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## Problems with a great idea: referral by prehospital emergency services to a community-based falls-prevention service

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# Problems with a great idea: referral by prehospital emergency services to a community-based falls-prevention service

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## ABSTRACT

**Background and aim** Falls are the leading cause of injury in older adults. Identifying people at risk before they experience a serious fall requiring hospitalisation allows an opportunity to intervene earlier and potentially reduce further falls and subsequent healthcare costs. The purpose of this project was to develop a referral pathway to a community falls-prevention team for older people who had experienced a fall attended by a paramedic service and who were not transported to hospital. It was also hypothesised that providing intervention to this group of clients would reduce future falls-related ambulance call-outs, emergency department presentations and hospital admissions.

**Methods** An education package, referral pathway and follow-up procedures were developed. Both services had regular meetings, and work shadowing with the paramedics was also trialled to encourage more referrals. A range of demographic and other outcome measures were collected to compare people referred through the paramedic pathway and through traditional pathways.

**Results** Internal data from the Queensland Ambulance Service indicated that there were approximately six falls per week by community-dwelling older persons in the eligible service catchment area (south west Brisbane metropolitan area) who were attended to by Queensland Ambulance Service paramedics, but not transported to hospital during the 2-year study period (2008–2009). Of the potential 638 eligible patients, only 17 (2.6%) were referred for a falls assessment.

**Conclusion** Although this pilot programme had support from all levels of management as well as from the service providers, it did not translate into actual referrals. Several explanations are provided for these preliminary findings.

## INTRODUCTION

Falls are the major cause of injury in older age groups. Deaths and hospitalisations as a consequence of falls increase significantly with age.<sup>1</sup> Non-injurious falls can reduce a person's confidence, mobility, and quality of life, and are known to result in an increased future falls risk.<sup>2</sup> Falls prevention is therefore a key issue in reducing morbidity and mortality and improving quality of life in older Australians.

Research suggests that, if high-risk fallers can be identified and provided with falls risk screening and targeted interventions, their risk of falling again can be significantly reduced.<sup>3</sup> Early identification of

people who are at risk of falls can result in earlier implementation of interventions to reduce this risk.

Ambulance services are in a potentially unique position to facilitate early recognition of at risk individuals because of their access to one high-risk population—specifically, people who fall in the community. Some of these people will require treatment and transport to hospital, but others will not, and many of these individuals may not seek additional health services after paramedic attention. Two British studies have looked at the outcomes of patients attended to by ambulance services for a fall. One study showed that 11% of fallers over 65 required assistance only (ie, no transportation), and, of those transported, 26% were admitted to hospital, 10% were referred to a liaison nurse, and 64% were discharged.<sup>4</sup> Another study<sup>5</sup> identified that nearly 50% of the non-transported older fallers made healthcare contact over the subsequent 2-week period, and 47% had made at least one additional emergency phone call. Of these non-transported fallers, there was an increased risk of hospital admission and death compared with the general population. These results suggest an ongoing clinical need either not recognised or able to be managed by an ambulance crew at the initial call-out.

In 2005, in the south-west area of Brisbane, ~120 patients aged 65 years and over were attended by the Queensland Ambulance Service (QAS) as a consequence of a fall, but were not transported to hospital (internal QAS figures). As an emergency service, the QAS did not have the operational capacity to provide falls risk analyses or targeted referral information to these patients, and these patients arguably missed an opportunity to receive assessment, intervention or information to assist in the prevention of future falls.

This perceived unmet clinical need for this group of vulnerable people led to a combined quality improvement activity by the Queensland Health Brisbane South Community Rehabilitation Service (CRS) and the QAS to design and test a referral pathway for ambulance services to refer patients directly to a falls-prevention service. The CRS is an allied health rehabilitation team consisting of physiotherapists, occupational therapists and therapy assistants. They offer a multiple factor falls-prevention programme including comprehensive assessment of falls risk factors, exercise, education and home hazard identification and modification.<sup>6</sup>

In addition to the development of a referral pathway, a parallel project was conducted with the

## Programme report

aim of comparing the characteristics of older people experiencing a fall referred to the CRS via two referral pathways: those who were attended by paramedics but not transported to hospital and those referred after a fall through normal referral pathways (ie, general practitioner or hospital emergency department).

