

Evaluating a model of service integration for older people with complex health needs

service integration

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Background: Older people with multiple chronic conditions and complex health care needs require a comprehensive, accessible and well-coordinated system of services. To address this growing problem, a consortium of acute and community-based health care organisations implemented a 'Patients First' model of service integration for the target population. The project evaluation utilised a combination of quantitative and qualitative methods in an action research framework.

Findings: The evaluation process not only demonstrated the benefits of the project to patients and the health care system, but also contributed to the identification of pivotal components in the model, aspects requiring attention and consequently their refinement. It was also a vehicle for the development of a sense of ownership amongst staff and has evolved into an integral part of the model.

Background

Older people (>65 years) with multiple health problems (complex needs) are a group who require particular assistance with their health care and accessing the services they require (DHS 2003; Wolff et al. 2002). Within the western suburbs of Melbourne, the experiences of the health care staff suggested that members of this 'Older Complex Needs' group used the Emergency Department of their local hospital as their primary means of accessing the health care system. Consequently, staff at the hospitals identified numerous presentations to the Emergency Departments that were deemed to be inappropriate or preventable. Examples of these include patients waiting too long before responding to changes in their symptoms, resulting in the need for an emergency admission, or attending the Emergency Department when

anxious about their symptoms despite there being little change in their condition. In such cases, appropriate use of community health services and better self-management, facilitated by an improved understanding of their condition, would be likely to improve patient health and reduce the use of acute sector services.

One of the factors likely to contribute to the prevalence of this situation within the western suburbs of Melbourne is the demographic features of the region, which is characterised by mild socioeconomic disadvantage (DHS 2002). Consequently, many of the aforementioned clients are of low income and view the hospital as a free or low-cost service. Furthermore, this phenomenon of over-using the hospital Emergency Departments is likely to have been accentuated by the decreasing number of general practitioners who bulk-bill. This results in low-income clients, who do not wish to pay for services being disinclined to visit their GP even if they will be reimbursed eventually. Additionally, the region is the most culturally diverse area in Victoria (DHS 2002). Over one third of the region's population were not born in Australia, or speak a language other than English at home. As a result, they are likely to experience difficulties in understanding the health care system, the options available to them, and how to access these services. Inevitably, therefore, the local acute hospital, being a very visible institution, is seen as the primary location for seeking health advice and intervention (Tod et al. 2001).

Moreover, this situation is exacerbated further by a limited number of options for ongoing support and 'client-centred' case management services (Roberts 2002). Significant waiting lists exist for clients requiring care coordination and multiple services and are even more extensive for patients requiring significant levels of case management or for those who have high-level, complex care needs. Limited ability of the existing 'system-centred' (Roberts 2002) case management services to address the needs of older people is evident in the western suburbs of Melbourne.

It was therefore proposed that with appropriate assistance, the health care needs of this Older Complex Needs group could be: more clearly identified; health care plans produced according to evidence-based practice; access to appropriate services facilitated; client health and quality of life improved; and use of hospital emergency and in-patient services reduced. To address the issues surrounding this Older Complex Needs group and other groups of patients with chronic diseases, a 'Patients First' model of care was developed (Smith et al. 2003). The overall goal of the Patients First strategy was to create a patient-centred, sustainable service system that allowed a consortium of acute and community health providers to deliver effective health outcomes for these patients.

In 2003 the Western Hospital Admissions Risk Programme (HARP) Consortium implemented two projects using this Patients First model: (i) the

Chronic Disease Management Project (CDMP), which targeted patients with specific chronic conditions such as chronic obstructive pulmonary disease, chronic heart failure, angina and paediatric asthma, and (ii) the Complex Needs Project (CNP), which targeted people aged 65 years and over, who frequently presented themselves to the Emergency Departments and in-patient services at Western Health (which includes three public hospitals: Sunshine Hospital, Western Hospital and The Williamstown Hospital) with multiple geriatric conditions, such as decreased mobility, incontinence, cognitive decline and depression. Within this article we describe the evaluation of the Patients First model during the early stages of its implementation with a group of Older Complex Needs patients, and how the evaluation process contributed to the development of the project.

