

Care coordination in the Emergency Department: improving outcomes for older patients

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Abstract

This study aimed to evaluate the effectiveness of the care coordination (CC) program operating in the Emergency Department (ED) of The Northern Hospital in improving outcomes for older people and reducing ED admissions and re-presentations. This was achieved by comparing admissions from ED to wards pre and post commencement of the CC program, and measuring patient health-related quality of life pre and post CC intervention. Patient readmission rates and staff and patient satisfaction with the service were also investigated. Results indicate a statistically significant reduction in the proportion of patients admitted from the ED to a ward since the inception of the program, a significant difference in the mean-related quality of life scores before and after intervention by care coordination, and staff and patient satisfaction with the service. The readmission data collected in the present evaluation will serve as a baseline measure for future evaluations.

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CONTINUING DEMANDS ON ACUTE CARE hospitals have resulted in an increased delay in admission of emergency patients to ward beds, blocking of emergency departments (EDs), and an increase in ambulance bypass.¹ Older

What is known about the topic?

Emergency admissions can be prevented through the timely provision of alternative health and support services at the point of emergency presentation. There is not yet consensus about the most effective model of intervention.

What does this paper add?

A multi-disciplinary case management approach supported by brokerage funds was effective in reducing the admission rate of patients presenting to the Emergency Department of a metropolitan hospital.

What are the implications?

While this model is successful, further evaluation of the many approaches currently being trialled in Australia is needed.

patients are often believed to cause “access block” due to the frequent need to admit them to hospital for reasons other than those that are purely medical. A shortage of available placements in aged care facilities and a lack of home support or other social issues are often the impetus for admission following a relatively minor injury or illness.²

In 1996, Street and colleagues³ reported on the complex issues surrounding presentation and discharge of older people from the hospital ED. They noted the difficulties of presentations where symptoms were sometimes non-specific, or where complex issues were compounded by disability and confusion. Patients who are not admitted as inpatients frequently suffer a deterioration in their condition, and up to 20% will re-present or be admitted within 1 month of discharge.⁴ Those who are discharged home from the ED often express apprehension about their ability to manage after discharge.³ In a study of ED usage by older Australians, Richardson reported that one of the strongest predictors of death or increased dependency within 3 months of discharge was found in presentations where social factors were of concern.⁵

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The Northern Hospital (TNH) responded to an increased demand for service with the introduction of the care coordination (CC) program in the ED and in the inpatient wards in the year 2000. The hospital's ED is one of the busiest in Melbourne, and currently provides services to almost 45 000 patients annually.⁶

Service description

The CC program seeks to prevent not only unnecessary admissions from ED to hospital wards, but also inappropriate or unnecessary presentations and re-presentations to the ED, through the implementation of early interventions. In addition to preventative measures, CC aims to ensure the coordination and provision of services and programs for patients with complex care needs upon discharge from the ED back into the community. The program acts as a single point of contact for linking systems of social services, home and community services, health care and medical services and provides service to any potentially 'at risk' individual who may not otherwise be eligible for assistance under any other program.

CC is also a conduit between internal disciplines (for example between medical staff, allied health staff and social workers) and between internal and external services and stakeholders. The program aims to streamline patient movement through the hospital system and to speed up allocation of services, thereby enabling a smooth and swift discharge.

Cases to assess for intervention are identified by the ED CC team through external referral (Royal District Nursing Service (RDNS), general practitioners or community health services), internal referral from the ED medical/nursing team or from a review of triage presentation records. Drawing on extensive knowledge of the local community services and mainstream health and allied health services, CC staff explore options in consultation with the patient and the treating medical team (if appropriate), and a discharge/care plan is developed.

The CC program provides all of the components of case management, with one of the biggest strengths being the time that care coordinators are able to take to seek out appropriate services. This capacity is supported through the availability of brokerage funds that are used for the purchase of equipment, goods (such as shoes if required for a safe discharge) and services like physiotherapy, nursing and interpreting. CC services do not have a cut-off point, but the primary aim is to link patients into mainstream services as soon as possible.

The CC team are able to provide services if required, however their primary role is coordination. Although coming from a diversity of disciplines, members of the CC team perform a generic role. The professional composition of the team has varied over time, but has included physiotherapy, occupational therapy, speech pathology, nursing and social work. There are currently eight team members.

The CC program was originally funded under Winter Emergency Demand Strategy (one staff member in July 2000), but has since been funded through the Hospital Admissions Risk Program.

Budget allocations for 2001–2002 and 2002–2003 were:

- 2001–2002 = 91% (\$289 000) salary and wages; 6% (\$20 000) brokerage; 3% (\$9000) other.
- 2002–2003 = 91% (\$401 000) salary and wages; 6% (\$25 000) brokerage; 3% (\$13 216) other.