This paper will discuss the potential barriers and enablers to the success of a collaborative approach between two health-services and briefly discuss the comparison of referral pathways.

### METHODS

#### Development of the referral pathway

The methodology provided by the Queensland Health's *Managing Organisational Change Guide*<sup>7</sup> was used to design the implementation of the pathway. Five factors identified by this resource as critical to success are planning, defined governance, committed leadership, informed stakeholders and aligned workforce. The Australian Centre for Prehospital Research (located within the QAS) and the CRS jointly developed a pilot plan with a clear referral pathway, outcome measures, marketing materials and education and a protocol for rolling out the programme to five QAS stations in the catchment area of the falls-prevention service (planning, defined governance). An electronic consent form for referral to a falls programme was built into the existing electronic Ambulance Report Form, so that paramedics could show patients the consent form, explain to them the referral process, and obtain their signature (electronically using the touch book) when consent for referral to the CRS was provided. Before the finalisation of the project plan, a number of information sessions were held with paramedics at the QAS stations in the target area. These sessions outlined the CRS and the project proposal and sought feedback on aspects of the project that may be problematic. The electronic consent facility was demonstrated and endorsed by paramedics as an easy tool that was likely to be used (informed stakeholders and aligned workforce). Paramedics were positive about the initiative and indicated that anything that could be provided for these patients (who are not transported) would be of benefit. There was no negative feedback in the early stages of the pilot to suggest that obtaining referrals from paramedics would be problematic. In the initial roll out, education was provided to officers-in-charge (OICs) of stations in the catchment area, and brochures and business cards were placed in ambulances (informed stakeholders). The project was approved and endorsed by both QAS and Queensland Health executives (committed leadership).

#### Decision pathway and referral method

An educational package was developed for the OICs and paramedics of the five QAS stations targeted for the pilot. Paramedics were provided with a laminated keycard-size 'How to Refer' card. The card information included eligibility criteria, CRS contact details, and the 24 h answering machine phone number for paramedics to leave the client's details on an answering machine for CRS team members to follow-up.

Paramedics were asked to refer consenting eligible clients to the CRS. QAS has an existing framework to assist paramedics in circumstances where patients refuse treatment and/or transport, to ensure that their duty of care is discharged in this event. Box 1 outlines this procedure.

During the project, paramedics continued to provide services to patients as usual. No change to standard operational practices was required. The training package emphasised this 'business as usual' direction. Eligible patients who consented to a referral

### Box 1 VIRCA decision pathway for non-transport of patients

- V—Refusal must be made voluntarily.
- I—Patient must be informed of their condition and risks associated with that condition if they are not transported.
- R—Refusal must be made relevant to the circumstances.
- C—Patient must have the capacity to refuse.
- A—Patient must be provided with sound discharge advice.

were informed that staff from the CRS would contact them directly in the following couple of days, but that, as the falls-prevention service was not an emergency allied health programme, contact with the client could not be guaranteed within a 24–48 h time frame.

#### Design of the parallel research study

This study used an observational cross-sectional design that compared two groups of community-dwelling older people at high risk of falls referred to the CRS falls-prevention programme. One group was referred via the QAS and the other group after presentation to the emergency department of one of three metropolitan hospitals or to their general practitioner. Ethics approval for this study was granted by the Princess Alexandra Hospital Human Research Ethics Committee, HREC/07/QPAH/140.

#### Participants and setting

Eligible participants were older than 65 years, living in the community, and had had a recent fall leading to the referral. Participants were referred through one of two referral pathways: (1) via the QAS either through direct referral from a paramedic or self-referral after a visit from the QAS and provision of referral information; (2) through a traditional referral path—that is, clients referred from a local hospital emergency department or their local general practitioner. Consenting participants received a comprehensive falls assessment with subsequent referral to an 8-week falls-prevention programme as required.