The Patients First model of care

A consortium of community health organisations and Western Health (acute sector hospitals) was formed to implement the 'Patients First' model of care. The project team included a project manager, six multiskilled 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 Hospital Admission Risk Programme (HARP) in Victoria funded the implementation of the model for this group. The four key components of the model were:

- 1 *A 'Gateway System'*. Suitable patients who frequently presented to the hospital were identified from hospital records, and upon presentation at the hospital, were invited to participate in the new model of care. They were then screened to ensure they met the inclusion criteria and if they agreed to participate, provided written informed consent.
- 2 *Clinical streams*. Patients were managed in streams most appropriate to their clinical needs, using evidence-based guidelines and personalised, outcome-based treatment plans.
- 3 *Care coordination and facilitation*. Each potential client, identified from the Gateway System, was allocated a Care Facilitator who had a maximum caseload of 30 patients. The Care Facilitator performed a comprehensive assessment in the patient's home, which included the:
 - Active Client Record XL Sheet (internal CNP data collection tool)
 - inter-RAI Comprehensive Assessment for Community Care (Heaney et al. 2003; interRAI-UK 2002; Morris et al. 2003)
 - Comprehensive Quality of Life (Com-QoL) subjective scale (Cummins 1993, 2000; Cummins et al. 1994)

- SF-12 Health Survey (Andrews 2002; Jenkinson et al. 2001; Sanderson & Andrews, 2002; Taylor et al. 2000; Ware et al. 2002)
- Carer Strain Index (Sullivan, 2002, 2003; Thornton & Travis 2003).

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 them 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 clear picture of the patient's history and resultant interventions. Information from these two sources were then combined and used as the basis for designing an individual care plan for each patient.

- 4 *A suite of services.* The Care Facilitators 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 specialist medical clinics (continence, cognition, and medical outpatients), allied health therapies and carer support services.

Evaluation of the Patients First model

The evaluation of the Patients First model when implemented in the Older Complex Needs project, utilised an action research framework with a combination of quantitative and qualitative methods. A summary of selected objectives, indicators and sources of data are presented in Table 1.

The evaluation is ongoing with six-monthly reports being made to the project steering committee (composed of representatives of the partnership organisations in the consortium). To gain a better understanding of the care facilitation process, the Care Facilitators recorded details of their activities and participated in focus groups and interviews, which were used to identify the core components of their professional practice. Fifteen major care

TABLE 1: SUMMARY OF PROJECT AIMS AND INDICATORS

Primary aims	Components	Secondary objective	Data source	Indicators
To develop and implement a model of care that delivered effective health outcomes for the targeted patients	Effective gateway	Effective patient identification and recruitment	Care Facilitator records	<ul style="list-style-type: none"> • Number of recruited patients • Proportion of screened and eligible patients who are recruited
	Care facilitation and coordination	Clients comprehensively assessed and services matched to identified needs	Care Facilitator records	<ul style="list-style-type: none"> • Rate of assessment and after recruitment • Completed assessments with the results informing Care Plans
	Access to suite of services	Patients accessing services required as determined from their care plan	Care Facilitator records	<ul style="list-style-type: none"> • Proportion of clients receiving new services
Improve patient health			Records of assessment. (Assessments repeated 3–6 months)	<ul style="list-style-type: none"> • Changes in assessment scores over time
Improve patient quality of life			Records of assessment. (Assessments repeated 3–6 months)	<ul style="list-style-type: none"> • Changes in assessment scores over time
Reduce ED presentations			Hospital records and Care Facilitator spreadsheets	<ul style="list-style-type: none"> • Changes in the rate of ED presentations • Reductions in preventable and/or inappropriate presentations
Reduce use of in-patient services			Hospital records and Care Facilitator spreadsheets	<ul style="list-style-type: none"> • Changes in use of in-patient services

facilitation tasks were identified. The reported durations of these tasks were then subjected to principal component analysis.

