The Cottage: providing medical respite care in a home-like environment for people experiencing homelessness

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Abstract

Purpose – *Co-existing health conditions and frequent hospital usage are pervasive in homeless populations. Without a home to be discharged to, appropriate discharge care and treatment compliance are difficult. The Medical Respite Centre (MRC) model has gained traction in the USA, but other international examples are scant. The purpose of this paper is to address this void, presenting findings from an evaluation of The Cottage, a small short-stay respite facility for people experiencing homelessness attached to an inner-city hospital in Melbourne, Australia.*

Design/methodology/approach – *This mixed methods study uses case studies, qualitative interview data and hospital administrative data for clients admitted to The Cottage in 2015. Hospital inpatient admissions and emergency department presentations were compared for the 12-month period pre- and post-The Cottage.*

Findings – *Clients had multiple health conditions, often compounded by social isolation and homelessness or precarious housing. Qualitative data and case studies illustrate how The Cottage couples medical care and support in a home-like environment. The average stay was 8.8 days. There was a 7 per cent reduction in the number of unplanned inpatient days in the 12-months post support.*

Research limitations/implications – *The paper has some limitations including small sample size, data from one hospital only and lack of information on other services accessed by clients (e.g. housing support) limit attribution of causality.*

Social implications – *MRCs provide a safe environment for individuals to recuperate at a much lower cost than inpatient admissions.*

Originality/value – *There is limited evidence on the MRC model of care outside of the USA, and the findings demonstrate the benefits of even shorter-term respite post-discharge for people who are homeless.*

Keywords *Australia, Homelessness, Emergency department, Hospital use, Medical respite care, Medical respite centre*

Paper type *Research paper*

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Background

The revolving door between homelessness and the health system is evident in many developed countries (Fazel *et al.*, 2008, 2014), and Australia is no exception. The high prevalence of co-occurring physical, mental health and substance use issues (Fazel *et al.*, 2008, 2014), and multiple, complex health conditions among people experiencing homelessness contributes to frequent use of health services (Moore *et al.*, 2010; Fazel *et al.*, 2014). Engagement with primary care providers and chronic disease management is also impeded by life on the street, hence people experiencing homelessness frequently present to hospitals and emergency departments (ED) in crisis, when their health has deteriorated to a life-threatening state (Fazel *et al.*, 2014; Jelinek *et al.*, 2008; Weiland and Moore, 2009).

Homelessness and unstable housing present significant challenges to the appropriate discharge of patients from hospital (Greysen *et al.*, 2013). Even if crisis or temporary accommodation is available, it is difficult to get the rest, recuperation and follow-up care needed, and these challenges are compounded when people are surviving day to day on the

streets (Buchanan *et al.*, 2006). Meeting the basic practical requirements for treatment compliance can be problematic, with hygienic wound care, lack of places to wash and no access to refrigeration or secure storage for medications among obstacles often encountered (National Academies of Sciences and Medicine, 2018).

For individuals experiencing homelessness, being "discharged home" is an oxymoron. There are few suitable post-discharge locations and temporary and transitional housing providers are often unable to meet the needs of unwell or injured patients (Greysen *et al.*, 2013; Zerger *et al.*, 2009). Consequently, patients experiencing homelessness face either longer inpatient admissions in expensive acute care beds, or are discharged when too unwell for the challenges of surviving on the street, resulting in high rates of unplanned re-admissions (Kertesz *et al.*, 2009; Doran, Ragins, Iacomacci, Cunningham, Jubanyik and Jenq, 2013). One innovative solution to this, however, is the concept of medical respite centres (MRCs), that originated in the USA, and is now gaining traction internationally.

An MRC provides stable accommodation and support to people who are homeless and have acute or sub-acute care needs but do not require inpatient care (Doran, Ragins, Gross and Zerger, 2013; Buchanan *et al.*, 2006). The MRC model of care was initiated by the Boston Homeless Healthcare Program in 1993, when they opened Barbara McInnis House to address the challenges of providing appropriate pre-admission and post-discharge care to homeless patients (Boston Health Care for the Homeless Program, 2014). The connection and rapport established during care at an MRC also allows staff to link clients with community-based support and primary care services (Zur *et al.*, 2016; Park *et al.*, 2017; Biederman *et al.*, 2014). Zur *et al.* (2016) conducted in-depth qualitative interviews at an MRC in the USA and found that both clients and staff identified support in navigating the healthcare system, overcoming logistical challenges and establishing trusting relationships as the most important aspects of the service. The provision of assistance to meet health goals and support to attend appointments has also been identified by clients as key desired features of MRCs (Park *et al.*, 2017). Although the ethos of all MRCs is similar, they vary in services provided, duration of stay possible, and location; some are co-located with healthcare facilities and have their own nursing staff or health practitioners, whilst other MRC clients may receive in-reach support from hospital services (Buchanan *et al.*, 2006; Doran, Ragins, Gross and Zerger, 2013).