#### Exclusion criteria

Participants were not eligible for the study if they were a resident of an aged care facility, were non-mobile or wheelchair bound, or diagnosed as having a psychiatric illness, an intellectual disability or severe dementia.

#### Data collection

At initial assessment, demographic details such as age and living arrangements were collected. A falls history was collected by asking the participant how many falls they had experienced over the past 6 months. Health-related quality of life data were collected using the European quality of life five dimensions (EQ-5D), and cognition was screened by using the Abbreviated Mental Test Score (AMTS).<sup>8</sup> Mobility was assessed using the Timed Up & Go Test.<sup>9</sup> Participation in a range of activities was measured by the Frenchay Activities Index, a self-report functional participation scale.<sup>10</sup> All patients were assessed by an occupational therapist and physiotherapist from the CRS trained in the administration of the comprehensive falls risk assessment battery. Assessments were carried out in the patient's home.

## Analysis

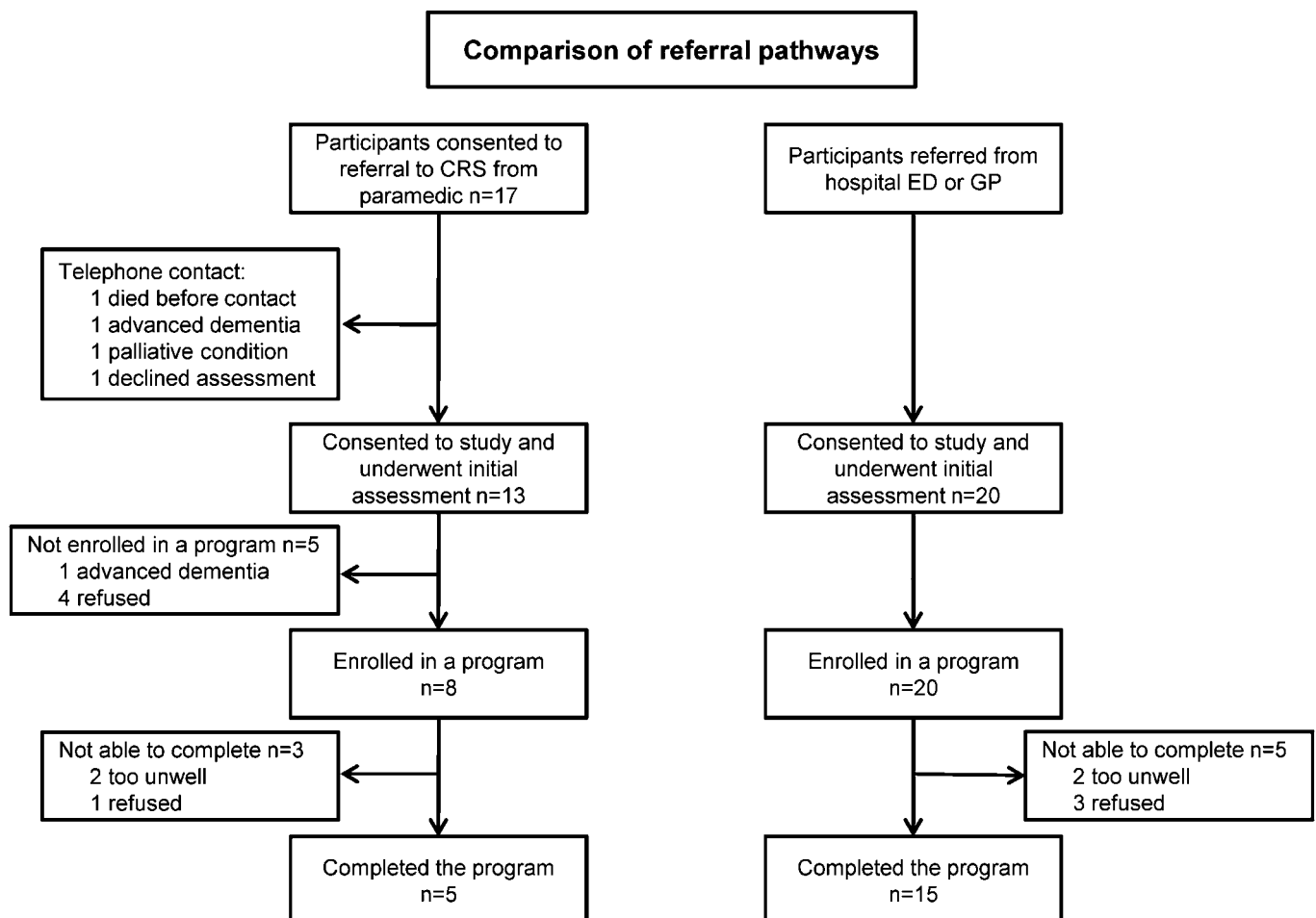
Initial power analysis calculated that a sample size of 37 participants in each group would be required to detect a significant difference of 2.5 steps on the step test outcome, power equal to 0.80, and assuming a SD in each group of 3.8. Initial expectations were that about one person per week would be referred from the QAS, and it was expected that the study would only take place over 1 year. Owing to the low numbers of participants in the study, between-group analyses were not considered appropriate, and data are presented descriptively only.

