

Integrated care facilitation for older patients with complex health care needs reduces hospital demand

Stephen R Bird, William Kurowski, Gillian K Dickman and Ian Kronborg

Abstract

Objective: The evaluation of a new model of care for older people with complex health care needs that aimed to reduce their use of acute hospital services.

Method: Older people (over 55 years) with complex health care needs, who had made three or more presentations to a hospital emergency department (ED) in the previous 12 months, or who were identified by community health care agencies as being at risk of making frequent ED presentations, were recruited to the project. The participants were allocated a "care facilitator" who provided assistance in identifying and accessing required health care services, as well as education in aspects of self management. Data for the patients who had been participants on the project for a minimum of 90 days ($n=231$) were analysed for their use of acute hospital services (ED presentations, admissions and hospital bed-days) for the period 12-months pre-recruitment and post-recruitment. A similar analysis on the use of hospital services was conducted on the data of patients who were eligible and who had been offered participation, but who had declined (comparator group; $n=85$).

Results: Post recruitment, the recruited patients displayed a 20.8% reduction in ED presentations, a 27.9% reduction in hospital admissions, and a 19.2% reduction in bed-days. By comparison, the patients who declined recruitment displayed a 5.2% increase in ED presentations, a 4.4 % reduction in hospital admissions, and a 15.3% increase in inpatient bed-days over a similar time-frame.

Conclusion: A model of care that facilitates access to community health services and provides coordination between existing services reduces hospital demand.

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IT IS WIDELY ACKNOWLEDGED that many countries face serious challenges in caring for a growing population of older people with multiple health problems. Part of this problem is that many health care systems have fragmented geriatric services, discontinuities within the system of geriatric care, system inefficiencies and a community/hospital split.¹⁻⁵ In these systems, elderly patients may fail to receive all the services they require and, as a consequence, suffer detrimental impacts upon their health status and quality of life. Resulting from this are hospital presentations and a need for acute care, which could have been avoided. The aforementioned studies have therefore concluded that coordinated and integrated services are vital for effective care of the elderly, and in accordance with this, a number of initiatives have been implemented in attempts to provide a seamless system of geriatric health care. These include the US Programme of All-Inclusive Care for Elderly People (PACE)⁶ and the Canadian system of integrated care for older persons (SIPA).⁷

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In an attempt to provide more integrated service delivery and in recognition of the growing demand for hospital emergency services, the Department of Human Services Victoria initiated a statewide Hospital Admission Risk Program (HARP), which provided funding for projects aimed at reducing the demand on hospital services and improving patient health.⁸ In response to this HARP initiative, a group of acute and community-based health care providers, in the western suburbs of Melbourne, and representing all facets of health care, formed a consortium (Box 1) that successfully attained funding for several HARP projects. Each of these projects aimed to provide an integrated system of care, which, through the employment of care facilitators, ensured that patients were linked to all the existing acute and community services they required. They also facilitated the coordination between the services through ensuring effective communication and exchange of relevant information. This paper describes the format and outcomes of the project that was established for older people with complex care needs (Complex Needs Project [CNP]).

Project description

Target group identification

The consortium identified older people with multiple comorbidities and complex care needs as a

What is known about the topic?

Many health care systems around the world face a challenge in effectively delivering geriatric care. Each country differs in the approach to deliver geriatric care, as indeed do many regions within the same country. It has been demonstrated that it is important to consider local context and demographics. Some common elements of successful models have been identified, including one of linkage and coordination of services for the elderly.

What does this paper add?

This paper describes a model of care which successfully linked hospital and community-based health care services for the elderly. The model produced reductions in the demand for acute hospital services without increasing overall costs to the system. At a systems level, central to success was the active involvement of key stakeholders throughout the planning, implementation and ongoing review stages of the project. At an individual patient level, the employment of personal care facilitators, who assisted the patients in understanding their health condition, accessed the required services and promoted self-management, was of prime importance.

What are the implications for practitioners?