Published studies on MRCs are in their infancy, but evidence is mounting for the capacity of MRCs to improve health outcomes for clients and potentially reduce ED and inpatient admissions. Reductions in hospital re-admissions and ED presentations have been observed across a number of studies examining the effects of MRCs on patients' health outcomes in the USA (Doran, Ragins, Gross and Zerger, 2013; Zerger *et al.*, 2009; Zur *et al.*, 2016; Buchanan *et al.*, 2006) and a pilot study in the UK (Homeless Link and St Mungo's, 2012). A cohort study of homeless patients who had been supported by an MRC where the average length of stay was 42 days found that, in the 12-months after initial discharge, patients had 58 per cent fewer inpatient days, a 49 per cent reduction in inpatient admissions and a 36 per cent reduction in ED presentations, compared to the control group of patients who had not accessed MRCs (Buchanan *et al.*, 2006). The MRC model of care has been expanded in the USA, with 78 MRCs now existing across 30 states (National Health Care for the Homeless Council, 2016).

While there is keen interest in the MRC model among those working in homeless healthcare in other countries, examples outside of the USA remain sparse. In 2012, Pathway produced a compelling feasibility case for an MRC for homeless patients in London (Pathway UK, 2012) but to our knowledge, this has not yet been funded. In Australia, there are two small respite centres operating under the auspice of St Vincent's Health Australia (Tierney House at St Vincent's Hospital Sydney, and the Sister Francesca Healy Cottage (The Cottage) at St Vincent's Hospital Melbourne (SVHM). A submission for an MRC in Western Australia was recently submitted to the State Government as part of a review into strategies for a more sustainable health system (Department of Health Western Australia, 2017).

This paper is based on a recent evaluation of The Cottage, an MRC attached to SVHM, an inner-city hospital with an ethos of providing high quality care to the most disadvantaged groups in Melbourne (Wood *et al.*, 2017). The SVHM campus is located in close proximity to many homelessness services, and sees a large proportion of the people experiencing homelessness in

inner-city Melbourne. The Cottage is a small six-bed respite facility providing a stable environment for people who are homeless or at risk of homelessness to receive acute nursing care and support post-hospital discharge (Wood *et al.*, 2017). It occupies a re-purposed cottage and provides a home-like environment adjacent to the main SVHM hospital, enabling prompt hospital treatment if necessary. The Cottage is staffed by nursing and personal care staff. Part of The Cottage remit is to link clients to with other community-based support services and assist in obtaining more permanent accommodation (Wood *et al.*, 2017).

Aims

The aims of this research were to: describe the health profile of clients supported by The Cottage, examine clients' patterns of hospital service use and the type of support they were provided and explore service provider and client perceptions of support provided by The Cottage. In addition, this paper examines patterns of clients' hospital service utilisation in the 12-months prior and 12-months following their first admission to The Cottage in 2015.

Methods

These results have been drawn from a larger mixed methods evaluation of four SVHM homelessness services that was undertaken in 2016 (Wood *et al.*, 2017). The full evaluation comprised qualitative in-depth interviews with staff, stakeholders and clients of the services and analysis of quantitative hospital administrative data. Approval to conduct this research was granted by the Victorian State Single Ethical Review Human Research Ethics Committee (HREC) (reference HREC/16/SVHM/114) and St Vincent's Hospital Melbourne HREC (reference HREC-A 086/16) on the 18 July 2016, with reciprocal ethics approval granted by the University of Western Australia HREC on the 16 August 2016 (reference RA/4/1/8577).

Qualitative data and analysis

In-depth interviews were conducted with five clients, three employees and 40 key internal and external stakeholders. A purposive sampling method was used to guide the recruitment of client participants that reflected the diverse demographic backgrounds and differing health and psychosocial needs seen at The Cottage, and included a mix of clients who had received support from both ALERT and The Cottage, and The Cottage only. Quotes presented in this paper are related to experiences and service delivery at The Cottage. Interviews were semi-structured and probed clients' experiences of The Cottage, support received and issues experienced.