## RESULTS

The paramedic referral pathway started in January 2008. In the first 6 months, only four referrals from paramedics had been received by the falls-prevention service. CRS staff repeated the education session with OICs of the five selected stations and explored barriers with the staff. Consequently, a process was put in place for all referrers to be personally contacted by CRS staff so that they were aware that their referral had been received and acted upon. After a further 6 months, only two more referrals had been received via this pathway. At this point, a poster was developed and displayed in the emergency departments of hospitals in the catchment area. In consultation with the QAS area director, three staff from the CRS spent a day each with paramedics to observe QAS clinical practice and make individual contact with paramedics with regard to the referral project.

These strategies improved the referral rate. Eleven referrals were received in the following 6 months; however, this improvement was not sustained. At the end of 2 years only 17 referrals in total had been made by paramedics, and it was decided to discontinue the project. An internal review of QAS data for the pilot period (2008–2009) indicated that there were potentially 638 eligible clients who had been seen at home for a fall and not transported to hospital in the pilot catchment area. The mean age of these clients was 81.4 (SD 7.7) years, and 61% were female. The most common reason for falling was trip/slip inside ( $n=169$  (26%)) followed by a fall from standing ( $n=124$  (19%)). In addition to the 17 clients referred, a further four patients had been offered referral and refused, giving a total of 21 clients where referral was attempted. This indicates that a little over 3% of the potential population were referred by the paramedics. The primary reason recorded for non-transport was 'not injured' ( $n=458$  (72%)). The second most prevalent reason was 'patient refusal despite advice to the contrary' ( $n=168$  (26%)). A very small percentage of patients (2%) were not transported because they had private transport or because they died at the scene.

Figure 1 illustrates the flow of referrals from the paramedic and alternative pathways. Participants referred from the ambulance service were on average 5 years older and more likely to live alone (64%) than those referred through traditional pathways (26%) (table 1).<sup>8 11–13</sup> Participants referred from the ambulance service also had a slower Timed Up & Go Score, although other measures were broadly similar in both groups. Of the 13



**Figure 1** Comparison of referral pathways. CRS, community rehabilitation service; ED, emergency department; GP, general practitioner.

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**Table 1** Characteristics of the participants from the two referral pathways

Descriptor	Ambulance (n=13)	Usual (n=20)	Normative
Age	83 (7.5)	78 (7.3)	
Lives alone*	7 (64%)	5 (26%)	
Frenchay Activities Index	20.1 (8.3)	20.4 (9.0)	40.86 <sup>11</sup>
Timed Up & Go	34.4 (37)	20.1 (11.4)	<10 s <sup>12</sup>
AMTS	8.9 (0.9)	8.7 (1.0)	8–10 <sup>8</sup>
EQ-5D	0.69 (0.10)	0.64 (0.7)	0.81 (0.01) <sup>13</sup>
Falls in last 6 months, median (IQR)	2 (1.5, 4)	2 (1, 3)	

\*Percentages based on n=11 of the Ambulance and n=19 of the Usual pathway with recorded data; AMTS, abbreviated mental test score; EQ-5D, European quality of life five dimensions; IQR, inter-quartile range.

participants who consented to assessment, only eight were able to start a rehabilitation programme, and only five completed it. Of the referrals taken from the traditional pathway (n=20), all patients were assessed and started a programme, and 15 of these participants completed the programme.