For practitioners, the model provides an insight into a model of geriatric health care that has been shown to be effective in a high demand metropolitan region of Australia. It outlines the components and attributes that were key in this integrated system of geriatric care. If older people can be assisted in making effective use of existing services, it will reduce their demand on the acute system.

I Member organisations of the HARP Western Consortium

Organisation	Health care role
Western Health	Acute sector with three hospitals
ISIS Primary Care	Primary care
Shire of Melton Council	Local government
Djerriwah Health Services	Health service including primary care
Westgate Division of General Practice	GP practices
Western Melbourne Division of General Practice	GP practices
Westgate Health Co-op	GP practice and primary care
Royal District Nursing service	Primary care nursing
Western Region Health Centre	Primary care
Westbay Alliance PCP	Primary care partnership
Post Acute Facilitation Unit (PACFU)	Sub-acute services

HARP = Hospital Admission Risk Program

group who frequently presented to hospital emergency departments (EDs), and whose use of hospital services could be reduced and general health improved via the implementation of a new model of care. The rationale for targeting this group was a perception that some of this group's presentations and subsequent hospital admissions could be prevented via: a more comprehensive use of community health services through support in identification of the required services, what was available and how to access them; and improved patient understanding of their condition and related self-management.⁹⁻¹¹ Thus, through better ongoing health care, this would prevent unnecessary deterioration in health and the occurrence of events requiring hospitalisation. Additionally, staff in the planning of the model of care perceived that members of this "older complex needs" group used the EDs of their local hospitals as their primary means of accessing the health care system. On some occasions, this was perceived as inappropriate, and alternative community-based services would have been more appropriate. The proposed model could prevent this by ensuring that the patients knew which component of the health system to use for different aspects of their health care needs.

Factors liable to be contributing to this overuse of the acute sector services in the region include its socio-economic demographic, which comprises areas characterised by mild socio-economic disadvantage.¹²⁻¹⁴ Consequently, many of the presenting patients were of low income and likely to view the hospital as a free or low cost service.¹⁵ This phenomenon of overusing the hospital emergency departments was likely to have been accentuated by the relatively low number of general practitioners and other health providers in the region.¹⁶ It may also have been affected by a decreasing number of GPs in the region who bulk bill, since it has been reported that low-income clients, who did not wish to pay for services, are disinclined to visit their GP and are more likely to present to the hospital, even if they would have been reimbursed eventually.¹⁵ Furthermore, the region is the most culturally diverse area in Victoria,^{12,14} with over one-third of the

region's population having been born overseas or speaking a language other than English at home. Consequently many older people from the area experience difficulties in understanding the health care system, the options available to older people, and how to access these services. The local acute hospitals, being very visible institutions, are inevitably seen by older people as the primary locations for seeking all health advice and intervention.¹⁷ This situation is exacerbated by the limited ability of the existing case management services to address the needs of older people in the western suburbs of Melbourne.¹⁸

Ethics approval

Ethics approval for the model of care and the evaluation process was provided through Melbourne Health Research Directorate in November 2003.

Recruitment

During the first few months of the project, the primary means of recruitment was through the identification of older patients (over 55 years) who were frequent presenters (3 or more presentations in the previous 12 months) to the hospital ED. A flagging system in the hospital records was used for patients fulfilling this criterion, and care facilitators were notified upon their next presentation to the ED. A care facilitator then contacted the patient in the hospital, or if already discharged, by telephone. The care facilitator invited them to participate in the new model of care. They were then screened to ensure they met the inclusion criteria, and, if agreeing to participate, provided written informed consent. Six months after the establishment of the project, the recruitment criteria were amended to include participants who had either made two ED presentations in the previous 12 months, or were perceived to be at risk of presenting to a hospital ED. The latter were identified through the local community health care agencies that comprised the consortium, and patients identified in this way were invited to participate in the project by care facilitators working through the community agencies.