Interviews were audio recorded and data was transcribed verbatim and coded using QSR NViVo (QSR International Pty Ltd, 2011). Thematic analysis using inductive category development and constant comparison coding (Glaser, 1965) was undertaken with cross checking between team members to enhance validity and minimise bias.

Quantitative data and analysis

Quantitative data on hospital service utilisation at SVHM were provided for clients supported by The Cottage during the 2015 calendar year ($n = 139$). This included clients whose episode of care commenced in 2014 but continued into 2015. Data on ED presentations and unplanned inpatient admissions were extracted from the Patient Administration System database and linked to anonymous client ID numbers before being provided to the research team for analysis.

The analysis for this paper explores hospital use in the 12-months prior to each client's first episode start date in 2015 and 12-months post their episode start date. The "post" period referred to in this paper includes the period of time during which clients received support from The Cottage. Clients who died less than 12-months post support ($n = 4$) were excluded from analysis. Some clients of The Cottage ($n = 33$) also received support from ALERT (a SVHM case management programme for frequent users of hospital services) and therefore the hospital service utilisation results have been presented for the total group (all clients of The Cottage), the sub-group ($n = 102$) of clients who received support from The Cottage only and the sub-group

($n = 33$) who received support from both The Cottage and ALERT. Distribution of hospital utilisation data both 12-months before and after first episode of care for The Cottage was not normally distributed, so Wilcoxon signed-rank tests were used to compare the data for each period. Stata version 14.0 (StataCorp, 2015) was used for the analysis.

Client case studies

Client case studies provide important context for hospital service utilisation amongst the client group and help to capture a richer picture of clients' interaction with the health system and the nature of support provided through The Cottage. The case studies include indicative estimates of the cost decrease associated with changes in ED presentations and unplanned inpatient admissions for these clients in the 12-months post support. The costs were calculated from hospital cost data produced by the Independent Hospital Pricing Authority (IHPA) (Round 20), using the average cost of $1,890 per day of inpatient admission (Independent Hospital Pricing Authority, 2018). The IHPA provides an annual report based on data submitted by Australian public hospitals and is routinely used to estimate healthcare costs (Independent Hospital Pricing Authority, 2018).

Results

Client demographics

Of the 139 clients supported by The Cottage in 2015, 102 (75 per cent) were male, with an average age of 54 (range 24–81 years). There were 96 clients (69 per cent) born in Australia, and English was the preferred language of 127 clients (91 per cent). When asked about their usual accommodation, 32 (23 per cent) of clients indicated that they were experiencing primary homelessness, with the remainder living in tenuous and marginalised housing.

The Cottage: 2015 service delivery

During 2015, The Cottage provided 167 episodes of care (range 1–4 episodes per person) to 139 individual patients. Of the 139 clients supported, 103 were supported by The Cottage only, with the other 36 supported by both The Cottage and by ALERT. The majority ($n = 131$) of individuals only had a single episode at The Cottage during 2015, with the remaining eight clients having multiple episodes of care.

Duration of episodes of care. The average duration of an episode of care for patients attending The Cottage in 2015 was 8.8 days. Over half of episodes (56 per cent; $n = 94$) lasted for one week or less, whilst 44 per cent ($n = 73$) of episodes were for a period of 8-14 days. The Cottage also had 29 episodes of care (17 per cent of episodes) which lasted for one night only.

Health profile of Cottage clients

The patients accessing The Cottage had extremely complex health profiles and frequently presented to ED resulting in unplanned inpatient admissions (the quotation below). Many had long-term histories of contact with the hospital system.

Clients who are admitted to The Cottage have a diverse range of health care needs. The most common reasons for admission during the study period were for post-operative care following a non-orthopaedic procedure and mental or behavioural disorders caused by AOD use. Clients of The Cottage had, on average, 11 psychosocial factors affecting their health (min 1, max 22). The most common were daily living issues (85 per cent), carer issues (75 per cent) and social isolation (74 per cent). The complexity of Cottage patients is further illustrated through the case study below (the quotation below).