Aims of the study

The study aimed to evaluate the effectiveness of the CC service operating in TNH ED by:

- characterising the type of patients that use the service
- examining rates of unplanned readmission of CC clients to the ED or hospital within 28 days of discharge
- comparing the rate of ED admissions pre and post the commencement of the service

I Source of patients referred to the care coordination (CC) program and referral numbers (all patients)

	Referrals to care coordination program (n)			Total CC patients (n)	Referrals made from CC program (n)
	Emergency Department	Community	After hours		
2001–2002	1555	18	185	1758	1307
2002–2003	2422	50	162	2634	1726

- investigating patient self-reported health-related quality of life pre and post CC intervention
- determining staff and patient/carer satisfaction with the service
- providing recommendations regarding the effectiveness of the service.

Methods

All patients of the CC service are included in most aspects of this study. Demographic and other client data, service provision information and past and present hospital admission rates were obtained through secondary database interrogation. The overall rates of admission pre CC program were compared with the overall admission rates post CC program.

Figures for readmissions of the CC intervention group were obtained through manual investigation and cross checking of CC service records. The Health Information Services database exposed any unplanned readmissions of those clients within a 28-day period.

Participants in the patient/client satisfaction and quality of life assessment phase of the evaluation were recruited from patients presenting to the ED who were targeted by the CC team and met the following criteria: 65+ years of age; able to speak and understand English; able to communicate by telephone after discharge; expected to be discharged back into the community; not exhibiting signs of diminished cognition (as assessed by the care coordinator); and requiring discharge planning.

The Assessment of Quality of Life (AQoL) instrument was used to measure health-related

quality of life.⁷ This instrument was chosen because of its previous application in other similar settings and on similar population groups. The measure has five primary dimensions: illness, independent living, physical ability, psychological well-being and social relationships. The questionnaire was administered within the ED by a trained interviewer in a face-to-face interview before full patient assessment by the CC team. The AQoL, together with a patient satisfaction survey, was readministered by the same interviewer in a telephone interview about 1 month later. Signed consent was gained from patients. Staff satisfaction with the service was assessed via two focus groups involving Junior Medical Officers (JMOs) and nursing staff.

The evaluation and service description was compiled by The Centre for Applied Gerontology, Bundoora. Before commencement, approval to conduct the evaluation was gained from TNH Research Ethics Committee.

Results

Service demand

Demand for the service is high. In the first full year of service (2001–2002) the ED care coordinators had contact with 1758 patients and made 1307 referrals. There was a marked increase (from a low base) in the number of community referrals received in 2001–02 and 2002–03 (Box 1) which may indicate growing community knowledge of the function of the CC team.

Although the primary aim of the CC program is to reduce the number of hospital admissions

and ED presentations, there is a clear indication that the service is providing support to patients through community liaison and referral to in-hospital services and community services that may not readily be captured in admission/readmission figures.

Patient characteristics

TNH is situated in an area where the population is culturally diverse. From the cities of Darebin and Whittlesea alone, 3071 Italian, 1742 Greek, 1487 Macedonian and 1273 Turkish people aged over 65 years presented to TNH ED in 2002–2003.

Almost 300 of the patients presenting to ED who were seen by the CC team in 2002–2003 required liaison activity with a nursing home or hostel.

Comparison of admissions to wards pre and post the CC program

The number of patients presenting to the ED has steadily increased during the past 4 years with an increase of 7.84% (approx. 4000 patients) in 2002–2003. Since the inception of CC, inpatient bed numbers have remained stable. Eight 'short stay' beds opened in November 2002. Box 2 indicates the total number of presentations to the ED and the number and percentage of admissions to wards from the ED for the periods pre and post the CC service.

Since the inception of the CC program there has been a sustained statistically significant

reduction in the proportion of patients presenting to the ED who have been admitted to the wards.

Unplanned readmission rates to the ED or hospital within 28 days

An audit of patient medical histories indicated that for the months of March and April 2003, 64 of the 351 CC patients (18.2%) had unplanned repeat visits to the hospital within 28 days of discharge. Of these, 89% were over the age of 65, with almost 39% being over the age of 80 years.

Due to database limitations this is the first time that unplanned readmissions or re-presentations to the ED or ward by patients where the CC team has intervened have been tracked, therefore there is no baseline data available. The current snapshot data will be used as a baseline measure for subsequent evaluations. The following case study illustrates the impact of CC on some patient re-presentations.