Model of care

To address the issues surrounding this older complex needs group, as well as other groups of patients with chronic diseases, a model of care based on the work of Frampton et al 2003,¹⁹ was developed by staff of Western Health, and designated the “Patients First Model of Care”.²⁰

The project team for the model of care included a project manager, six multi-skilled care facilitators with professional expertise in: nursing, psychology, gerontology, case management, community development and social work, and a specialist geriatrician. Brokerage funds were available for purchasing other health and aged care services, as required. The four key components of the model were:

- A “*gateway system*”: Recruitment (as described above)
- *Assessment of needs*: A care facilitator performed a comprehensive assessment in the patient’s home, including the completion of InterRAI,²¹ ComQoL,²² SF-12²³ and Carer Strain Index²⁴
- *Care coordination and facilitation*: The results of the assessment were used to identify issues for the patient, unmet health care needs, barriers to management of their health by community services and factors putting the participant at risk of further functional decline. The assessment results were taken to a case conference attended by the geriatrician who reviewed the medical record to attain a comprehensive picture of the patient’s history and resultant interventions. Information from these sources was then combined and used as the basis for designing an individual care plan for each patient. The care facilitator provided information, advice and education for the patient concerning their condition and promoted self-management. Each care facilitator had a maximum caseload of 25 patients
- *A suite of services*: The care facilitator then facilitated the patient’s access to the suite of health services they required. They contacted the health services and made appointments for the client, ensuring that the service would be provided in a location accessible to the patient. Examples of services arranged included special-

ist medical clinics (continence, cognition, and medical outpatients), allied health therapies and carer support services.

Relating the model to the spectrum of integration described by Hudson et al,²⁵⁻²⁶ it is best described as a combination of “communication” and “collaboration”. The contributing health services exchanged information, and via the care facilitators there was an established process for receiving and making referrals to other members of the consortium. This was further consolidated at an administrative level by these services being recorded centrally. However, according to the definition of Hudson et al,²⁵⁻²⁶ the model could not be described as fully integrated, since the level of integration did not reach the stage whereby the separate organisations considered their separate identities as no longer significant. One reason for this would be the fact that the model of geriatric care described here formed only part of their activities, while other aspects of their health care activities continued with more of an individual agency focus. Additionally, with the current mix of federal and state funding for different components of the health care system, such full integration is unlikely.

Data collection

The patients’ rates of ED presentations, inpatient admissions and inpatient bed-days before and after their recruitment were calculated from Western Health’s patient activity records. For the analysis of pre- and post-recruitment usage, each patient’s recruitment date was given as the date of separation (discharge) from the event that initiated contact by the care facilitators. Thus the event that initiated recruitment was included within their pre-recruitment data, while all subsequent events were included in their post-recruitment data. A “comparator group” was formed from patients who were eligible to participate, and had been offered the opportunity, but had declined. For the comparator group a “dummy” recruitment date was allocated to each patient using the date of separation from the event that had initiated contact by the care facilitator.

Data on the patients' use of services, including those provided by the care facilitators, such as patient assessment of needs, were collated using project-specific record sheets. Additionally, as part of the formative evaluation process, in which 6-monthly reports were provided to the project Steering Committee, a range of staff including hospital department managers, community health agency CEOs, care facilitators, nursing staff and patients were regularly interviewed and completed questionnaires that included items related to concepts in the Improving Chronic Illness Care Model (Robert Wood Johnson Foundation and MacColl Institute of Healthcare Innovation)²⁷ and elements from the Assessment of Chronic Illness Care (ACIC).²⁸

A basic cost-saving analysis was conducted to assess the financial implications of the project. Project costs were derived from the expenditure reported in the project budget. Additionally, costs for hospital services, including weighted inlier equivalent separations (WIES) pre- and post-recruitment were calculated from standard computerised records for each patient.