### DISCUSSION

The combined QAS and CRS project team were successful in establishing a new direct referral pathway for QAS paramedics to refer high-risk older fallers to an allied health falls-prevention service. There was, however, a clear lack of uptake of this referral pathway by the paramedics. Although the project team worked systematically through the problems and had endorsement from the 'top down' and the 'bottom up', this project did not achieve the expected rate of referrals. Of those who were referred, many were inappropriate for the service because of diagnoses including dementia, terminal cancer and end-stage Parkinson's disease. So, although there was a clear referral pathway, the paramedics did not use this regularly, and, when they did, the referred clients were older and less able than those from the traditional referral pathway.

The referral pathway pilot was trialled at a limited number of stations, as this was felt to be manageable and achievable within the project's resource constraints. However, this decision may have contributed to the failure of the project. Paramedics often work across district boundaries and move between stations during shifts, making a limited pilot area difficult to operationalise. It would have been more straightforward for the ambulance service in terms of disseminating information and knowledge about the referral pathway to introduce the initiative on a regional basis. The lack of dedicated resources available for the pilot was also problematic. Normal turnover of staff, movement between stations, and shift work meant it was difficult to comprehensively educate all paramedics about the initiative. Education needed to be repeated at frequent intervals, and there were not adequate resources available to do this. Since the completion of this pilot, hospital liaison officer positions have been created in emergency departments in Brisbane to provide an interface between the hospital and ambulance service. These people would be in an ideal position to be the 'champions' for any future initiative along these lines and may offer a greater opportunity for success.

Although limited data were available on those older people seen by paramedics and not referred, the general profile (age and gender) of these people and the cause of falls is congruent with that of an average older person at risk of falls. Therefore it could be expected that many of these people may have benefited from a programme designed to reduce future falls.

Patients who decline transport to hospital may also be more likely to decline referral to another service, or paramedics may be

unwilling to attempt referral for a patient who has already declined their advice on transportation. This cohort, however, only represents about a quarter of the total eligible population and hence does not provide a complete explanation as to why so few total referrals were made. A further reason for non-referrals could be that the paramedic was aware of other healthcare services already involved with the patient and was therefore confident that the fall would be followed-up by the patient's primary care provider. In some cases, community health services (eg, domiciliary nursing) may already be attending. The paramedic may ring and discuss the matter with the general practitioner or be aware that the patient already has a medical appointment in the near future. It is not clear from current documentation processes how often this would affect the paramedic's decision to refer to other services.

Paramedic education, regardless of the point of delivery, has traditionally placed emphasis on resuscitation and the treatment of acute illness and injury, although this includes attention to the acute exacerbation of chronic disease. In most cases, little attention is paid in curricula to disease and injury prevention, health promotion or the more general tenets of public health. This educational and practice framework may contribute to the low uptake of this particular referral pathway for falls patients.

Other operational realities have probably also come into play in this project. Significant increases in emergency calls that require immediate or life-saving treatment have been reported by most Australian ambulance services over recent years. Therefore, while the implications of falls among the older community-based population are not insignificant, conflict potentially arises between providing the quite different skills for acute and non-acute treatment within a limited resource framework. Health-related prevention and promotion activities require a time frame and skill set that are not often available to paramedics, particularly those operating in busy metropolitan areas.