Complexity of Inpatient Admissions for Cottage Clients:

> A male in his early forties with a history of alcohol dependence and depression had four separate stays at The Cottage in the 2015 calendar year, but has previously had multiple complex presentations to

SVHM since first presenting in 2006. In April 2015 he was admitted for post-detox respite, and then supported by the ALERT team for ongoing support and case management over a 13-month period (until May 2016). Since 2015 he has had at least fortnightly contact with SVHM (either through the ED or as an outpatient). These presentations are usually for intoxication, injuries sustained while intoxicated, overdose or self-harm related. Additionally, he has had multiple inpatient admissions for alcohol withdrawal and liver damage; between 2015 – April 2017 he had 38 inpatient admissions to various units including emergency short stay, psychiatry and general medicine.

Changes in hospital service utilisation post support from The Cottage

Changes in hospital service utilisation after receiving support from The Cottage in 2015 are presented for all Cottage clients, excluding those who died less than 12-months post-support ($n = 4$).

ED presentations. The number of clients who presented to ED decreased in the year following support from The Cottage compared to the year prior (Table I). While there was an increase in the total number of ED presentations in the 12-months prior to post service contact (from 304 to 356 presentations), this was not significant and masks variability in the patterns of ED presentation among clients. Overall, in the year after commencing an episode of care at The Cottage 36 per cent ($n = 49$) of clients had a reduction in the number of ED presentations, 32 per cent ($n = 43$) had no

Table I ED presentations and unplanned inpatient admissions 12-months before and 12-months after first episode of care at The Cottage

	The Cottage (n = 102)	*ALERT/The Cottage (n = 33)*	*Total (n = 135)*
ED presentations			
12-months before			
Total ED presentations	146	158	304
Average number of ED presentations per person (SD)[a]	1.4 (1.9)	4.8 (8.4)	2.25 (4.7)
Median presentations	1	2	1
Range in number of presentations per person	0–8	0–47	0–47
Total people presenting to ED (% of group)	58 (57)	29 (88)	87 (64)
12-months after			
Total ED presentations	179	177	356
Average number of ED presentations per person (SD)[a]	1.8 (3.4)	5.4 (8.9)	2.6 (5.5)
Median presentations	1	2	1
Range in number of presentations per person	0–28	0–46	0–46
Total people presenting to ED (% of group)	57 (56)	23 (70)	80 (59)
Unplanned inpatient admissions			
12-months before			
Total inpatient admissions	95	71	166
Average number of inpatient admissions per person (SD)[a]	0.9 (1.4)	2.1 (2.9)	1.2 (1.9)
Median admissions	0	1	1
Range in number of inpatient admissions per person	0–6	0–13	0–13
Total people admitted as inpatients (% of group)	48 (47)	26 (79)	74 (55)
Total days admitted	543	304	847
Average days admitted per person (SD)	5.3 (9.6)	9.2 (10.7)	6.3 (10.0)
Median days	0	4	2
12-months after			
Total inpatient admissions	88	83	171
Average number of inpatient admissions per person (SD)[a]	0.9 (1.5)	2.5 (4.9)	1.3 (2.8)
Median admissions	0	1	0
Range in number of inpatient admissions per person	0–8	0–25	0–25
Total people admitted as inpatients	43 (42)	18 (55)	61 (45)
Total days admitted	566	221	787*
Average days admitted per person (SD)	5.5 (14.7)	6.7 (13.9)	5.8 (14.5)
Median days	0	1	0

Notes: [a]Average unplanned admissions were calculated over whole sub-sample including those who did not present in the specified period.
*$p = 0.05$

change and 32 per cent ($n = 43$) had an increase. The overall increase in total ED presentation in the post period was attributable to 43 individuals, with four clients having an increase of 11 or more ED presentations in the 12-month period.

Inpatient admissions and length of stay. There was a significant decrease of 7 per cent in the total number of unplanned inpatient admission days (from 847 to 787 days) that clients were admitted for at SVHM in the 12-months following support compared to the 12-months prior to their first episode of care at The Cottage (Table I). There was also a reduction in the proportion of clients admitted (18 per cent) as inpatients in the 12-months after receiving an episode of care from The Cottage. For those patients who were admitted, their average number of inpatient admissions did not significantly change in the post-support period, but notably, the average duration of admission was shorter (from 6.3 to 5.8 days) (Table I). As with ED presentation variability, there was substantial variation in inpatient admission patterns among individual clients in the 12-month period after they were supported by The Cottage. Overall, 42 per cent ($n = 57$) of clients had a reduction in inpatient days, 32 per cent ($n = 43$) had no change and 26 per cent ($n = 35$) had an increase in inpatient days.