Data analysis

The general design of the evaluation and analysis of the outcome measures of the project are similar to those used in the Australian Coordinated Care Trials.^{29,30} For the purposes of this paper, data were analysed for patients who were offered participation in the project between February 2004 and 1 October 2005 and who had been recruited to the project for a minimum of 90-days at any time between 1 February 2004 and 1 January 2006. The criterion of 90 days was selected subjectively, as it was deemed a suitable minimum duration for the interventions of the project to have an observable impact. The same 90-day criterion and average length of participation were applied to the dummy recruitment dates of the comparator group. In the analysis, the first 90 days post-recruitment were included in the post-recruitment data. The baseline characteristics of the HARP and comparator groups were compared using Kruskal-Wallis tests.

Patient pre-recruitment use of hospital services, such as the number of ED presentations, inpatient admissions and bed-days, were determined from hospital records for the 12 months before their recruitment. For the purposes of comparison with post-recruitment data, these data were scaled to rates of service use per day. Post-recruitment rates of ED presentations, admissions and hospital bed-days were scaled by dividing the number of occurrences by the number of days since the patient had been recruited onto the program. Pre- and post-recruitment values were compared using non-parametric Wilcoxon signed rank tests with $\alpha=0.01$, to adjust for multiple comparisons.

As an indication of the services provided by the project, data were analysed for the 3 months between January 1 and March 31 2005.

Results

Patient characteristics (Box 2)

A total of 231 older patients had been participants in the HARP-CNP for the requisite minimum of 90-days between 1 February 2004 and 1 January 2006 and had Western Health patient activity records that were suitable for analysis. Excluding Australia, the patients were born in 43 different countries, and 59% of patients had been born in countries where English was not the first language. Excluding English, 26 different languages were spoken and 54% of patients preferred to use a language other than English at home.

As of 1 January 2006, 168 of the recruited participants had been discharged from the project, having been participating for an average of 227 ± 104 days; the 63 who were still active participants on the project had been participating for 253 ± 129 days. The comparator group had been tracked for an average of 230 ± 16 days since their dummy recruitment. The main reason for discharge was the project intervention resolving the patients' health care issues, usually through the project facilitating the attainment of the required level of support from community-based health care services and/or improved self-man-

2 Baseline characteristics of HARP and comparator groups

	HARP	Comparator group	Kruskal-Wallis <i>P</i>
<i>n</i>	231	85	–
Age (years)	74.7±8.6	76.8±8.4	0.071
Age range (years)	56±94	56±94	–
Pre ED rates (presentations/patient/day)	0.0125	0.0115	0.911
Pre admission rates (admissions/patient/day)	0.0068	0.0068	0.909
Pre bed-day rates (bed-days/patient/day)	0.0625	0.0537	0.636
Sex			
■ Male (no.)	112	42	–
■ Female (no.)	119	43	–

HARP = Hospital Admission Risk Program

3 Changes in the use of hospital services

	Pre-(rate)	Post-(rate)	Change (%)	Wilcoxon <i>P</i>
HARP (<i>n</i>=231)				
ED presentations (presentations/patient/day)	0.0125	0.0099	–20.8	< 0.001
Inpatient admissions (admissions/patient/day)	0.0068	0.0049	–27.9	< 0.001
Inpatient bed-days (bed-days/patient/day)	0.0625	0.0505	–19.2	< 0.001
Comparator group (<i>n</i>=85)				
ED presentations (presentations/patient/day)	0.0115	0.0121	+ 5.2	0.246
Inpatient admissions (admissions/patient/day)	0.0068	0.0065	–4.4	0.390
Inpatient bed-days (bed-days/patient/day)	0.0537	0.0619	+ 15.3	0.656

HARP = Hospital Admission Risk Program

agement (50%). Other reasons were the patient moving out of the area or moving into a nursing home. Two percent of patients died while in the program.

