

Development of a care model for early supported discharge of patients with lower limb ulcerations: a co-design study

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Background

Foot disease, including ulcers, infection, and lower limb ischaemia is a leading cause of hospitalisation in Australia, accounting for approximately 5% of hospitalisations.(1) There are more than 10,000 admissions each year in Australia for diabetes-related foot disease, with an average length of hospital stay of 26 days.(2,3) Recently published research suggests affected individuals experience very high rates of unplanned 30 day readmissions (around 17%).(4) Poor health literacy has been identified as a contributing factor for readmission risk, attributed to patients failing to understand and act on discharge instructions for appropriate care in the home.(5)

A recent cost-effectiveness analysis on care for patients with diabetic foot disease found that provision of care in an optimal way results in both clinically important health benefits measured in quality-adjusted life years (QALYs) and overall cost savings for high-risk patients when compared with usual care.(6) QALYs and costs savings ranged between 0.13 and \$9,100.11 respectively for those aged 35–54 years, to 0.16 and \$12,394.97 respectively for those aged 75 years or older.(6)

A 2017 Cochrane review found that for a number of conditions, early supported discharge improves patient satisfaction, reduces length of stay and does not increase the risk of 30-day readmissions.(7) However, this review, and a more recent scoping review I have led on alternative models of service delivery, found no research on early supported discharge models for patients with diabetes related foot disease.(8) A recent Delphi study of 72 national policy makers, health services managers and health services researchers identified alternative models of care to support early, safe discharge is a key priority for improving the sustainability of the health system.(9)

References

1. Lazzarini PA, et al., Direct inpatient burden caused by foot-related conditions: a multisite point-prevalence study. *BMJ open*, 2016. 6(6): p. e010811.
2. Davis W, et al., Predictors, consequences and costs of diabetes-related lower extremity amputation complicating type 2 diabetes: the Fremantle Diabetes Study. *Diabetologia*, 2006. 49(11): p. 2634-2641.
3. Bakker K, et al., Practical guidelines on the management and prevention of the diabetic foot 2011. *Diabetes/metabolism research and reviews*, 2012. 28: p. 225-231.
4. Holscher CM, et al., Unplanned 30-day readmission in patients with diabetic foot wounds treated in a multidisciplinary setting. *Journal of vascular surgery*, 2018. 67(3): p. 876-886.
5. Rubin DJ, et al., Early readmission among patients with diabetes: a qualitative assessment of contributing factors. *Journal of Diabetes and its Complications*, 2014. 28(6): p. 869-873.
6. Cheng Q, et al., A cost-effectiveness analysis of optimal care for diabetic foot ulcers in Australia. *International wound journal*, 2017. 14(4): p. 616-628.
7. Gonçalves-Bradley DC, et al., Early discharge hospital at home. *Cochrane Database of Systematic Reviews*, 2017(6).
8. Jessup RL, et al., Alternative service models for delivery of healthcare services in high-income countries: a scoping review of systematic reviews. *BMJ Open* 2019
9. Jessup RL, Co-design of health literacy interventions to improve understanding, access and use of health services. 2018, Deakin University.

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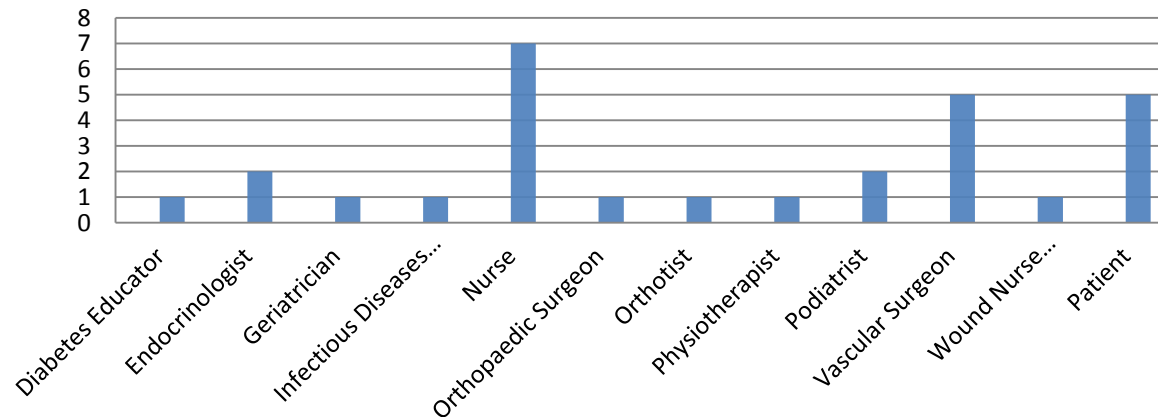
Methods