Evaluation challenges and responses

- 1 For much of their data the evaluators were reliant upon many different health care workers to provide complete, valid, reliable, accurate and meaningful data. This being undertaken in a context in which health staff experience work pressures and data recording may not be a high priority. This resulted in the evaluators receiving incomplete data, overly brief descriptions or categorisations that did not fully explain the scenario, delays in completing data collection and non-responses to requests for data. To address this the evaluators had to take a proactive approach in asking staff for missing data, cross-referencing data from different sources to check its validity (hospital computer records and Care Facilitator data sheets on each participant) and to develop a positive working relationship with the project's management and staff. One aspect of this was conveying to staff that the evaluation process was an integral part of the project that would provide useful information concerning the efficacy of the model and potential refinements to its workings. It was therefore a positive element rather than an additional burden. Likewise, clarification was required concerning the comprehensive assessments, which may have been perceived primarily as evaluation tools, whereas in reality, they had been recommended and/or approved by the clinical specialists for the purposes of providing vital information about the patient, which could also be utilised in the evaluation. Regular reports provided at monthly steering committee meetings provided all staff with information on the project activities, such as recruitment rates, services provided and relative demands on staff time. This facilitated staff discussion on the different components of the model and informed refinements. In doing so staff were able to contribute to improvements in the model and work practice, which illustrated the value of the data collection process and hence increased compliance to data reporting. Furthermore, the data analysis that revealed positive outcomes for patient health and quality of life, plus reductions in the demands upon hospital services (Emergency Department presentations, in-patient admissions and use of hospital beds) all provided positive feedback on the efficacy of the model and hence encouragement to all those working on the project and further emphasised the significance of the data collection.
- 2 The initial approach to the reporting of Care Facilitators' activities was developed by the project management team. This approach focused on a distinction between direct and

indirect involvement of the participant. All actions that involved personal interaction between Care Facilitators and participants were reported in the 'direct category', whereas all other actions that did not personally involve the participant, such as liaison with services and making referrals, were reported in the 'indirect category'. One of the prominent care facilitation tasks that emerged in the 'direct category' was 'encouraging the participant to accept services' which reflected the reticence of the target population. However, the initial analysis of the direct and indirect care facilitation tasks and subsequent presentation of findings to Care Facilitators revealed the need for a fundamental review of the very concept of 'client centeredness'. Care Facilitators were concerned that the initial data collection tools tacitly implied that 'direct' interventions were superior to indirect interventions. Care Facilitators vigorously and convincingly argued that their 'indirect' interventions on behalf of the participant, which often involved high-level negotiation and advocacy skills, were effectively contributing to the implementation of the Patients First model of care. Developing collaborative partnerships with service providers and involving general practitioners were identified as essential components of the 'client-centered' approach. In response, the evaluators organised a series of focus groups with the project management team and Care Facilitators to explore the care facilitation practice. The process continued until full consensus of the care facilitation team was achieved. As a result, 15 distinct care facilitation tasks were distinguished, which in the opinion of Care Facilitators truly reflected the complexity of their practice. Subsequently, Care Facilitators commenced reporting their time spent on the activities and tasks.

When analysing the activities of the Care Facilitators the evaluators experienced the scenarios described in the existing literature with regard to the importance of implicit practitioner knowledge (Bussing & Herbig 2003; Herbig & Bussing, 2003) and the complexities inherent in the measurement of professional expertise among health care and case management workers (Mateo et al. 1998; van der Heijden 2000). However, the direct involvement of the Care Facilitators in the assessment of their role, through focus groups and individual face-to-face interviews, enhanced the sense of ownership of the outcomes and resulted in an improved data collection and reporting practice.