At the time of recruitment, the HARP participants (data available for 214 of the 231) had an average of 4.7±1.9 medical disease diagnoses per person, which ranged from 1–12 diagnoses. The most common ED diagnoses were: chronic obstructive pulmonary disease, chest pain, congestive cardiac failure, abdominal pain, pneumonia lobar, headache, urinary tract infection, angina pectoris (unstable), cellulitis and constipation. The HARP participants (data available for 210 of the 231) were taking an average 8±4.7 medications per person, which ranged from 0 to 24 medications.

Changes in the utilisation of hospital services

The analysis revealed statistically significant reductions in the rates of presentation to the EDs (–20.8%), admissions (–27.9%) and inpatient bed-days (–19.2%) post-recruitment for the HARP patients (Box 3), but no statistically significant changes in the comparator group, which displayed a mean increase in ED presentations and bed-days, and a small reduction in admissions.

As part of the formative evaluation process the governance and steering committees of the project were interested to know whether the project was targeting an appropriate population and whether its impacts were more evident in men or women, or older or younger subgroups of

4 Hospital services pre- and post-recruitment: utilisation rates presented as means per patient per day

Hospital services	Pre (rate)	Post (rate)	Change (%)	P
ED presentations				
Age 55.0–71.27 (<i>n</i> = 77)	0.0135	0.0084	–37.8	<0.001
Age 71.3–79.33 (<i>n</i> = 77)	0.0117	0.0107	–8.5	0.135
Age > 79.33 (<i>n</i> = 77)	0.0123	0.0106	–13.8	0.024
Men (<i>n</i> = 112)	0.0133	0.0109	–18.0	0.001
Women (<i>n</i> = 119)	0.0117	0.0090	–23.1	0.001
Inpatient admissions				
Age 55.0–71.27 (<i>n</i> = 77)	0.0070	0.0030	–57.1	<0.001
Age 71.3–79.33 (<i>n</i> = 77)	0.0069	0.0069	0.0	0.246
Age > 79.33 (<i>n</i> = 77)	0.0065	0.0049	–24.6	0.042
Men (<i>n</i> = 112)	0.0071	0.0052	–26.8	0.001
Women (<i>n</i> = 119)	0.0065	0.0047	–27.7	0.001
Inpatient bed-days				
Age 55.0–71.27 (<i>n</i> = 77)	0.0527	0.0246	–53.3	<0.001
Age 71.3–79.33 (<i>n</i> = 77)	0.0723	0.0550	–23.9	0.050
Age > 79.33 (<i>n</i> = 77)	0.0624	0.0718	+15.1	0.119
Men (<i>n</i> = 112)	0.0595	0.0500	–16.0	0.009
Women (<i>n</i> = 119)	0.0652	0.0509	–21.9	<0.001

the population. Therefore the target population was subdivided by age into tertiles (younger than 71.27 years; between 71.27 and 79.33 years; and over 79.33 years at recruitment) and gender for further analysis (Box 4).

These results show similar reductions in the use of hospital services by the men and women of the HARP group, and no obvious age-associated trends in ED presentations and admissions. There is however some suggestion that there may be an age-associated effect upon changes in the use of hospital bed-days, with the greatest reduction seen in the youngest age group and an increased, although not statistically significant, utilisation post-recruitment in the oldest age group. By comparison, when the comparator group was subdivided into three age classes using the same age divisions, they displayed the following changes for pre- versus post-dummy recruitment for the youngest (*n* = 26), middle (*n* = 22) and oldest (*n* = 37) age divisions, respec-

tively — ED presentations: –14.9%, +8.3% and +19%; admissions: –13.4%, +16.3% and –7.1%; bed-days: +3.0%, +28.6% and +16.8%. In all comparisons between the HARP and comparator group the changes in use of acute hospital services were considerably better for the HARP groups, with the exception of the increased use of bed-days in the oldest age group, for which a similar increase was seen in the HARP and comparator groups.

