement episodes (82 commencement episodes in 2016; 95 in 2017; 73 in 2018; and, 57 in 2019; Table 1).

Across the four year period, nurses provided the majority of episodes of care for each HCV care milestone (HCV antibody testing, 70%; HCV PCR testing, 56%; treatment assessment, 71%; treatment commencement, 66%; Fibroscan, 78%; SVR12 confirmation, 63%; Table 1).

Analysis by year showed that nurses' contribution to all milestones was substantial and had generally increased year to year since 2016 (Table 1, Figure 1).

There were large and statistically significant increases in nurses' contribution between 2016 and 2019 for five of the six HCV care milestones: HCV PCR testing (48% (2016) to 61% (2019); chi-square 8.33,  $P=0.004$ ), HCV antibody testing (61% (2016) to 77% (2019); chi-square 40.8,  $P<0.001$ ), HCV treatment assessment (61% (2016) to 83% (2019); chi-square 14.25,  $P<0.001$ ), Fibroscan (62% (2016) to 78% (2019); chi-square 60.96,  $P<0.001$ ), and SVR-12 confirmation (54% (2016) to 85% (2019); chi-square 6.41,  $P=0.011$ ; Table 1).

Hepatitis C treatment commencement was the exception where nurses' contribution remained substantial but the increase over the period was not statistically significant (66% (2016) to 72% (2019);  $P=0.445$ , Figure 1).

**TABLE 1: CONTRIBUTION (% AND N/N) OF NURSES AND DOCTORS TO HCV CARE MILESTONES BETWEEN 2016-2019**

| Milestone                    | Health professional | 2016<br>% (n/N)   | 2017<br>% (n/N)   | 2018<br>% (n/N)   | 2019<br>% (n/N)    | Total<br>% (n/N)    | Chi-Square <sup>a</sup><br>p value <sup>c</sup> |
|------------------------------|---------------------|-------------------|-------------------|-------------------|--------------------|---------------------|-------------------------------------------------|
| HCV PCR test                 | Nurse               | 48.4<br>(186/384) | 59.2<br>(222/375) | 57.4<br>(175/305) | 60.9<br>(134/220)  | 55.8<br>(717/1284)  | 8.33                                            |
|                              | Doctor              | 51.6<br>(198/384) | 40.8<br>(153/375) | 42.6<br>(130/305) | 39.1<br>(86/220)   | 44.2<br>(567/1284)  | <0.01 <sup>b</sup>                              |
| HCV Ab test                  | Nurse               | 60.8<br>(284/467) | 66.1<br>(281/425) | 62.9<br>(236/375) | 76.5<br>(802/1048) | 69.2<br>(1603/2315) | 40.8                                            |
|                              | Doctor              | 39.2<br>(183/467) | 33.9<br>(144/425) | 37.1<br>(139/375) | 23.5<br>(256/1048) | 30.8<br>(712/2315)  | <0.001 <sup>b</sup>                             |
| Assessment for HCV treatment | Nurse               | 60.9<br>(95/156)  | 72.3<br>(99/137)  | 76.0<br>(76/100)  | 83.3<br>(70/84)    | 71.3<br>(340/477)   | 14.25                                           |
|                              | Doctor              | 39.1<br>(61/156)  | 27.7<br>(38/137)  | 24.0<br>(24/100)  | 16.7<br>(14/84)    | 28.7<br>(137/477)   | <0.001 <sup>b</sup>                             |
| Commenced HCV treatment      | Nurse               | 65.9<br>(54/82)   | 63.2<br>(60/95)   | 67.1<br>(49/73)   | 71.9<br>(41/57)    | 66.4<br>(204/307)   | 0.58                                            |
|                              | Doctor              | 34.1<br>(28/82)   | 36.8<br>(35/95)   | 32.9<br>(24/73)   | 28.1<br>(16/57)    | 33.6<br>(103/307)   | 0.45                                            |
| Fibroscan                    | Nurse               | 61.7<br>(200/324) | 82.9<br>(267/322) | 87.2<br>(177/203) | 89.7<br>(148/165)  | 78.1<br>(792/1014)  | 60.96                                           |
|                              | Doctor              | 38.3<br>(124/324) | 17.1<br>(55/322)  | 12.8<br>(26/203)  | 10.3<br>(17/165)   | 21.9<br>(222/1014)  | <0.001 <sup>b</sup>                             |
| SVR-12                       | Nurse               | 54.2<br>(26/48)   | 57.7<br>(30/52)   | 70.5<br>(31/44)   | 85.0<br>(17/20)    | 63.4<br>(104/164)   | 6.41                                            |
|                              | Doctor              | 45.8<br>(22/48)   | 42.3<br>(22/52)   | 29.5<br>(13/44)   | 15.0<br>(3/20)     | 36.6<br>(60/164)    | <0.05 <sup>b</sup>                              |