- 3 Completion of the comprehensive assessment involved is lengthy, involving four major, internationally validated tools, namely inter-RAI, Com-QoL, SF-12 and Carer Strain Index. Initially, the comprehensive assessment was to be repeated every three months in order to identify

changes in the participant's functional health and quality of life. However, due to the limited capacity of this group to participate in such a process for prolonged periods, assessments initially took many weeks to complete. This made regular reassessments problematic. This was doubly problematic since the health status of people within this group can change rapidly and therefore regular reassessment is desirable in health care service provision. Therefore, a balance between regular monitoring and over-assessing the participants was required. Care Facilitator familiarisation with these tools and appreciation of their importance in identifying health care needs and services, as well as effective patient monitoring all contributed to attaining this balance.

- 4 By definition, the target population of the Complex Needs Project has multiple co-morbidities, with complex health care needs. Many of the participants have conditions that result in a progressive deterioration of their health. Consequently, evaluating the impact of the model by using a longitudinal approach to compare their health and quality of life is problematic, as any benefits of the model of care may to some extent be counterbalanced by factors related to disease progression and ageing. Additionally, the classic randomised

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controlled methodology for the assessment of any impacts was not an option due to obvious ethical issues and the comprehensive implementation of the project across the Western Consortium. Likewise, using cross-sectional data and comparator groups from another region, or the records of a group of matched individuals previous years, or those who declined to consent is also problematic as the groups may not be matched for medical conditions, health issues, sociocultural factors, health system availability or environmental factors. Consequently, given the acknowledged difficulties with each of the above methodologies several approaches were required and the indications from each compiled to produce a coherent overview from which inferences could be made using logical reasoning.

- 5 Some clients declined or refused services, and consequently there were often gaps between the services to which they had been referred and what they actually received. Identifying these gaps required cross-referencing different data sources from different partner organisations, with each using different data recording systems.
- 6 Whilst the hospital Emergency Department records state the primary reason for admission

on a patient's discharge file, other confounding factors may not be recorded in the computerised database and, consequently, the complexity and true nature of their admission may be missed. This is illustrated by the fact that of the 22 principal diagnoses, 'pain syndrome' was the most frequently (13.5%) reported condition by the CNP Care Facilitators¹. This may suggest that it was the principal factor affecting the functioning of this group, yet according to their SF-12 scores, 'bodily pain' was not the most significant factor affecting their health and social functioning. Indeed of the eight health constructs of SF-12 it was their second-best score. This may be due to the Emergency Department system splitting the different diseases categories, whereas the SF-12 clumps their effects.

Consequently, caution needs to be exercised when interpreting the data, particularly when two different collection tools are used and the evaluation process is not the primary reason for data recording.

Results

Cohort characteristics

In accordance with the HARP-CNP recruitment criteria, all recruited participants were aged 65 years and over, had presented to the Emergency Department at Western Health at least four times in the previous 12 months and presented with two or more of the preliminary risk factors. The following preliminary risk factors were identified among the project's participants:

- self-care problems (87.8%)
- using services in the past (68.9%)
- living alone (28.4%)
- having a caregiver's responsibility for others (12.2%)
- not being able to nominate a regular general practitioner (2%)
- being at risk of homelessness (4%).

In recognition of the central role of the informal carers, the CNP Care Facilitators identified a seventh risk factor, which was consequently added to the original list:

- having an informal/family caregiver under stress (33.8%).

The initial CNP participant profiles indicate that 'having an informal/family caregiver under stress' was almost three times more prevalent than 'having a caregiver's responsibility for others'. These findings illustrate the unique ability of the community-based Care Facilitators to identify additional risk factors and to explore non-clinical reasons for frequent Emergency Department attendances of older people. For this reason the CNP management contemplate whether to relax the recruitment criteria and allow recruiting older people at their fourth Emergency Department presentation in the past 12 months

without any screening for the preliminary risk factors. The rationale is to allow an in-depth exploration of factors that contribute to frequent use of the acute care services.