Use of services

Between 1 January and 31 March 2005, there were 182 patients active on the project, and records for the use of services were available for 114 of these participants. Data were not available for the remaining 68. All active participants received care facilitation and 36 of the participants received the care facilitation service only. Care facilitators recorded 265 other services that were provided to the 114 participants. Excluding

5 Services provided by the project between 1 January and 31 March 2005

Service category	No. of services (%)
Home help	40 (15.09%)
Specialist medical	29 (10.94%)
Physiotherapy	28 (10.57%)
Occupational therapy	19 (7.17%)
Personal care	19 (7.17%)
Transport	16 (6.04%)
Counselling/psych	15 (5.66%)
Case management	13 (4.91%)
Podiatry	12 (4.53%)
Personal alarm	11 (4.15%)
Respite care	11 (4.15%)
LTC assessment	8 (3.02%)
Nursing: general domiciliary	7 (2.64%)
Caregiver support	6 (2.26%)
Meals on wheels	5 (1.89%)
Rehab group	4 (1.51%)
Dietetics	4 (1.51%)
Geriatric: continence	4 (1.51%)
Education: other disease	3 (1.13%)
Medication management	2 (0.75%)
Education: diabetes	1 (0.38%)
Home/garden maintenance	1 (0.38%)
Interpreter	1 (0.38%)
Nursing: wound care	1 (0.38%)
Pain management	1 (0.38%)
Psychiatry	1 (0.38%)
Social support	1 (0.38%)
Speech pathology	1 (0.38%)
Vision	1 (0.38%)
All services	265 (100.00%)

care facilitation, the mean number of services received by each patient was 2.32 ± 2.23 .

Excluding the service of care facilitation, which accounted for 12% of all services, six service categories accounted for 50% of all services. These were: home help, specialist medical, physiotherapy, occupational therapy, personal care and transportation services (Box 5).

Over 70% of the services provided were initiated/arranged directly by the care facilitators. Staff of Western Health or staff of the Western HARP Consortium partners arranged 20% of the remaining services, and 10% of services had been arranged before recruitment. Private services accounted for 28% of all reported services. One-off services accounted for 37.5% of all services. The participants paid for 2.7% of services themselves. Twenty-five of the arranged services were not implemented/delivered due to: the patient's ineligibility ($n=2$), failure to attend ($n=1$), cancellation ($n=3$), and the patient refusing or declining the services ($n=19$).

Cost-saving analysis

Comparing the HARP and comparator groups and the suggested trends in their use of acute hospital services over time (a general percentage increase by the comparator group compared with a general percentage decrease by the HARP group) gives a rough estimate of the magnitude of annual savings attributable to the project. These are estimated to be ~250 ED presentations, ~125 hospital admissions and 1700 bed-days annually. Such annual savings (~\$2M) exceeded the annual total cost of the project (~\$1M), which included staffing, on-costs and the brokerage purchase of additional services, and therefore suggest the model of care has economic advantages as well as a beneficial impact upon the patients. Based upon these and other findings, this project and similar ones for other patient groups have subsequently been mainstreamed into the region's health care system.

Discussion

The Patient's First model used in this project²⁰ aligns with the views of Glendinning² in focusing on "the 'users' needs and the best way of meeting those needs" rather than individual services being "preoccupied with the performance of a specific service".² (p. 150) It also had similar objectives and outcomes to the Canadian SIPA, in reducing hospital demand and improving health status.⁷

The overall results indicate that patients who participated in this model of care displayed a reduced demand for acute hospital services post-recruitment. While the study design cannot provide irrefutable proof that it was the model of care that caused these improvements, there are strong indicators to support such a claim. Also, while acknowledging the potential bias caused by patient self-selection into participating or declining to participate in the project, it is interesting to note the trends in use of hospital services by the HARP and comparator groups; particularly since the HARP and comparator groups were very similar in their baseline rates for ED presentations, admissions and use of hospital bed-days. The data shows the HARP participants reduced their rate of ED presentations and inpatient bed-days post-recruitment, whereas the comparator group showed mean increases in ED presentations and bed-days. Although the comparator group did show a decline in admission rates post-dummy recruitment, it was much less than that recorded for the HARP group, thereby suggesting that the decline in the use of acute hospital services seen in the HARP participants was unlikely to be entirely attributable to regression to the mean caused by recruiting them at a peak time of their use of hospital services. It is therefore suggested that the declines were at least in part attributable to participation in the project.