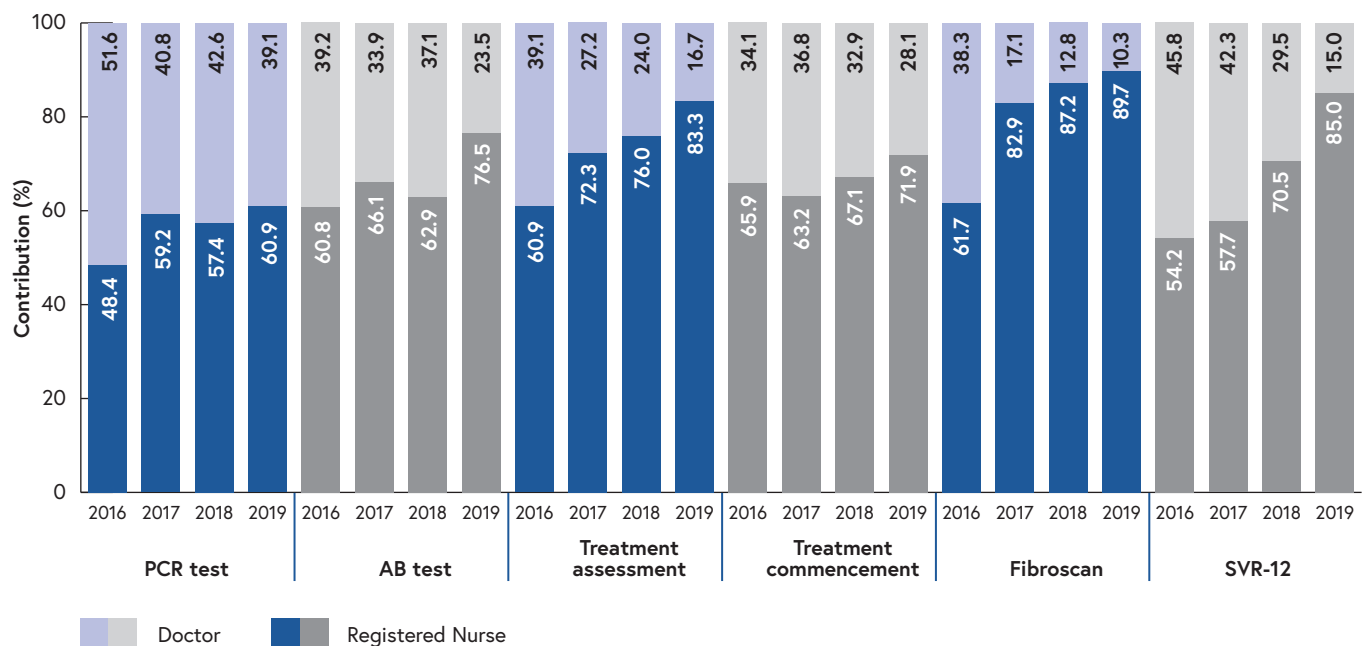
HCV=Hepatitis C; PCR= Polymerase chain reaction; Ab=Antibody; SVR-12=Sustained viral response at 12 weeks post-treatment.

a Mantel Haenszel Chi-Square test

b Statistically significant

c Extended Mantel Haenszel Chi Square test for linear trend with a p-value for one degree of freedom

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**FIGURE 1: CONTRIBUTION OF NURSES AND DOCTORS TO HCV CARE MILESTONES 2016-2019**

\*Statistically significant increase in nurses' contribution between 2016-2019

HCV=Hepatitis C; PCR= Polymerase chain reaction; Ab=Antibody; SVR-12=Sustained viral response at 12 weeks post-treatment

## DISCUSSION

To our knowledge, this is the first study which has quantified the contribution of nurses across the continuum of HCV care from testing to treatment completion. Examining the contribution of nurses to six key milestones revealed their pivotal role in the current HCV response at this inner Sydney integrated primary healthcare service.