Case studies

This evaluation was mixed methods, and it is recognised that hospital service utilisation data does not capture the full picture of clients' interaction with the health system, nor the nature of support provided by The Cottage. The following case studies (the quotation below) provide additional insight into the type of support provided by The Cottage and how this potentially contributed to changes in hospital service use. Additionally, indicative estimates of the economic impact of changes in clients' service use in the year following support from The Cottage have been provided.

Case studies for clients with reductions and increases in inpatient days.

Case study 1: client supported to engage with appropriate health services:

> A man in his late sixties was living alone in public housing when he had a heart attack, resulting in a one-month inpatient admission in the cardiology ward. He was discharged to the Cottage for 14 days, where he was supported in his physical rehabilitation and given education on the management of his condition including the use of blood thinning medication and the necessity of regular blood testing. During his time at The Cottage the client received support from the Department of Addition Medicine at SVHM and agreed to have ongoing drug and alcohol support when he was discharged. He also engaged with heart failure nurses who provided further education and established a care plan with the client. The Cottage provided a dosette box to assist the client in self-managing his medication. After discharge the client continued to receive support from the heart failure rehabilitation team and attended a heart failure rehabilitation program in both 2015 and 2016. The client's successful management of his condition, facilitated through support provided from The Cottage and cardiac rehabilitation teams, resulted in a substantial reduction in hospital inpatient admissions. In the 12 months after receiving support from The Cottage, the client had one planned hospital admission to fit an implantable defibrillator, and spent 38 fewer days as an inpatient than in the year before he was supported by The Cottage. This reduction in inpatient days resulted in a cost decrease of $71,820 (Independent Hospital Pricing Authority, 2018).

Case study 2: client assisted to stabilise health conditions and navigate services:

> An Aboriginal woman in her early sixties had a three-week stay at The Cottage to treat multiple health issues stemming from injecting drug use. Prior to her admission to The Cottage she had extensive inpatient admissions as injecting drug use had caused bacterial blood infection and hip and spinal abscesses. During her admission at The Cottage she received IV antibiotics, blood tests and methadone administration. Staff at The Cottage assisted the client to navigate the health system and arranged for her to have physiotherapy to assist her mobilisation and rehabilitation. After her health had stabilised she was discharged to stay with her daughter whilst awaiting public housing accommodation. In the 12-months after support from the Cottage she spent substantially less time admitted as an inpatient, a reduction of 33 days compared to the previous year. This reduction in inpatient admission days is associated with a cost decrease of $62,370 (Independent Hospital Pricing Authority, 2018).

Case Study 3: client with complex mental health issues and increase in inpatient admissions:

> A client in his early forties was socially isolated with health issues including schizo-affective disorder, hepatitis C and thyroid dysfunction. He was admitted to the Cottage for three days to have pre and post care following a colonoscopy and was subsequently discharged home. His mental health continued to be unstable despite community mental health support and he had an extended psychiatric admission of 91 days, after which he was discharged to a residential psychiatric facility. This admission resulted in an increase of 91 inpatient days compared to the 12 months prior to support from The Cottage.

Qualitative client, staff and stakeholder perceptions of The Cottage

Qualitative interview data helps to describe the way in which The Cottage supports clients in a non-clinical respite environment. Key themes that emerged through the qualitative analysis included the importance of The Cottage culture and environment, the significance of The Cottage in enabling clients to receive appropriate care and, the role of The Cottage in assisting clients to navigate the healthcare system and engage with mainstream health services.

The caring ethos of The Cottage was emphasised by numerous staff members, stakeholders and clients. A dominant theme was the genuine compassion and empathy that infuses The Cottage culture, and the way in which this lubricates forming connections with clients. This was considered particularly important in light of the high levels of loneliness and social isolation experienced by clients. The non-clinical physical environment of an MRC also emerged as a critical factor, with the home-like environment of The Cottage enabling people to have social contact and support (from staff and others), whilst creating a space for clients to retreat to:

> Within a hospital setting it would be different to the relationships you form within The Cottage (Service staff).

> This is more homely. It's – you feel like you're part of a family or you're at home or something (Client).

> It's nothing like a hospital facility. I wouldn't describe it as anything like a hospital facility. It's totally different (Client).