This assumption is supported by other research in a UK sample,<sup>14</sup> which demonstrated that ambulance crews failed to recognise their encounter with older fallers who had no apparent injuries as having a clinical dimension. The low referral rate in our programme indicates that this may also be a key factor in the failure to generate the expected rate of referrals from paramedics. Over the past 5 years, universities in many states of Australia have begun to offer undergraduate degrees in paramedic science with significant public health components. While this shift in educational approach for the profession may provide sufficient background to alter paramedic knowledge and practice with regard to prevention and health promotion, the mitigating factors associated with demand for emergency services will remain in conflict with alternative referral pathways for low-acuity ambulance patients.

Interestingly, in examples where older, non-urgent patients have been more successfully managed through 'treat and refer' protocols, paramedics have been provided with extended primary care training (paramedic practitioners, community paramedics or extended care paramedics), and are given specific primary care roles where they are not required to respond to usual emergency ambulance calls.<sup>15–17</sup> Evidence from the UK suggests that specifically designated primary care paramedics might reduce emergency department attendance and subsequent admission of older patients, shorten the experienced episode time, and increase patient satisfaction with their experience.<sup>15</sup>

Evidence suggests that paramedics approach decision-making in relation to older patients who have fallen with a significant degree of caution. In relation to the decision to transport patients, the process undertaken by ambulance staff has been shown to be

complex and negotiated, driven by several key factors: the experience and confidence of the paramedic; spatial aspects (time of day and location); the wishes of the patient; whether the patient has a carer and the condition of their home surroundings; and the emergency department waiting time.<sup>18</sup> These decisions are also known to be contextual to whether or not a non-transport decision would be supported by the employer if subsequent adverse events associated with that decision occurred.

From the small numbers actually referred during this project, it appears that these clients were functionally more dependent than clients referred through usual pathways. The clients referred were at, or close to, crisis point, and a slow-response community falls-prevention programme is not likely to be the best service for this clientele. More appropriate clients may well have been attended to and not referred, as it was believed that these clients were not at risk. Emergency personnel may not have the appropriate tools or training to recognise when older people are at high risk of falls and hence may not recognise when follow-up would be beneficial for the older person.

To date there is scant published literature examining the clinical decision-making process of paramedics relating specifically to older people who fall. Consequently, we have started a formal evaluation of this study, which will include interviews with paramedics from catchment stations, to investigate their decision-making processes and factors driving non-transport and referral of this particular patient cohort.

Clinical practice change management and establishing new patient care pathways between health providers, with a focus on rapid response to high-acuity cases in one instance and prevention in the other, increases the complexity of establishing programmes such as described here. While the findings described are necessarily preliminary, several key outcomes are worthy of note. First, the numbers of potential patients in the target area

show a need for dedicated resources and funding to facilitate systematic roll out of a well-supported falls-prevention referral programme. Future success may also be predicated on the need to fully integrate referral programmes into operational ambulance service practice, with funded staff to push referrals and provide timely feedback on the outcomes of referrals. Because of the mobile nature of the paramedic work practice, continual contact with front-line paramedics appears necessary to promote referrals and embed the programme into usual practice. Better education and training for paramedics on falls risk is also required and would be likely to improve the skills of paramedics to recognise appropriate patients for referral. Finally, the implementation of future referral pathways reliant on paramedics must take into account the operational realities of the provision of emergency prehospital services and the current absence of health promotion and disease/injury prevention education in this profession.

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**Competing interests** None.

**Ethics approval** Princess Alexandra Hospital HREC.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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## What is already known on this subject

- Falls in the community are the leading cause of injury for older people and older adults are at who have fallen once are at much higher risk of future falls.
- Ambulance services are often called to attend to older people after they have experienced a fall in the community and currently have few treatment options other than transporting to hospital.

## What this study adds

- Direct referral from Ambulance services to Community Falls Prevention services is a possible alternative care pathway for some patients, however substantial barriers may exist that prevent direct referral from operating successfully.
- Current focus and training on acute care may not provide the skills for paramedics to recognise a non injurious fall as a clinical incident requiring follow up care. Direct referral from Ambulance services to falls prevention services may not be successful without dedicated trained falls prevention personnel within Ambulance services.