Mr H

Mr H is a single 83-year-old man who presented at TNH ED in July 2000. At that time he underwent a procedure for a urinary infection and renal impairment which resulted in him having a permanent catheter inserted. The catheter blocked frequently and as a result Mr H re-presented at the ED on 45 occasions in a 12-month period. Mr H was socially isolated with no next-of-kin or friends, and had previously

2 Comparison of admissions to wards pre and post the care coordination (CC) program (all patients)

	Presentations to Emergency Department (ED)	Admissions to ward	% of presentations admitted	P value of reduction since base year
1999–2000 (pre CC)	40510	8170	20.16%	na
2000–2001* (post CC)	42196	7639	18.10%	$P < 0.005$
2001–2002 (post CC)	44456	8178	18.39%	$P < 0.005$
2002–2003 (post CC)	48238	8699	18.03%	$P < 0.005$

Admissions = patients admitted to an inpatient ward. Figures do not include patients who have been treated within the ED for over 4 hrs and are therefore admitted to the ED.

*The CC program was initiated in July 2000 with one staff member.

na = not applicable.

3 Comparison of health-related quality of life (AQoL) scores ($n = 11$) following participation in the care coordination program

Variable	Pre intervention mean (SD)	Post intervention mean (SD)	Difference (pre-post)	P
Illness	0.314 (0.270)	0.384 (0.296)	0.070	0.139
Independent living	0.606 (0.223)	0.797 (0.142)	0.191	0.037
Social relationships	0.609 (0.310)	0.869 (0.124)	0.260	0.009
Physical senses	0.756 (0.215)	0.868 (0.133)	0.112	0.038
Psychological wellbeing	0.649 (0.260)	0.918 (0.066)	0.269	0.003
AQoL utility score	0.268 (0.238)	0.578 (0.164)	0.310	0.006

refused any involvement from community-based agencies. He was articulate and alert, however he always appeared dishevelled and dirty, with the catheter attachments appearing unhygienic.

Over a number of visits, rapport was established with Mr H by a male member of the CC team, however he remained reluctant to disclose personal information and viewed the efforts of the CC team with suspicion. A number of meetings were held with other professionals (continence nurse, district nurse, doctors and nurses) and the CC team liaised with local Community Health Centres to find a suitable service. Mr H eventually agreed to attend a GP clinic at a health centre, accompanied by the care coordinator. A care plan was devised and Mr H agreed to attend the clinic during business hours on a weekly basis to maintain care of his catheter. In the case of an after-hours emergency, he was to present to TNH ED. Supplies and continence support were to continue from TNH.

At a review meeting 2 weeks later Mr H confirmed his agreement with the care plan, and discussed making a request for reinstatement of his drivers licence. An appropriate referral was arranged. At a 1 month follow-up, Mr H was happy to continue with the arrangements and had not presented to the ED again.

Health-related quality of life assessment (AQoL)

To investigate any change in reported health-related quality of life, the AQoL was adminis-

tered to patients who met the selection criteria and were willing to participate in the evaluation. Thirty-eight patients met the inclusion criteria during the recruitment period. Of these, eight patients declined the invitation to participate, with a further 11 declining to sign the consent form. During a 4 week period the AQoL was administered pre intervention in the ED ($n = 19$), followed by a telephone interview post intervention about 28 days later ($n = 11$). At the time of the second administration four patients were unable to participate due to deterioration in their condition, and four patients were not contactable after four attempts.

Due to the very small sample size and the skewed distribution of scores a Wilcoxon signed rank test was used to analyse the data. This showed a significant difference in the population mean AQoL utility scores before and after intervention. When viewed individually, this was true for five of the six dimensions. As Box 3 shows, the only dimension where there was not a statistically significant result was in the 'illness' score which relates to the use and reliance upon medicines, medical aids and medical treatment.

Staff and patient satisfaction

To assess staff satisfaction, focus groups were held with nursing staff ($n = 11$) and Junior Medical Officers ($n = 6$). Feedback was also separately sought from senior medical staff. A total of 19 staff members contributed. Many of the comments from staff members related to the accessibility and responsiveness of the CC team, the ease with which the team members could be

contacted, and the speed of response. As the comments below illustrate, staff acknowledged that one of the biggest advantages of the CC team was the lessening of pressure on their own roles, however they were very keen to highlight the direct positive impact that they felt the program had on patient care.

The focus in ED is to get the patient in, get them fixed and get them out again. The medical staff will address the primary medical issue, but that is often not the primary issue. That's where the care coordinators address issues that will prevent patient readmissions.

Patient satisfaction was assessed via a telephone survey that was administered with the post-intervention AQoL about 28 days after ED presentation. The patients who participated in the survey ($n=11$) received a combination of home help ($n=7$), personal care ($n=3$), nursing ($n=2$), physiotherapy ($n=2$), and speech therapy ($n=1$).