Data obtained using the interRAI showed the recruited participants to have an average (median) number of five diagnosed conditions per person (Mean = 5.18, SD = 2.11), which ranged from one to 12 conditions. They were taking an average (median) of seven medications per person (Mean = 6.75, SD = 5.16), which ranged from zero to 24. From among the eight constructs of SF-12, the lowest mean standardised scores, indicating the poorest self-reported health were identified with regard to 'vitality' and 'physical functioning'. The highest mean standardised scores were identified with regard to 'role emotional', 'bodily pain' and 'mental health'. Thirty-eight participants (51.4%) reported English as their first language. Other participants reported speaking 13 different community languages. Seventeen participants (23%) required an interpreter. Twenty-two principal diagnostic categories were identified at the discharge from the Emergency Department, the most prevalent being: pain syndrome, cardiac failure, infection, pneumonia, diabetes, fracture(s), chronic obstructive pulmonary disorder (COPD), renal failure, Parkinson's disease, gastritis, depression and asthma.

Impact of the model

Evaluation of objective: reduction in the use of Emergency Department and in-patient services

Within the period of 12 months prior to recruitment the recruited participants had an average (median) of four presentations per participant (Mean = 5.35, SD 1.93) with a maximum of 12. Since commencement of the project the recruited participants had made a total of 18 presentations to the Emergency Department. Care Facilitators assessed 15 of these presentations as 'appropriate' and three as 'preventable'. The low number of inappropriate or preventable presentations suggests improved self-management and effective use of alternative health care providers.

To evaluate the efficacy of the model of care upon Emergency Department presentations further, the participants' presentations for the 12 months prior to their recruitment were analysed and compared with their presentations post recruitment. To account for participants being recruited onto the program for differing lengths of time the data were scaled to activities per patient per month. For the year prior to recruitment the 74 participants made 396 presentations, which corresponded to 0.45 per patient per month. Post recruitment the Emergency Department presentation rate was 0.13 per patient per month. This difference was statistically significant (Wilcoxon test $Z = -6.48$, $p < 0.001$) and for a cohort of 74 participants suggests a saving of 284 Emergency Department presentations a year. As indicated above, some of

this reduction may be due to the selection of recent frequent presenters and possible regression to the mean, but when considered along with other data, it suggests that a major contributor is the model of care contributing to improved health status, improved self-management and access to alternative and appropriate health care services.

Evaluation of objectives: client health status and quality of life

Longitudinal monitoring via the second comprehensive assessment, which was conducted an average of 116 days after the first assessment revealed:

- significant improvement in cognitive performance between the first and the second assessments among female participants
- the proportion of participants with depressive disorders diminished from 21.4% at 'Assessment 1', to 19.7% at 'Assessment 2'
- the proportion of patients with pain diminished from 65.9 % at 'Assessment 1' to 57.6% at 'Assessment 2'
- significant overall improvement in the activities of daily living (ADL) between the first and the second assessment
- statistically significant improvements with regard to seven (of eight) health constructs of the SF-12 Health Survey. These improvements applied primarily to the 'younger' women aged 55–75 years. Some improvements applied to the 'older' men aged 76 years and over
- significant improvements in the perceived quality of life were identified in six of the seven Com-QoL domains of quality of life. Major improvements applied primarily to the younger group of patients aged 55–75 years. Women were more likely than men to experience an improvement in the perceived quality of life during their participation in the CNP. No significant changes were identified between assessments in the subjective quality of life with regard to Com-QoL 'Health'
- significant reduction in caregiving strain among the carers of the 'younger' women aged 55–75 years between Assessments 1 and 2.