Furthermore, it is likely that the study failed to capture all of the patients' use of services pre-recruitment, when, for example, they may have presented to another hospital, whereas during the post-recruitment phase, the regular contact between patient and care facilitator, which included regular phone monitoring, should ensure minimal data loss. Consequently, it is possible that any bias in data loss may result in an underestimate of the beneficial impact of the project rather than the converse.

The qualitative aspects of the evaluation indicated that the introduction of the model and care facilitators into the existing health care system actively engaged and linked the key services without disruption, did not challenge

professional boundaries, and gained support through all services. One of the reasons for this was the engagement of all stakeholders in the model's development and implementation, thereby generating a sense of joint ownership. With this widespread acceptance and positive attitude among stakeholders, the care facilitators were able to develop an ongoing working relationship with the patients, and this continuity enabled them to better understand the patients' needs. They also provided the coordination and linking between separate services, including those of the hospital and community. They achieved this through direct contact between each of the service providers and the patient. This ensured an effective linkage between services and that the patient was referred to all the services they required in a timely manner and at locations suitable for the patient. In doing so the care facilitators were able to assist the patient in becoming aware of the available services, navigating the complexities of the Australian health-care system and overcoming many of the perceived difficulties that the patient may have found insurmountable if attempting to access the different services unaided. Additionally, the care facilitators provided the patients with a consistent point of contact, and as a result the patients perceived there was continuity and coordination between services.

Since the employment of the care facilitators and their role did not impinge on existing services and their roles, they were not seen as a threat to professional domains and identities, which was reported as an issue in some UK attempts to integrate services,² and did not disrupt the existing delivery of specific services and care. One way in which this was avoided was through the involvement of key staff and heads of departments during the early planning stages of the model and through ongoing steering and governance committees. Additionally, through their direct contact with the service providers the care facilitators were able to establish effective working relationships with the providers, and this facilitated the transfer of vital information needed to ensure coordinated care.

Limitations

When reporting the results of this project it is appreciated that the findings could be criticised due to the lack of a control group. However, the nature of the project, its design and implementation were not amenable to such inclusions. In generating the comparator group the authors acknowledge that there are issues relating to the self-selection into participant (HARP) or non-participant (comparator) groups, yet the real-world nature of the project prohibited a randomised-controlled design. It was therefore considered that despite these acknowledged weaknesses, the comparator group could be used to provide further indications of the impact of the project that were in addition to the primary pre-versus post-recruitment comparisons within the HARP group. In particular, the analysis of the comparator group could indicate whether the recorded reductions in the use of hospital services seen in the HARP group were due to patients being recruited at a peak time of their use of hospital services, and were therefore caused by a regression to the mean — which was also an issue faced by those evaluating the Australian Coordinated Care Trials.²⁹ Changes in recruitment criteria made during the project created difficulties in the evaluation process — also a feature of the Coordinated Care Trials.³⁰ Therefore the evaluators endeavoured to select and utilise appropriate outcome measures that provided the best objective indicators of its impact and report these as evidence of effectiveness within the constraints of a real-world initiative.

In addition to the hospital demand data, which is reported here, an extensive analysis of the data collected using the assessment tools was undertaken (InterRAI,²¹ ComQoL,²² SF-12²³ and Carer Strain Index²⁴). It is planned to report these findings in a subsequent paper.

Conclusions

These data suggest that for older patients with a history of frequent emergency department presentations and/or at risk of frequent presentation, with complex health care needs, an integrated

care facilitation model that is patient-focused, links and coordinates services, and delivers a continuum of care through the acute and community health sectors reduces utilisation of acute health care facilities.

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Competing interests

The authors declare that they have no competing interests.

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