The role of The Cottage in assisting clients to navigate the health system was another key theme emerging from the interviews with staff, stakeholders and clients. The Cottage was seen as a place where positive relationships with staff were formed while clients' health issues were stabilised and trust established to facilitate successful referrals back to the mainstream health system:

> The purpose of The Cottage as I see it, is to be able to provide equitable health care for people that are homeless that may ordinarily struggle navigating their way through the health system. I think our purpose is to help people receive the health care that they deserve, and embrace the challenges to achieve this (Service staff).

Staff at The Cottage and in the wider hospital acknowledged that people who are homeless can sometimes find hospital settings intimidating, and may have had negative experiences of health institutions in the past. Consequently, The Cottage was seen to play a valuable role in supporting clients to re-engage with the health system. As such, staff suggested that increases in hospital use by some clients following attendance at The Cottage is not necessarily a negative outcome, as it can reflect an increased trust of health services and willingness to seek appropriate treatment:

> Sometimes their hospital contacts might actually go up because their trust of services is better because we have built up trust and a relationship with them. The other thing that we haven't measured and could be an option is that yes they may well re-present, but is their episode of care shorter (Service staff).

A client discussed how they would usually avoid hospitals but that the coordination between staff at The Cottage and SVHM had made it easier for them to attend dialysis appointments:

> Like it's a real good hospital if you've got to go into hospital, but I'm not really a hospital person. Whatever I can do, I'll stay away from there. So if I can go to The Cottage, it makes it a whole lot easier […] Like even when I'm at The Cottage and that and I've got to come to dialysis, everything's arranged. Usually I've got – they even walk me back to The Cottage, yeah, most times (Client).

Staff also identified multiple instances where support provided through The Cottage had made a substantial difference to clients' outcomes, and enabled them to access care that they would otherwise have been unable to receive, due to lacking suitable home environments for preparation for or recovery from medical treatment. For these clients The Cottage is a stable place for this necessary phase of care and provides a stable location to complete assessments and appropriate referrals during clients' recovery (see case studies 1 and 2):

> We will organise things like booking them into The Cottage the night before so that they can do their [bowel prep] or their fasting or whatever needs to be done. You know expecting someone who's homeless to get to a pre-admission clinic at nine o'clock that's been arranged through the ED is almost impossible (Service staff).

> We've had a couple of clients that come to dialysis as our patients and then they did some respite. They needed to be admitted and so they've actually admitted them into The Cottage for a period of time. Allows them to still continue dialysis and we get to actually do a mental health assessment (Internal stakeholder).

Discussion

There is increasing pressure on hospitals around the world to reduce costly bed occupancy through earlier discharge and "home-based" care, but homelessness presents significant medical, social and ethical challenges to hospital systems in this regard (Zerger *et al.*, 2009). Moreover, as articulated by Hewett and colleagues, the care delivered to patients' experiencing homeless can be considered an "acid test" for the whole health system (Hewett *et al.*, 2013).

The MRC model addresses many of these dilemmas, offering a safe space for post-hospital recuperation and follow-up care that can reduce the likelihood of re-presentation, and enable other health, psychosocial and housing issues to be addressed (Buchanan *et al.*, 2006; Zerger *et al.*, 2009). The complex multi-morbidities of people who are homeless means that a short-term episode of care in a MRC is not a "magic bullet". However, as shown in this evaluation study of The Cottage, even a small respite facility can make a significant difference to the post-discharge care and recovery of patients experiencing homelessness.

There is limited published literature outside of the USA that contributes to the evidence base for MRCs, with the present study a notable exception. The 7 per cent reduction in unplanned inpatient days in the 12-months following support from The Cottage builds upon international evidence that MRCs can stabilise clients' health and reduce the burden on the health system (Doran, Ragins, Gross and Zerger, 2013). Whilst the magnitude of reduction in inpatient days was smaller than that observed in the most cited MRC studies from the USA, it is pertinent to note that The Cottage is a shorter term facility, with an average length of stay of 8.8, compared to an average stay of over one month for other MRC models (Buchanan *et al.*, 2006; Doran, Ragins, Gross and Zerger, 2013).

Consistent with the available published studies on MRCs (Buchanan *et al.*, 2006; Doran, Ragins, Gross and Zerger, 2013), we found that there was a decrease in the proportion of clients who presented to ED and who were admitted as inpatients to SVHM in the 12-months following admission at The Cottage. However, clients that continued to utilise hospital services did so more frequently, with increases in the number of ED presentations per client. A longer follow-up period is warranted for future studies, with an evaluation of Tierney House (a short-term small bed respite facility at St Vincent's Sydney) reporting that clients' hospital service use initially increased, but as health conditions stabilised, acute health service use was lower at two-year follow up (Conroy *et al.*, 2016).