Our findings reflect the changing nature of the HCV nursing workforce since the advent of DAA therapy as we move away from interferon treatment education and side effect management.<sup>3,6,10</sup> Hepatitis C treatment is now more effective, shorter and has far fewer side effects.<sup>6</sup> This advance has allowed HCV testing, treatment and management to be integrated into non-specialist settings such as primary care and harm reduction.<sup>5</sup> The shift away from the provision of HCV care in tertiary settings by specialists has enabled more nurses to be engaged across the HCV care cascade and improved access to testing, linkage to care, and treatment.<sup>5</sup> Additionally, task-shifting of care to nurses and non-specialists was associated with similarly high cure rates (SVR12) to care delivered by specialists.<sup>5</sup>

To achieve HCV elimination, we need to scale up nursing activity in primary care. Extending the role of the nurse in the community setting and advocating for dedicated HCV nursing positions are important steps. Developing viable models of care which do not rely on the specialist system are essential as the specialist workforce alone cannot meet treatment needs.<sup>11</sup> In our service, ongoing workforce development within our nursing team extended the role of the nurse with, generally,

clinical nurse consultants (CNC) providing the more advanced care. This enabled an increased contribution across the HCV care cascade and allowed for an expansion of our outreach work. For example, KRC's 'Hep@Home' program involves nurses working with medical staff and local peers who inject drugs to identify, assess and treat clients in the community who are more comfortable being seen in an outreach setting than attending traditional primary or tertiary healthcare settings.<sup>12</sup> To inform these strategies, in line with calls globally to strengthen capacity for health workforce data collection,<sup>13</sup> we need to get better at measuring the impact of nurses across the HCV sector. This will require participation across organisations, greater collaboration between nurses and researchers, and a commitment to use data to guide policy and program development.<sup>4</sup>

It is time to move away from a focus on the prescriber and better measure activity across the continuum of HCV care. Nurses clearly make a substantial and increasing contribution to clinical care in the management and treatment of HCV. The next step is to investigate whether these workforce changes have increased HCV testing and diagnosis, and improved linkage to care and treatment completion. While activity-based outcomes can be influential they do not encompass all that nurses do. A large part of the nurses' role in delivering person-centred care is building relationships and trust with people – particularly with those who are marginalised or have been discriminated against in the health system.<sup>4</sup> This is an important dimension of nurses' work which is harder to measure and is an important area for future research.

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### LIMITATIONS

Results may have been influenced by external factors. For example, treatment commencement episodes in 2016 and 2017 may have been higher than in subsequent years because people waiting for DAAs were already worked up for treatment; and, relatively high HCV antibody testing episodes in 2019 may have been attributable to an 'opt out' testing study underway at the time which meant more clients than usual received a HCV antibody test in that year. While external factors may have influenced the number of episodes of care, this is unlikely to have influenced findings because the proportion of episodes of care attributable to nurses and to doctors would not have changed. Changes in staffing profile could potentially influence results, however the number of doctors and nurses in the service did not change over time. Our results reflect KRC's model of care, however findings would likely be generalisable to other multi-disciplinary primary care services which target marginalised populations.

### CONCLUSION

These findings shine a light on the growing value and substantial contribution of nurses to clinical care in the management and treatment of HCV. The goal of eliminating viral hepatitis globally by 2030 cannot be achieved without maximising the contribution of nurses.<sup>13,14</sup> Nurses account for about 60% of the health workforce,<sup>13</sup> spend more time with patients than physicians and are less expensive.<sup>15</sup> Extending nurses' scope of practice is essential for workforce development and is particularly important in primary care which underpins the HCV care cascade. If required, reorientation of health services should be considered to achieve this aim. Nursing leadership and governance is critical to strengthening the nursing workforce and to driving efforts to strengthen workforce data which supports decision making and justifies role expansion.

**Acknowledgments:** We would like to acknowledge that our fight against viral hepatitis elimination is indebted to people living with viral hepatitis both past and present.

**Declaration of conflicting interests:** All authors declare that they have no conflict of interest in relation to this work. PR has received research funding from Gilead Sciences, as well as institutional and individual honoraria from Gilead Sciences, Abbvie and MSD.

**Funding support:** No funding was received for the conduct or write up of this work.

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