Patients felt that the services/interventions put into place by the CC team were helpful in their return to home, with all either agreeing ($n=7$) or strongly agreeing ($n=4$) that the services made it easier for them to manage. Despite the lower level of strong agreement, seven patients reported that the services were very helpful, with four suggesting they were somewhat helpful. The majority of patients ($n=9$) reported that they felt more confident about returning home because of the services (5 agree; 4 strongly agree), with 9 agreeing that it was helpful to have someone identify issues that may have made it difficult to manage at home. When asked to rate the service, the patient responses were varied. Four rated it excellent, 6 very good, and 1 good. All but one of the patients surveyed indicated that they would recommend the program to other people (the remaining patient was uncertain).

Discussion

The major findings of the evaluation indicate that the CC program in the ED has had a

positive impact on admissions to wards from the ED and on staff morale and work practices. The flexibility, brokerage capacity and responsiveness of CC are clearly three of the greatest strengths of the program, with the mix of staff backgrounds adding a unique dimension to the service.

In the past 12 months, variations in staffing levels due to resignations and leave have had an adverse effect on the efficiency of the program. In the months of April, May and June 2003 the number of patients seen by the team reduced, while the number of ED presentations remained stable. Recruitment of new staff from diverse professional backgrounds was difficult, which may indicate the need to develop very specific recruitment strategies for the future.

Staff reports suggest that there is a greater demand for the service than is currently being met, with Junior Medical Officers and nursing staff indicating scope for the program to intervene in additional cases, particularly out of regular working hours and at weekends.

Processes could be streamlined by the introduction of a formal method of referral with a screening tool that would allow 'at risk' patients to be easily identified. A validated risk screen tool is already in use in other similar settings,⁸ however any tool introduced should not inhibit the flexibility that the CC program currently has in being able to involve any patient who does not 'fit' with other existing programs. The availability of brokerage funds is vital to the flexibility and timeliness of interventions, and must be viewed as an integral part of TNH CC model.

One of the outstanding features of the program has been the significant reduction in the numbers of admissions from ED to the ward that coincides with the introduction of CC and has continued into the second year of the program.

Patients involved in the program reported an increase in health-related quality of life in the pre and post intervention AQoL. A statistically significant improvement was shown by the AQoL utility score in all domains except the illness score. The disappointingly small number

of participants involved in this aspect of the evaluation and the lack of control or historical data means that results should be viewed cautiously.

Attempts at ED data collection highlighted the difficulties associated with approaching patients or their families at what is understandably a stressful time in their lives. In most instances, patients were happy to give verbal feedback, but were hesitant to sign the necessary consent form, a common response being: "My son/daughter told me not to sign anything while I was in here".

Nevertheless, the results found here were in keeping with a similar program evaluation at Angliss Health Service (Melbourne) which also examined whether CC led to a better outcome for clients and improved performance of the ED. In that instance patients reported a statistically significant improvement in health-related quality of life, as measured by the AQoL. The authors indicated that substantial health gains were brought about for the intervention group, who were four times more likely to report high levels of good health after a period of 2 months following their hospital visit. Similarly, a 2-month follow-up of self-care capacity implied that the intervention group had a greater ability to continue to look after themselves than did the non-intervention group.⁹

The community links that members of the TNH CC team have been able to establish are a valuable resource for the whole of TNH organisation and are another of the important secondary functions of the service. The role that the CC program fulfils is perhaps best captured by the following comment that came at the conclusion of the staff focus group.

Unfortunately if you have someone in cubicle A with huge social problems and someone in cubicle B having a heart attack and you only have so many staff, then unfortunately you have to spend your time with the heart attack at the expense of the other person. That doesn't mean that the patient has not received excellent medical care, it just means that their other issues,

that have perhaps brought them to ED in the first place, are not dealt with.

In addition to improving patient outcomes, it is worth reiterating that fundamental to TNH CC model is the ability of team members to streamline patient movement through the hospital system; they have the potential to prevent an avoidable admission and they are able to hasten the allocation of services in order to facilitate a smooth and swift discharge.

Conclusion

Outcomes from this evaluation suggest that following its early years of service in TNH, the CC program in the ED has successfully achieved its original aims. A comparison of admissions pre and post introduction of the program indicates that there has been a statistically significant reduction in the proportion of patients presenting to the ED who are admitted to the wards.

There is also evidence of a very high level of satisfaction with the program from hospital staff who report a streamlining of processes, increased staff morale and improved patient outcomes. Similarly, patients expressed satisfaction with the program and agreed that the interventions made it easier for them and gave them more confidence about returning to their homes. As with the Angliss Health Service evaluation, results of a pre and post intervention quality of life measure (AQoL) indicate that patients involved in the program have experienced a significant improvement in their overall health-related quality of life.

Results from this and other studies demonstrate that the CC model is one that provides positive outcomes for all stakeholders; it can be easily integrated into existing ED processes and therefore should be considered for inclusion in all ED settings.

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Competing interests

None identified.

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