Recruitment

Northern Health (NH) podiatry staff recruited patients from the Foot Procedure Unit (FPU) over the age of 18 years and who have experience one or more hospital admission in the past 12 months to attend the patient focus groups. Staff working in the FPU, and all members of the NH vascular team were invited to participate (Graph 1).

A further 5 patients attending the hospital with a lower extremity condition over a one-month period were invited to participate (inclusion criteria over the age of 18 with no cognitive impairment). Patient participants were purposively sampled based on likelihood that they will be attending the hospital for appointments over the four month data collection period. The three Delphi surveys were delivered to these patients during their appointments, while an inpatient, or post discharge at home, and they were permitted assistance by family or an interpreter as required

Expertise by Profession



Graph 1 – eDelphi participants by profession

Data collection

Phase one involved focus groups with patients, carers, clinicians and health service managers to identify options for early discharge home, supported by evidence from the literature review. Four focus groups (two with patients and two with staff, with 6-8 participants per workshop) were conducted using a clinical case scenario where a ‘typical’ (fictional) patient was presented and attendees were invited to suggest solutions to supporting an early discharge to home and prevention of unplanned hospital readmissions.

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Methods and Results

Phase two involved an e-Delphi survey to gain consensus on the best components of an early supported discharge model for lower extremity conditions. This phase involved a three round electronic Delphi survey. **Round 1** - a questionnaire comprising only open ended questions, where each participant was asked to review the components of the model identified in the focus groups in phase one, and provide additional potential components (if they feel any are missing) with a brief justification. **Round 2** - a questionnaire based on the information provided in the first round. Respondents were invited to score how important they feel each component of the model was to providing an 'ideal' model of early supported discharge on a 5-point Likert scale. **Round 3** - participants were provided with the results of the second round in the form of a mean group response. They were asked to re-rate the components, taking into consideration the mean importance of each as rated by the panel in the previous round.

#	Intervention	Responses (% agreement)
1	Comprehensive management plan in place for patient prior to discharge	14 (100%)
2	Patients cognitively able to understand management plan prior to discharge	14 (93%)
3	Shared care between consultants allowing consultants to make decisions or change management as required on other team members behalf	14 (93%)
4	Less than 3 days wait for inpatient angiogram and/or angioplasty	13 (93%)
5	Information provided to GPs around referral point of access	12 (92%)
6	All lower limb wound patients co-located on the same inpatient ward	13 (87%)
7	Patients appointed a care coordinator prior to discharge to support early discharge	13 (87%)
8	All disciplines agree on criteria for model of early supported discharge	13 (87%)
9	Early referral to Endocrinology and seen within 48 hours	13 (87%)
10	Identify who needs to be involved in patient's care on admission and alert the relevant teams	13 (87%)

Table 1 – participant responses with consensus over 80%

Results

Sixteen staff and five patients contributed to the first round, 17 staff and five patients contributed to the second round, and 13 staff along with three patients contributed to the third round. Results show there is a high consensus among the Delphi panel (established a priori as a rating of either absolutely essential or very important by $\geq 80\%$ of the panel) that 10+ components should be considered for inclusion in early supported discharge model for patients with lower limb extremity conditions (Table 1).