Evaluation of objective: system functioning

Model components

- 1 *Gateway.* Care Facilitators screened a total of 460 people between 1 February and 31 July 2004. From these, 74 patients were recruited and the Care Facilitators were awaiting receipt of consent from a further 34 eligible clients. Of the others, 148 were identified as ineligible for participation in HARP-CNP; of these, 71 people (48%) were in residential care and 69 people were adequately managed by other

agencies or programs, which meant that they were not suitable for recruitment. A further 114 people either declined consent (27.2%), did not respond (52.6%) or died (14.9%). Based on the total number of eligible participants (n = 199), there was a 30.1% non-response rate and a 15.6% decline rate. The high number of potential participants who did not respond to letters inviting them to participate in the project was identified as a concern. These were primarily individuals who had been discharged from the Emergency Department before a Care Facilitator could meet with them. Given the concern that many of these individuals may have been able to benefit from the program, the project team applied for permission and received approval from the Ethics Committee to contact the applicants by telephone, to explain the project and invite their participation.

2 *Principal component analysis of Care Facilitators' activity.* Fifteen care facilitation tasks and activities were identified via focus groups with the CNP Care Facilitators. Care facilitation activity data, which contained the reported durations of 15 tasks, were suitable for factoring (Kaiser-Meyer-Olkin measure of sampling adequacy = 0.631). Five groups of care facilitation tasks were extracted with eigenvalues greater than unity. These five components accounted for 70.1% of the variance explained in the reported durations of care facilitation activities. Using the quartimax rotation method the five components were identified and a five-factor model was adapted. This model illustrates care facilitation practice in the initial stage of the project² (Table 2).

Liaison with service providers and the provision of direct client support emerged as a single

most important component of the client-centred care facilitation practice (accounting for 30.1% of the variance explained). Assessment, referrals and client education loaded as Factor 2. The third factor was primarily composed of case conferencing and reporting activities. Interestingly, participant recruitment and GP involvement, which were identified by the project management team as two areas that required special attention, loaded together on one factor. The last, fifth factor contained a direct intervention task of arranging and accompanying the participant to attend appointments.

3 Access to a suite of services. Prior to their recruitment, participants (N = 52)³ were receiving 62 services that were arranged before their last hospital admission or Emergency Department presentation and 17 services arranged as part of the Western Health discharge plan. By 30 June 2004, the CNP Care Facilitators had initiated/arranged 115 services in 31 categories. This suggested that prior to their recruitment the participants may not have been accessing all of the services they required and therefore the model was having a positive impact upon their health and quality of life.

Conclusions

Conducting an evaluation on a project that focuses upon people whose health, quality of life and health care needs are complex and changing as a result of ageing, disease progression and socio-demographics presents numerous challenges. However, the evaluation process has made a positive contribution and fulfilled several roles in the early stages of this project, including that it:

- provided clear evidence that the project has had a beneficial impact upon the health and quality

TABLE 2: FIVE FACTOR MODEL * OF 15 CNP CARE FACILITATION TASKS**

Liaison and support	Assessment and referrals	Reporting and equipment	Recruitment and GP involvement	Appointments
Liaison acute	Referrals	Case conference	Recruitment	Appointments
Support	Education	Reporting	Liaison GP	
Liaison family	Assessment	Equipment		
Liaison community				
Monitoring				

*Factor loadings and eigenvalues available from the authors. **Re-assessment did not load on any factor.

of life of these patients. In doing so, it has also provided positive feedback to staff

- identified aspects of the model warranting improvement and contributed to subsequent refinements
- facilitated the development of a sense of ownership amongst staff working in the project from a diverse range of disparate health professions, and facilitated the development of a coherent team approach

Consequently, the evaluation process and related data collection has moved from its early status as being viewed as an inconvenience and peripheral activity that required staff time and distracted them from their 'real' work, to being recognised as an integral and valued part of the project that benefits staff and patients.

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Notes

- 1 Unless otherwise stated, the data in this paper refer to 74 patients recruited within six months between February and July 2004.
- 2 Data based on 52 participants recruited by 30 June 2004.
- 3 Recruited by 30 June 2004.

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