The Cottage clients had highly complex health and psychosocial needs, and the prevalence of clients with trimorbid and chronic health conditions is consistent with the patient profile of MRCs internationally (Doran, Ragins, Gross and Zerger, 2013; Buchanan *et al.*, 2006). Due to this complexity, once-off short episodes of care at The Cottage cannot be considered as a panacea to the challenges experienced by clients. Changes in clients' social, housing and health circumstances are all factors beyond the influence of The Cottage that can impact on wellbeing and hospital use. The high burden of chronic health conditions among clients seen at The Cottage may explain some of the increases observed in the number of ED presentations and inpatient admissions among some of the cohort. Mental illness has been shown elsewhere

to be a key driver of extended hospital admissions among people who are homeless (Stafford and Wood, 2017), and this accounted for the very lengthy admission in case study 3.

Congruent with qualitative findings reported by Zerger *et al.* (2009), Zur *et al.* (2016) and Park *et al.* (2017) in the USA, The Cottage was viewed by clients and stakeholders as providing an important period of stability, enabling staff to build trusting relationships that increased clients knowledge and capacity to manage their own health. Social isolation was noted in the clinical records of a number of the case studies presented in our paper, highlighting the critical role of places such as The Cottage as a conduit for social interaction and support during a period of high vulnerability post-discharge.

Being able to discharge patients who are homeless to an MRC facility is a far less costly alternative to keeping them in acute hospital beds (Pathway UK, 2012; Doran, Ragins, Gross and Zerger, 2013), or dealing with the sequelae of discharge to rough sleeping or transitional accommodation. The average inpatient day for a Melbourne hospital in 2015/2016 was $1,890 (Independent Hospital Pricing Authority, 2018), compared with an estimated average cost per day of care of $505 at The Cottage in 2015 (Wood *et al.*, 2017). Additionally, as shown in case studies 1 and 2, reductions in hospital use following care at The Cottage can potentially free up hospital beds and yield a cost saving for the health system. The economic rationale for the cost effectiveness of MRCs is clearly articulated in the Pathway UK (2012) proposal for a MRC in London and calls for a MRC in Western Australia (Department of Health Western Australia, 2017).

Limitations

As with any evaluation of a real-world intervention, this study is not without its limitations. Hospital data were only available for SVHM, and given the itinerant nature of the homeless population, ED presentations and inpatient admissions at other hospitals were not able to be captured. Whilst interviews with homelessness service providers indicated that SVHM is often the default hospital for their clients, it is noted that clients in The Cottage cohort in this study may have used other hospitals and health services. This could impact the reported change in hospital service utilisation, resulting in either an under or overstatement of the actual change.

The study was also not able to capture nor control for other interventions that homeless clients may have accessed that could have impacted on health and/or the underlying social determinants of health. Data on housing status and how this changed over the two-year period would be a powerful addition to studies of MRCs, given amassing evidence for the critical role of housing in tackling the enormous health disparities associated with entrenched homelessness (Stafford and Wood, 2017). People who are homeless often access multiple support services and clients of The Cottage may have been accessing other support services pre-, post- and simultaneously to their period of support, such as the 39 clients who were also supported by ALERT. It is therefore not possible to directly attribute changes in health service utilisation and client outcomes to support provided through The Cottage.

The small sample size in our study may have resulted in limited ability to detect all changes in hospital and ED use before and after use of The Cottage. Similarly, the study period is relatively short, with other studies not detecting significant changes until the 24-month mark (Conroy *et al.*, 2016), so it is not possible to observe longer term trends using the available data.

Conclusions

Services such as The Cottage have an important role in the appropriate discharge and post-hospital care of patients experiencing homelessness and have the potential to reduce the burden on health systems. Overall, while only the reduction in unplanned inpatient admissions days was significant, the narrative of two of the client case studies and qualitative findings support the existing evidence on the benefits of MRCs in reducing hospital service utilisation, providing stability, follow-up care, increased knowledge and capacity and establishment of trusting relationships for clients. Our study has demonstrated that even short stay MRCs can have an impact on clients' future hospital service utilisation. Future research could utilise case-control study designs to investigate outcomes amongst patients who have accessed MRCs compared to similar patients who had not accessed this support.

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